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JUNE 9 – JUNE 11, 2023

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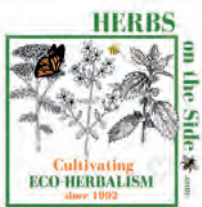
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# *The Digestive System Connected to the Nervous System*

**Betzy Bancroft**

Millions of years ago, the evolution of multicellular animals began as a simple tube of cells within the primordial sea, full of single-celled organisms flowing through it. Microbes, the single-celled beings floating in that primordial sea, had already figured out how to communicate with one another by producing and decoding chemicals that function as signaling molecules. As organisms became more complex, nerve cells grew around the digestive tract cells and began to facilitate the motion of food through the tube in one direction so that the digestive process could proceed in effective stages. The digestive and nervous systems were thus the first two functional body systems to evolve, and notably the gut nervous system, now known as the enteric nervous system, developed before the central nervous system, or brain and spinal column. And all animals, from insects to humans, still have a huge variety of microbial friends within our digestive tracts, mostly bacteria, but also archaea and fungi that perform an amazing variety of supportive functions. Chemical communication between our human cells, between microbes, and between human cells and microbes has become a complex and essential conversation that enables our development, functioning, and wellbeing overall.

## **A little review of digestive system anatomy & physiology**

Our digestive systems are regulated by our circadian rhythms, nervous and endocrine systems. It's quite advantageous to survival to have multiple mechanisms helping ensure we are resourced, but it does also get complicated. Overall, the key functions of digestion are secretion of fluids like HCl, bile and enzymes that break food down, and the coordinated muscular contraction and relaxation that facilitate motility (peristalsis) through the tract. These two functions, in turn, are facilitated and informed by an enormous sensorium of nerve, endocrine and other types of receptors on our gut lining, which if we could flatten and spread out would be the size of a basketball court. We know there are receptors on our tongues for each taste, and stimulation of those taste receptors stimulates different effects in the body, but we have receptors that bind bitter and aromatic plant constituents all through our guts and other viscera too. And those are only a couple kinds of receptors, among many!

Secretions of the stomach, gall bladder, small intestine and pancreas are regulated by chemical receptors that 'taste' what we've consumed and respond by stimulating release of just exactly the type and amount of breakdown fluids and enzymes necessary for those foods. Stretch receptors along the gut let our system know how much food we've eaten, and what its consistency is like, leading to stimulation of very coordinated peristaltic action of the gut smooth muscles. There are many endocrine cells in our digestive organs that secrete hormones and signal molecules like serotonin, gastrin, secretin, CCK and motilin, which are the chemicals that communicate to the digestive organs and structures what and when to do to facilitate the digestive process.

For example, when we've eaten some fat, enteroendocrine cells in our duodenum secrete CCK (cholecystokinin) into the bloodstream, which is picked up by the gall bladder and causes it to contract, ejecting bile down the common bile duct into the duodenum, hopefully just when the stomach releases a bunch of that fat. Bile then emulsifies, or breaks up the bigger fat structure so that lipase enzymes can



finish the job of taking the fatty acids apart. These enteric endocrine cells (EC, also enterochromaffin cells) can release many different hormones into the bloodstream, not just those that act on the digestive tract. Especially 95% of our body's serotonin is stored in these EC cells, which regulates motility in the gut but also binds to other receptors in the body and has many other crucial functions in sleep, appetite, pain sensitivity, mood and overall wellbeing.

Another important feature of the digestive tract is mucus. In the esophagus, mucus helps facilitate smooth passage of food to the stomach. The stomach is lined with a thick layer of mucus to protect it from hydrochloric acid. It also has three layers of muscle fiber that enable the powerful churning motion that mixes food with stomach acids and helps with breakdown. There are two mucus layers in the large intestine-- a very thin, dense layer that protects the layer of epithelial cells lining the gut, and a thicker layer in which many of our resident microbes live. Mucus is secreted by goblet cells, which are interspersed along the epithelial lining, along with the enteric endocrine cells. Without this mucus, there isn't good lubrication or protection of the gut, and it can become hypersensitive. Our microbes also rely on it as a resource for protection and food.

These gut epithelial cells are also firmly connected to one another through a variety of types of tight junction structures. Communication is also possible along these connected cells (enterocytes or intestinal lining cells), known as cell-to-cell communication. The gut epithelium needs to be tightly connected so that food particles, metabolites, pathogens and even friendly microbes can't get into the body. We're learning that stress, infection, diet, some medications and other factors can degrade or damage the tight barrier of the gut interior surface. When our intestinal barrier becomes permeable, anything in our gut, from our friendly microbes to incompletely digested food, signal molecules, etc are able to reach the immune cells, enteric nerves and bloodstream. So as gut mucus and tissue integrity break down, and our blood brain barrier also gets leaky, there may be too much communication, or aberrant, reckless communication taking place. Now all these systems become irritated, triggered, reactive, inflamed and imbalanced.

### **The nervous system of the digestive organs**

Mostly the enteric nervous system, located inside the muscular layers of the esophagus, stomach and intestines, takes care of coordinating digestive functions by itself, but it also transmits a whole lot of information up to the brain through the vagus nerve so it can pay attention to bigger picture stuff that relates more to behavior, survival, significant threats, etc. The ENS is comprised of 50-100 million nerve cells (neurons) divided into nerves in the submucosal layer that stimulate secretions and nerves deeper within the muscles of the gut which stimulate peristalsis. These nerves are rich in interneurons, or cross-links that enable the digestive system to make its own decisions. The vagus nerve is the major nerve plexus that serves most of the viscera, and it is a superhighway for signals from the ENS to brain. Interestingly, while both chemical and neuronal information goes both ways, from gut to brain and brain to gut, mostly (about 90%) goes up to the brain, underscoring how important what is going on in the gut is to the organism as a whole. The ENS also enables bidirectional communication between brain and microbes.

The ENS is made up of sensory neurons that detect substances (what you've eaten) inside the gut, stretch receptors that detect tension in the gut wall indicating bulk (how much you've eaten), and motor neurons that direct digestive gland activities (secretion) and smooth muscle contraction (peristalsis). Some of the neurotransmitters at work in the ENS include acetylcholine, norepinephrine, GABA, serotonin, substance P and vasoactive intestinal peptide. We recognize some of these also as hormones, and communication chemicals important in mood, stress and immune response.

## **Microbial friends**

One of the many reasons it is so advantageous for us to harbor trillions of microbes in our large intestines is to help us digest a variety of foods. For example, humans can't make enzymes to break down the beta bonds of complex carbohydrates, but our microbes can. In fact, humans only have about 26,000 genes (compare this to rice's 46,000 genes and you get a sense how paltry this number is), so we really appreciate that our microbes lend us the use of their couple million genes to make digestive enzymes as well as many types of metabolites produced from our food, bile acids and mucus that are crucial to our metabolism and functions. These metabolites influence the gut locally (the epithelial, ENS, EC and immune cells in the gut itself) and also get into bloodstream and travel to every organ. In the digestive tract, microbes participate in the regulation of secretion and motility, but they influence far more of our functions, from maintenance of our gut lining to helping regulate autonomic neurons outside the gut, including those of the sympathetic and parasympathetic nervous systems.

Remember that microbes figured out chemical communication way before multicellular organisms evolved. Microbes can make an amazing variety of chemicals, including the neurotransmitters GABA, serotonin, catecholamines and histamine that can bind to our human receptors. Thus, our microbes communicate with us through hormones, neurotransmitters and metabolites and they are engaged in ongoing conversations with our CNS through the neuronal, endocrine and immune systems. They are a key part of what's happening in our bodies, influencing not only digestive function in the moment, but our minds, our immune response, and truly homeostasis overall. More amazing still is that they are integral to the development of our nervous and immune systems and our HPA axis during infancy and childhood.

## **The connections**

Here's where it gets interesting. We have the GI tract tissue, the largest barrier between ourselves and the environment, that has an enormous number of neurons, endocrine and immune cells embedded in it. In fact, there are more endocrine and immune cells in the gut than anywhere else in the body. And we have trillions of microbes living there too. This location allows the microbes to 'listen' to the chemical signals our brain is sending to our gut about stress, anxiety, happiness, etc. even if we're not consciously aware of our emotional state. Microbes residing at this interface between digestive and nervous systems are in a key position to link our physical and mental wellbeing directly to what we eat and drink and in turn connect our feelings and emotions to the processing of food.

Imagine a conversation taking place in multiple languages between millions of people all at the same time. Can you? It's complicated! But this is basically what's going on in our bodies every instant--multiple cells, our own and our microbes, are secreting many different communication molecules that are received by many different receptors. Science has found multiple pathways of communication from the intestinal microbes to the CNS, including vagal afferent nerves, immune and HPA axis modulation (inflammatory mediators/cytokines, stress hormones/cortisol) and microbe -produced neurotransmitters and active metabolic products. The CNS, in turn, does not just passively receive information from gut microbes. It can also initiate interactions that affect the gut microbiota, through gene expression and through sympathetic and parasympathetic control of digestive function. The ENS is another important participant in this conversation, because by regulating intestinal secretion, motility, permeability, and immunity the ENS controls the gut environment and thus the composition of our microbial population. Lots of two-way streets in this conversation!

## Levels of communication

There are other ways that what's going on in the gut impacts, and can be impacted by the rest of the body as well.

First, on the level of the tissue is reflexive action – because the GI tract arises from the same cells in the embryo as respiratory and urinary tissue, they are all linked. When one consumes a demulcent herb like marshmallow, the soothing effect on the throat, stomach and intestines reflexively also soothes the respiratory passages, urinary tubules and also the nerves. The actual mucilage doesn't have to travel through the blood--it can't anyway, the molecules are large, and not broken down until they get to the large intestine, past absorption! (Learn more about this in *Principals & Practice of Phytotherapy*/Mills & Bone).

Another tissue level effect is the 'tissue state' model, where tension, stagnation, laxity or hypersensitivity become generalized throughout the body. In this case, normalizing the overall tissue state will address both nervous and digestive systems, along with the rest of the body. For example reducing neuromuscular tension overall will help improve gut motility and reduce painful spasm. (Learn more about this in *Energetic Herbalism*/Kat Maier)

The state of the digestive organs and their function can also affect one's mood. For example, stagnation in the gut—gas, bloating, constipation – can lead to feelings of gloom and depression. Irritation to the intestines, from food allergens, junk foods or poorly digested food, can result in irritability of the emotions as well. Anger is a well-known contributor to and effect of Liver Heat in TCM. Demulcent herbs can help calm this irritability, as well as improve mucus secretion when taken over a period of months, leading to a more peaceful mood and better microbial ecology.

Plants can affect what is going on in the gut through binding with taste and other receptors in the GI tract. Herbalists all know that stimulation of bitter receptors on the tongue increase digestive secretions. But receptors for bitter plant constituents lower in the gut tend to normalize tonus, or baseline tension in the smooth muscles, and help facilitate downward direction, which is obviously very helpful with reflux, burping and constipation, especially in concert with increased secretions like HCl and bile. There are also receptors for aromatic plant compounds in the gut, which help relax the smooth muscles and increase blood flow to these tissues, improving assimilation.

Then we get to the chemical conversation. Because digestion is controlled by both nervous and endocrine systems, both impact how well our GI tract functions. Remembering that the nervous system works largely through neurotransmitters, the endocrine system communicates with hormones, and cytokines from the immune system impact many cells and organs, there are a ton of overlapping and interconnected effects. For example, it's well known that stress is positively correlated with several GI conditions, including ulcers, irritable bowel syndrome and inflammatory bowel diseases such as ulcerative colitis. Especially chronic stress promotes the body's secretion of inflammatory mediators (cytokines) – communication chemicals that the ENS recognizes that can initiate or exacerbate inflammation. Pro-inflammatory cytokines travel in the blood and are also 'understood' by the brain and gut microbes. Our circadian rhythms, including the timing of our meals, can also affect chemical (hormonal especially) regulation of our digestion as well as sleep cycles, energy levels, etc.

It is easy to see emotions on people's faces, and they also less visibly affect the GI tract. As we've discussed, our gut and our brain are especially wired to affect one another, so it's common to talk about gut feelings, having knots or butterflies in our stomach, etc. Several digestive issues now thought to involve aberrations of gut-brain communication include IBS, chronic constipation, indigestion, and functional heartburn, with symptoms ranging from queasiness to pain. Our emotions and state of mind also affect the ENS--changing motility and messing up orderly functioning. Fear tends to slow upper GI function (stomach) and increase lower GI function (colon); with anger both are increased and in depression both slow down. Big emotions, like fear or anger, can also cause the CNS to override the ENS temporarily. Stress of course puts us into sympathetic mode, which inhibits digestion and long term leads to many negative changes in the gut like permeability.

In summary there are many ways our guts interface with our brains:

- reflex action
- tissue state
- neurotransmitters/ENS & Vagal nerves
- hormones/EC cells
- other signal molecules produced by the body
- signal molecules produced by our microbes

### **Actions of herbs**

Carminatives are aromatic herbs containing volatile oils/terpenoids. These small molecules are dispersive and help relieve gas, tension and spasm. They act directly on the gut tissues and through receptors to help the digestive process function smoothly and with ease. Aromatic plants are also uplifting to our moods.

Bitters are stimulating to the secretions of stomach, pancreas, liver and small intestines, and increase our ability to digest and assimilate our food. They help normalize the tonus, or level of tension in the gut muscles, helping normalize motility. Bitters can also help ground us when emotions are volatile.

Demulcents are slimy, mucilaginous herbs. They are made up of branched carbohydrate molecules that easily trap water and other molecules, causing them to swell and become like soft sponges. These herbs are very soothing to the gut walls and the nerves.

Nervines are relaxing herbs that are often tonic or supportive to the nervous system, including the ENS.

There are many herbs possessing two relevant actions, and this natural synergy makes these herbs particularly well-suited to problems involving both digestive and nervous systems in a person. For example, with an herb like catnip, its carminative qualities benefit our digestive systems and its nerve properties ease stress and relax the nerves.

**Carminative nervines** - lemon balm, chamomile, lavender, hawthorn, rosemary, valerian, peppermint, spearmint, hyssop, wood betony, linden, tulsi, catnip, damiana

**Carminative bitters** – turmeric, angelica, elecampane, wormwood, mugwort

**Bitter nervines** – motherwort, blue vervain, hops, skullcap, wood betony

**Demulcent nervines** – linden, oats

**Other demulcents** – marshmallow, slippery elm, plantain, flax, chia seed; Use demulcents when any of the GI tract mucous membranes are irritated, ulcerated or inflamed – from the throat on down, and for watery stools or hard stools or fluctuations between. Demulcents can also help restore the mucus layers of our GI tract when used regularly over time.

When we suspect or assess damage to the gut epithelium, often evidenced by skin issues like rashes and other immune reactivity, it's a good idea to include herbs to help heal these 'inner woundings'. Herbalists often administer these as teas along with carminatives.

**Mildly astringent vulneraries** – plantain, yarrow, calendula, lady's mantle, meadowsweet; Vulneraries and gentle astringents can help heal the mucus membranes of the GI tract, including permeability in the colon, along with good nutrition and other healthy lifestyle habits.

And of course, helpful to invite more microbial friends, especially in tandem with creating a more hospitable home for them with demulcents, vulneraries and good diet with plenty of fiber and polyphenols. Science is working on which species of microbes support which functions, and so far species in the Bifidobacterium group have been found to help with anxiety, like *Bifidobacterium infantis* and *longum*.

**Prebiotics** – dandelion, burdock, chicory, sunchoke roots, marshmallow, slippery elm.

**Probiotics** – all raw cultured and fermented foods – lactofermented vegetables like pickles, sauerkraut, kimchi; yogurt, kefir, sour cream, buttermilk, cultured butter, cheeses; unpasteurized homebrews like mead, cider or beer; apple cider vinegar, kombucha, miso . . . even meats like salami cultured with lactic acid bacteria.

**Polyphenol rich herbs** like blueberries, green tea, hawthorn, rosehips, etc. increase our population of beneficial microbes.

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# *Functional Fungi and Fun Food Formulae*

**Bill Chioffi**

Mushrooms are having a moment coming out of the dark places they grow and into the light. No longer the stuff of soup, they are finding their way into a myriad of goods. They are not plants and early botanists, and taxonomists mis identified them as such until around the 1950's when US ecologist RH Whittaker described them as a separate kingdom in an article and then another US Mycologist RT Moore becoming the first to formally diagnose these as separate from plants in 1980. Our learning curve continues.

North Americans tend to be somewhat fearful of mushrooms but in the last few years attitudes are quickly shifting and more “specialty” mushrooms like Oyster's (*Pleurotus*) are being grown and sold in addition to the standard White Button's (*Agaricus*) and our familiar Shiitake (*Lentinus*), the two leading mushrooms in modern commerce and cultivation. Europeans are wild about mushrooms and hunt them with a passion. In Asia it is no different. Wild and cultivated mushrooms fill the markets and are looked upon with great favor. And nowhere are they so highly prized than Japan. With approximately 12 species cultivated for the marketplace, the Japanese surely lead the world in their appreciation of edible mushrooms. And although their use as food is the most obvious way mushrooms have been utilized by cultures, the use of mushrooms as medicine could be their most important contribution.

Certain mushrooms have been employed as herbal medicines for thousands of years in Asia. These mushrooms were some of the most safe and effective of the many substances that formed the Chinese herbal tradition.

To fully understand mushrooms and mushroom products, an understanding of their life cycle is helpful. Most mushrooms are composed of a cap and a stem. The underside of the cap has many thin blades called gills that are the spore-bearing surface. Spores are the “seeds” by which mushrooms can spread to new areas. A mature mushroom produces billions of spores which are carried away by the wind. The shiitake is an example of this classical mushroom shape. Not all mushrooms are so classically formed or even edible. Polypore's, the group to which reishi and turkey tail belong do not have gills, in many cases lack a stem, and are hard like the wood they grow on. The underside of a polypore cap is composed of a tightly packed layer of pores where the spores are propagated.

What is not readily visible however is the actual fungal body, called mycelium. Just as an apple is the fruit of an apple tree, so too is a mushroom the fruit body of a mycelial “tree”. Mycelium is a network of fine threadlike filaments that originates from the germination of spores. Unlike green plants that convert sunlight into energy, fungal mycelia derive their nutrients from dead organic matter, like leaves, annual plants, and wood waste, recycling this material into humus. As the mycelia spreads throughout the nutrient base or substrate, it is amassing nutrients. When environmental conditions are right, the mycelia use these nutrients to produce mushrooms. At this point the life cycle is complete as a new generation of mushrooms mature and spread spores into the environment. While we can readily observe mushrooms, the mycelial network generally stays hidden within the nutrient base materials.

The use of mushrooms as food has been somewhat of an enigma in North America. Years ago, classically trained nutritionists stated that mushrooms have minimal food value since mushrooms are low in calories. Today we know that mushrooms are a nutritionally sound food with 20-40% protein, 40-60% high quality, slow acting carbohydrates like mannitol and beta-glucan, low in fat, high in fiber and with no starch. In general, they have good amounts of the B vitamins thiamine, riboflavin and niacin, and the minerals potassium and phosphorus. Just keep in mind that each mushroom species will have a different nutritional profile.

It is fair to say that mushrooms, in a cooked or processed form, represent a valuable food source. But mushrooms have been used in Asia for thousands of years in a much different way, as herbal medicines. Ganoderma can be traced to the earliest records of Chinese traditional medicine, the “Shen Nong’s Herbal”, dating to the 1st century BCE.

Despite the relatively large number of mushrooms identified as having medicinal properties, only a dozen or so species have been seriously utilized or studied. The common bond that is shared by these mushrooms is the occurrence of complex carbohydrates called beta-glucans.

Beta-glucans potentiate immune cells such as macrophages and T-lymphocytes and enhance the cell-mediated immune response. They also play a role of regulating homeostasis and immune modulation in the human body. Of importance is the fact that beta-glucans have no toxic effect on humans and are clinically safe. Given that most of these mushrooms are also used as food strengthens this safety observation.

According to Traditional Chinese medical theory, herbs such as mushrooms are classified as “superior” and are called tonic herbs. Such herbs increase disease resistance and normalize bodily functions. They are also called “harmony” herbs. Mushrooms should therefore be seen as a cornerstone for preventive medicine and a means to maintain a high level of overall resistance to disease in general.

Specific benefits of each mushroom species discussed in this lecture are as follows:

### **Shiitake ~ *Lentinula edodes***

In the 12th century, shiitake mushroom cultivation began in the mountains of central China. Using fallen trees and then wood logs, early cultivators were able to plant spores and help nature produce a larger crop. A fragrant and delicious edible mushroom, shiitake is now the second most popular cultivated mushroom in the world. In the 1970’s, the Japanese mushroom industry supported extensive research into the nutritional and beneficial properties of shiitake. The scientist Goro Chihara fractionated shiitake polysaccharides and named the most active fraction lentinan, a pure beta-1-3-glucan. This compound was developed into a product that has been utilized as an adjuvant to modern medical oncological practices

### **Maitake - *Grifola frondosa***

Maitake is a choice edible that only recently has been utilized for its medicinal properties. Today it is extensively cultivated on sawdust substrates. During the 1990’s Japanese scientists led by Dr. Hiroki Nanba carried out extensive research demonstrating the activity of Maitake beta-glucans as immune system potentiators. Their research identified and commercialized a concentrated beta-glucan called D-fraction or MT-1. Maitake extracts have also demonstrated the ability to lower blood sugar.

### **Turkey tail - *Trametes versicolor***

Wild Trametes, commonly called Turkey Tail, grows naturally worldwide in all types of forests although it is primarily found on deciduous trees. Numerous strains of Trametes have been investigated, analyzed, and chosen for their production of beta-glucans. In the 1980's scientists in Japan and China utilized Trametes to develop new two interesting mushroom-based products: PSK and PSP. These are manufactured using fermentation of mycelium in liquid culture. The process generates unique protein-bound polysaccharides through isolation of these specific substances. These compounds are concentrated and refined and are some of the few mushroom-based products that have progressed through clinical trials. It is difficult to impossible to compare a Turkey Tail mushroom's activity to this purified protein that has been isolated and manufactured from pure liquid state mycelium and is typically delivered intravenously.

### **Reishi - *Ganoderma lingzhi***

Reishi, or Ling zhi, is a legendary mushroom that has been called the “mushroom of immortality” and is considered a symbol of good fortune. Reishi is unique among mushrooms in that it not only contains ample immunologically active beta-glucans, but also a high content of triterpenoids. Research with reishi indicates that it calms our nervous system, provides relief from insomnia, and improves liver function. It is one of the most widely researched mushrooms on the planet.

### **Chaga - *Inonotus obliquus***

Wild Chaga grows naturally in the vast forests of Canada, Russia, northern China, and northern climatic zones where birch makes up the primary tree species. \*Even though Chaga is commonly referred to as a mushroom, it is a sterile conk or canker, a hardened mass of woody tissue with an amorphous shape and dark pigmented outer layer. It has been estimated that Chaga consists of only 10% Inonotus obliquus mycelium. Being a tree pathogen, Inonotus mycelium slowly grows throughout the tree trunk, causing decay and ultimately death. The canker/conk we call chaga, is a manifestation of this fungal disease. For hundreds of years Chaga has been wildcrafted and utilized by the people of northern Europe and Russia.

Birch trees contain precursor compounds such as the triterpenoid betulin. Chaga draws betulin and other precursors directly from the birch tree and turns them into inotodiol, trametenolic acid and betulinic acid. Chaga needs the tree-bound precursors to synthesize the triterpenoids for which it is famous.

### **Tremella – *Tremella fuciformis***

Tremella has been used in Traditional Chinese Medicine for thousands of years. Today it is extensively cultivated on sawdust logs in shade-houses. Tremella is a flowery shaped mushroom with a gelatinous texture. It is a rich source of carbohydrates with an atypically low amount of protein. It has been used in cosmetic products for its moisturizing properties and is considered to have positive effects on the skin. Research has also demonstrated immunological potentiation.

So, it's time to think of mushrooms as a delicious forgotten food and missing dietary link as well as a preventive medicine that can play an important role in our overall health and well-being. And remember the wise words of the Greek physician Hippocrates, “*Let food be thy medicine and medicine be thy food*”.



## Mushroom Immune Pudding Recipe

**Prep Time:** Less than an hour including cooling time

**Ingredients:** 2 Tablespoons of Real Mushrooms™ Hot Chocolate Mix (Sugar Free Avail)  
8oz Organic ½ and ½ (Or Alt Dairy Bev of your Choice)  
4oz Glass Jars with tops  
Whisk, Saucepan, Spatula

Directions: In a medium saucepan on medium heat, whisk the 2T Mushroom Hot Chocolate Mix into the 8oz liquid until homogenous. Continue whisking and increase temp until mixture reaches a boil (208F). Once the mixture “foams up” to a boil, reduce heat and continue to stir with whisk for 5 minutes as the mixture thickens, then pour off into 4oz glass jars to cool in refrigerator for a minimum of 30 minutes. Each serving contains 500mg of a signature formulation containing; Turkey Tail, Reishi, Chaga, Maitake and Shiitake Mushroom Extracts at extract ratios between 8:1 and 16:1. It is the equivalent of consuming 4 grams of dried Mushrooms.

### Shiitake Vinaigrette

- ½ cup olive oil
- ¼ cup balsamic vinegar
- 1 teaspoon honey
- 1 teaspoon Dijon mustard
- 1 shallot, minced
- 1 clove garlic, minced
- 2 TSP Shiitake Mushroom Powder
- salt and ground black pepper to taste

Place olive oil, balsamic vinegar, honey, Dijon mustard, shiitake mushroom powder, shallot, garlic, salt, and black pepper together in a glass jar with a tight-fitting lid, then shake the jar vigorously while thanking the earth for preparing all these for your use. Add to your other favorite other gifts from Mother Nature where a savory flavor is your aim. It makes a nice fish marinade.

### Traditional Snow Fungus Soup (Sichuan)

- Dried Tremella fuciformis or Snow Fungus-25g
- 8 Pitted Red Dates (*Da Zao / Ziziphus jujuba*)
- 1 tbsp. Goji berries (*You Ji Gou Qi Zi / Lycium barbarum*)
- 50 g sugar or sweetener
- 1.5 L water if using a pressure cooker or 2L for stovetop

#### How to make it:

1. Soak the tremella in water until it’s soft. Remove the yellowish end and tear into small pieces. If you find one fresh, you don’t need to rehydrate it.
2. For a pressure cooker, add the tremella pieces, red dates and sweetener, then add the 1.5 L of water. For regular stove top, follow the same procedure as above, bring the mixture to a boil then simmer, covered on low for approximately 40 minutes.
3. Add Goji and continue cook for 5 to 10 minutes.
4. Serve either warm or chilled

# **Kava (*Piper methysticum* G. Forst): Trade Update and Review**

**Bill Chioffi**

In the South Pacific Islands where oral tradition and gathering around a fire in a communal hut still occurs nightly, they tell stories and share myths to entertain themselves and pass the time. They also share a mildly intoxicating and socializing beverage from the roots of a Pepper family plant; *Piper methysticum* G. Forst, or Kava. On one of my trips to the archipelago Country of Vanuatu I had the great fortune to hear an origin story about Kava in a Nakamal, which is the name for a traditional village meeting place in Vanuatu. Kava beverages made from freshly ground roots mixed with water produce a mouth numbing, bitter, and certainly psychoactive effect. It is consumed communally and prepared in various but similar ways in villages, and in commercial Nakamal. The inhibition of social tension has been exploited by villagers and chiefs in remediating disputes for hundreds of years. Before you fight over who owns the pig that was slaughtered for dinner that wandered into your yard; you sit down to a few shells of Kava to figure it out. The story I heard that evening is one of hundreds of stories shared by South Pacific Islanders about how the Kava plant first appeared from the earth and presented itself to humans. There are two main types of Kava Origin Myths. One centers around Kava growing out of a buried human corpse and subsequently a “Drunken Rat” or “Drunken Pig” is observed chewing on the roots of a pepper plant and then appearing completely inebriated, and thus the observer learns how to prepare the plant. The second main type of story uses the archetype of Kava as a gift from the God’s delivered by descending from the sky or sailing across a long ocean voyage to give the islanders the original gift of the plant. (3) The story I was told comes from the Island of Maewo but certain elements have changed, typical with oral tradition and the passing of tales. The core element (buried corpse of a woman) remains in addition to the end user benefit of promised calm from anxieties, coupled with a promise to cultivate the plant and tell of its benefits. It was told to me by Gloria Julia and Frank King from Mélé Village on the island of Efate in Vanuatu and they share a version of this story with visitors at The Kava House in Mélé Village. Gloria Julia instituted The Kava Discovery Tour onsite at their headquarters to integrate educational experiences centered on the traditional preparations and cultural significance to the Vanuatu islands they trade with.

Few people realize the arduous and complicated task required for intra island transport of Kava, let alone challenges with meeting phytopharmaceutical specifications for raw material export challenged by the climate crisis, market demand, and from 2020-2022 Pandemic related community challenges (more details). The market relies profoundly on local shipping between the Islands that brings in the fresh “green” Kava into the main Port on the Island of Efate. With limited infrastructure in Port Vila and almost complete lack of it in the islands, atop fluctuating weather patterns, getting the kava to the main center alone is a challenge. The scarcity of roads, lack of vehicles and other services on the islands means most of the Kava is carried on bare human backs in 50KG poly mesh sacks across ridges, over mountains, to small boats with 75 Hp outboard engines, that take it out to a larger vessel that comes through periodically. The produce is then transferred by truck in the main port city of Port Villa to bio-security approved facilities in Mele Village where it is processed, packaged and ready to be exported. It is encouraging to know that the oral tradition and cultural history of this plant are being cared for and promoted by The Kava House as fervently their promotion of commercial sales.

## Kava Origin Story

(As told to the author by Frank and Gloria Julia King, Ni-Vanuatu; Mélé Village, Efate Island, Vanuatu-July 2017)

Our story begins with two brothers Ben a farmer and Cassie a fisherman. Each day Ben would rise early and work his crops in the forest, while his brother would fish when the tides allowed, and he would come and go with the water and bait and was often around the village during the day due to bad fishing or weather. One day Ben came home to find Cassie in bed with his wife and in a fit of rage killed his wife and his brother. He buried them in the earth behind his hut and went into a long state of depression so dark that he could not expose himself to the light nor could he sleep. He had a dream that came during one of his long nights and restless sleep that a plant with heart shaped leaves spoke to him and told him to get up and look for it in the forest behind his house where he buried his wife. The next morning Ben got up and went looking for the plant and sure enough there it was sprouting branches that looked like the brown knuckles of his wife's hands coming from the ground with green heart shaped leaves with veins in them. It was the first time Ben had come out of his hut since that tragic night and he began to have more dreams about the plant and seemed to sleep better and be more at ease just being around it. The next night he dreamt the plant told him it was the spirit of his slain wife and that she forgave him for his rage and could help him with his heavy guilt, shame and lift the darkness that he was living with. The plant told of how Ben should carve a board out of black wood to resemble her womb, and then of the plant with the heart shaped leaves, "pull up my feet and legs (roots) and grind them into the womb you will make out of dark wood and with a long, rounded piece of dead coral and some fresh rainwater until it forms a milky liquid that you should squeeze through coconut fibers and drink the liquid. While you are drinking you will not think of me or think about sex. Your sore muscles will be warmed by the drink and the pain will ease and I promise to keep you peaceful if you only remember to cut up my arms and hands at each joint and stick them into the earth to grow more and tell other men in the village how I make you feel and how to prepare me and how to grow more of me." And so, Ben did this and he began to sleep well and went back to farming and told the men in the village about his dreams and they tried the drink together at night in the village hut and found that not only did it help them sleep, but it eased their sore muscles from working the forest gardens and waters all day. And that is the story of how Kava came to this Island and spread to the other islands.

### A plant and its people

The Medicinal plant *Piper methysticum* G. Forst, is commonly referred to as Kava, 'Awa, or Yaqona in Vanuatu, Hawaii, Fiji respectively. Kava relies on asexual propagation since it cannot produce a viable seed. After I heard and read about the various Kava origin stories, I wondered if the buried corpse of a woman was an explanation via metaphor for how a plant could reproduce without a seed and why it made them feel at ease in body and mind. The plant that is thought to be the "Mother" of *Piper methysticum* G. Forst; *Piper methysticum* var. *wichmannii* is also an asexual or vegetative reproducer though it is physically much larger than the drinking varieties, grows more rapidly and is substituted intentionally and unintentionally for Noble or commonly consumed Varieties. This plant is considered a spiritual and ceremonial plant in Vanuatu and typically has not been consumed for nakamal drinking but only used in ceremonies. On my last visit in 2017 I heard from several Ni Vanuatu that they were drinking "wild kava" *P. methysticum* var. *wichmannii* ('wael kava' in Bislama language). That they would drink from a plant normally reserved for spiritual and ceremonial practice is indicative of the strain on this plant in trade. During my times visiting the islands with Frank and Julia King they began facilitating the transplanting of some Noble varieties on

Efate from Pentecost and other island's because various tropical storms, volcanic eruptions and cyclones damaging Kava crops specific to those islands (Efate, Pentecost and Ambrym in this case) and rendering the islanders unable to work the crop with many other life preserving activities taking precedent, such as replanting food gardens, clearing debris and building water storage. The fresh kava trade between islands for drinking has extended into selling young shoots for cultivation. For much of the known history of Kava dating back to the works recorded by early Botanist J.G. Forester who travelled on Captain Cook's expeditions around the Pacific Islands in 1777 each Island cultivated, harvested, and traded varieties that were endemic to that Island with varieties such as Borogu and Borogu Temit predominant on Pentecost and varieties such as Pia being more predominant on Tanna. There are 16 known folk cultivars of Kava that have been identified on Pentecost and about the same on Tanna but the reader must also consider the linguistic diversity of Vanuatu and the fact that there are over 20 different Islands that have cultivated Kava for centuries in a concentrated geographic area. There are 105 languages spoken in the archipelago of Vanuatu the most of any Country by population and cultivars are recorded in as many languages. The gathering and recording of this information have been long and laborious and a debt of gratitude is due to Dr. Vincent Lebot for his work. (1,3) As efforts to increase diversity and inclusion increase and extend to the plants in addition to the people of interesting note here; the trip in 2017 was the first time I had seen Women in Nakamals and drinking Kava in public. Custom or "Kastom" a Bislama/Pidgin word for culture, including religion, economics, art, and magic, has not allowed native Vanuatu women to harvest, process, or drink Kava apart from masticating rootstock on some occasions for ceremony. Despite this strict adherence to Custom in conversations with locals on different islands, some women do drink Kava regularly, they are just do so in hiding. Now, attitudes are changing and the women I spoke with said for the better. A prime example is Gloria Julia King from the Kava House mentioned earlier. Gloria Julia King was recently elected to the Vanuatu Parliament in October of 2022. An achievement worthy of much praise for her dedication to public service in this new and respected arena but noteworthy for other reasons. She ended almost a quarter-century of male rule within the halls of Vanuatu's parliament, becoming the only woman elected in the nation's 52-member legislature this year and only the sixth ever to be elected since Vanuatu's independence in 1980.

### **The experience of Kava from Clinic to Couch**

The Kava Origin story above is just one of many stories on the origin of Kava and I encourage you to find more information in the references on this subject. If possible, travel to any Kava bearing island in the South Pacific and ask for yourself, they will be happy to share their information with you and it's a great thing to chat about after a shell or two. Kava grows in some of the most beautiful tropical paradise locations known, Fiji, New Guinea, Tonga, Samoa, Hawaii, New Caledonia, Papua New Guinea, The Cook and Solomon Islands and Vanuatu among the jewels in this Pacific treasure chest. This plant perhaps more than any other I've encountered represents the human, plant coevolutionary process in the most sublime of ways and is a major part of Oceanic culture (10). It is a plant that prepared properly, from the correct species, relieves anxiety and opens certain areas of perception and the plant must be reproduced by humans. It grows naturally where rainfall is plentiful (average 2,000 mm/yr.). Ideal growing conditions are 21–35 °C and 70–100% relative humidity. Too much sunlight is harmful, especially in early growth. It's propagated via cuttings and each branch can produce up to 12 cuttings which are stuck directly in the ground close to where the roots were dug and will produce shoots within 5 days with the right moisture and temps. The beverage is prepared from the lateral roots and peeled rootstock in commercial nakamals and some villages using a mechanical grinder, most often a manual hand crank meat grinder. Traditionally it is ground into a wooden board with a rounded piece of coral. The ground roots are then put into a

mesh cloth or in the most remote areas filtered through coconut coir into a half coconut shell or strained directly with the hands while grinding a rounded piece of coral into the palm using it as the mortar. When observing and assisting in the preparation of Kava in Vanuatu, I've always seen a mechanical expression of the roots in preparation. It never merely "steeps" in water but is actively ground and then compressed by hand in some type of filter. Press or squeeze every last drop out of your Kava to gain the most from the material. True for most of our plants being prepared as extracts.

One time in Mele village I helped prepare some of that night's Kava and we used a pair of men's mesh football shorts (I promise they were clean!) as a makeshift filter. They also use towels in some cases.

In the USA Kava is regulated as a dietary supplement and dried lateral root stock in a powdered form and various extracts are available. I do take an extract of Kava from time to time and there's a slight feeling of warmth and an ease in tension without cognitive inhibition. This sensation is more pronounced in the water extracted dried root preparations you may make yourself or buy in a "Kava Bar" than from capsules or extracts but the experience of drinking fresh kava on the islands is not easily reproduced through even the best of dried Kava preparations or extracts.

The word Kava is thought to be from Tongan language meaning 'bitter' and in Hawaii it is known as 'Awa', also meaning bitter and other variations of sharpness in flavor, as it is so indicated in almost all the languages that refer to this beverage (2). It's not a flavor that one savors. Spit troughs are common at the Nakamals in Vanuatu and there's always some coconut meat, pawpaw (Papaya), or pineapple to cleanse the bitterness from the palate after knocking back a shell of fresh Kava. It is also a type of "prayer offering" to spit and cough after consuming in honor of the ancestors and the spirit of the Kava plant. I am grateful to have access to Kava as we do in the US and feel for my fellow herbal enthusiasts in the UK that cannot so freely enjoy this plant. In 2001 concerns about Kava's safety were raised by European media reports of liver toxicity involving the use of Kava. Then in 2002 the Office of Dietary Supplements issued this statement: "On March 25, 2002, the Food and Drug Administration (FDA) issued an advisory notifying consumer that kava-containing dietary supplements may be associated with severe liver injury. The FDA reported that kava-containing products have been associated with liver-related injuries, including hepatitis, cirrhosis, and liver failure, in over 25 reports of adverse events in other countries. In the U.S., FDA received a report of a previously healthy young female who required liver transplantation, as well as several reports of liver-related injuries." (8) Though not "banned" in the US many companies subsequently stopped selling Kava and products and those that remained in the market were mandated to contain a detailed label warning relating to potential liver toxicity. Some researchers believe that extraction using solvents other than water create chemistries not found in traditional water extracts and lack glutathione which is a known antioxidant that the liver and plants produce to protect from peroxide and other free radical induced damage. (7) More research is needed in this area. The World Health Organization in its 2007 report on the safety and efficacy of Kava noted: "2.1.3. Products from water-based suspensions and further synthetic preparations should be developed and tested in clinical trials and consideration given to using these in preference to acetonic and ethanolic extracts." (9) Of interesting note are the lack of studies using aqueous extracts of the peeled roots and rhizomes to approximate the matrix of how the beverage presents in a traditional preparation and considering that the preparations recommended for removal from the market in the UK and other countries were based on the evaluation of acetone and ethanol extracts of Kava and that the WHO recommended studying water based traditional beverages. One effort in the right direction was initiated in a study conducted in 2009 called The Kava Anxiety Depression Spectrum Study (KADSS). This was a 3-week placebo-controlled, double-blind, cross-over trial involving 60 adult

participants (18–65) with elevated stable anxiety and varying levels of depressive symptoms. (4) It is one of the only studies we are aware of using an aqueous extract of Kava with humans and a control. In the study the researchers from Queensland University in Brisbane, Australia and School of Health, University of New England, Armidale, Australia concluded in their summary; “The study demonstrated that an aqueous extract of Kava was a safe and efficacious anxiolytic in participants with elevated, stable generalized anxiety and may also have antidepressant effects. In accordance with our results, aqueous preparations of Kava may tentatively be recommended for intermittent or short-term use in people with generalized anxiety. In cases of regular use, liver function tests and clinical examinations should be periodically conducted, and dosages should not exceed 250 mg of kavalactones per day. Kava should preferably not be consumed with alcohol, benzodiazepines, or anticonvulsants. This current study—and research that follows—may encourage the reassessment of Kava as a first-line treatment of anxiety. Such a decision would provide a significant expansion of viable treatment options for people with acute anxiety. It is necessary to continue more work in this area with aqueous extracts if we are to uncover the evidence contained in traditional preparations.” One of the practical limitations of the study is the lack of preparations commonly available for aqueous extracts of Kava. Most preparations are Ethanolic Tinctures or straight powder/dried roots of Kava. It is however landmark in its efforts to approximate a traditional beverage, which to date had not previously been accomplished.

A notable 8-week randomized, double-blind multi-center placebo controlled clinical trial in 129 out-patients was conducted in 2003 using a 95% ethanolic extract of 400mg kava standardized to contain 30% kavapyrones at an average dose of 120mg. (5) The study concluded that the preparation was well tolerated and as effective as Buspirone and Opipramol in the acute treatment of out-patients suffering from GAD. This study is encouraging for the types of preparations that are available in areas where commerce on extracts is allowed. More research on the solvent and aqueous preparations is needed and would hopefully lead to the development of safe, evidenced based therapeutics which also align with traditional preparation of the plant.

### **The ‘mycorrhizal’ connection of plants and people**

On my last trip to Vanuatu, I had the ultimate good grace to travel there with my son Cameron who was 22 at the time and studying Sustainable Tourism and Fisheries Biology at Colorado State University in Fort Collins, CO. One of the goals was to see some Kava “gardens” as they call them on the Island of Ambrym and for Cam to see firsthand the results of a paper, he had read for a fisheries class investigating the impact of commercial fishing and coral bleaching on Efate Island (6). We waited at the Port Vila International Airport for an 8-seat small engine flight to Ambrym Island with the customary live chicken in tow that I had become accustomed to on island visits with Frank. It’s bad form not to show up without one, and it’s usually eaten for dinner by the group. When we walked out to load the plane, Cam was asked to sit in the Co-Pilot seat up front as the Pilot needed proper weight distribution and he was about the same height and weight as our pilot, a Fijian man about Cam’s age. The islands appeared and disappeared into the puffy nimbus clouds amidst a turquoise coral backdrop with nothing but pelagic pacific waters below. We landed safely coming into the Ulei Airport, a small grass landing strip emerging out of the palms with a brick building containing a latrine. Perhaps the most basic airport I have ever seen. I hugged Cam a little extra tightly in gratitude once we were taxiing in and marveled at the thought of the original islanders making that trek across treacherous waters in a hand-hewn outrigger canoe. We met the Chief of the village (Aram) that was farming the Kava who also ran a small shop with essentials that came in with the Kava trade. Aram was carrying a rifle which was something I had never seen on the islands before but was assured it

was only to hunt fruit bats or Flying Foxes in the local language. Such is life in the bush, but I would later learn that the rifle was in fact for our protection since a neighboring tribe had gotten word of this one's success in trade with Kava and was making threats. The chief confided to me that his brother was sick with "stomach cancer" and it was putting a strain on harvesting and planting Kava since he was responsible for a small crew and becoming unable to work. Later during that trip while hiking to the active Volcano (Benbow) as we made our way through the forested part of the Lahar, I spotted two species of fungi that surprised and delighted me: *Ganoderma lingzhi* and *Trametes versicolor*. I made a mental note of their location, took some pictures, wrote a note in my journal but did not take any of them as I only wanted to ask the chief if he knew about them or if there was any use of them known to his tribe. Our Volcano guide from the village; Solomon had not known about them and said they don't eat them since they don't know if they are poisonous or not. I showed the chief the photos who also had no experience with them when we returned to the village the next day told him how to prepare the mushrooms, if he felt inclined, by making a decoction for his brother to drink. He was grateful for my time and sharing and promised strong kava when we returned to the village nakamal that night to drink. This exchange of knowledge and caring was facilitated through the business of botanicals and the plants themselves and is an unspoken language of unity. The plants will take you on an amazing journey and instructions for their proper engagement can be found in the language of cultural tradition, the plants themselves, and the soil web connection that is the center of it all.

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# *Treating Late Stage Lyme Disease: Western Herbs and Chinese Medicine*

**Brendan Kelly LAc, Herbalist**

## 1. *What is medicine?*

Healing?

How do we define a “successful” treatment, with herbs or with pharmaceuticals?

How we see the world affects fundamentally how we practice and receive medicine.

## 2. *What is Lyme disease?* From western view comes from tick bite: from Chinese medicine starts with *heat*

- a. Heat is very treatable.
- b. Treating Lyme by not treating Lyme.
- c. CDC estimates 300,000 new cases of Lyme yearly. Patient groups think is underestimated by many factors.

## 3. *How does the language we use reflect our beliefs/assumptions about the world and medicine?*

- a. What are the consequences of waging war on diagnosis:
  - war on Lyme
  - potential consequences: tiredness (deficiency of Qi/lifeforce) and dampness/phlegm
- b. What does it mean when we study if pharmaceuticals or herbs “kill Spirochetes” or “kill Lyme co-infections? Are killing cells necessarily a good thing? What happens to these cells when they die?
- c. What can be the “collateral damage” of waging war on Lyme? Effects on:
  - *energy (Qi)*
  - *long-term, deep strength (Yang)*
  - *a sense of peace and internal coolant (Yin)*
  - *digestive health, immune health etc*
  - *significant quality of life issues.*

## 4. *Western medical view can encourage fear.*

- a. More than moderate fear creates either contraction or scattering of Qi (from fright).
- b. What are other motivations for addressing Lyme, other than fear?

## 5. *Historically Chinese medicine emphasized a genuinely holistic view.*

- a. Bigger and deeper issues of Lyme is imbalance in the environment and climate change in particular.
- b. More ticks carrying Lyme because less cold winters are killing off less of the ticks. More Lyme diagnosis



coming from the climate crisis.

- c. Assumption in Chinese medicine is that first we treat the person and second condition/disease. Understanding someone's internal condition is essential.
- d. Clearing clearing things out (including heat) *and* bringing things in (Yin, Qi).

6. **Many perspectives/traditions/lineages in Chinese medicine.**

*Bian Hua/To Change and Transform*: very good match with Lyme as it presents a progression of imbalance/disease.

- a. Very little is writing on *Bian Hua*.

*Bian Hua/To Change and Transform* includes the importance of the liquids in the body in treating progression of disease. Has four stages of progression: *Heat—Dryness—Phlegm--Wind*

- 1<sup>st</sup> stage: Heat: This occurs with tick bite. The redness on skin, fever, pain and joint stiffness are all signs of heat.
  - As heat being introduced from outside via tick, at the beginning, the heat is on the outside, surface level.
  - *The way to prevent Lyme disease is to decrease internal heat. Ideas of waging war with DEET and insecticides is based on belief in killing things off/medical warfare.*
- 1<sup>st</sup> treatment principle: **Vent/clear heat**. Initially this likely includes diaphoretics, which from the Chinese view *release exterior* (i.e. open the pores, venting things up and out, creating sweating.)

*Nutrition:*

**Avoid:** All hot and spicy food: coffee, onions, garlic, cayenne, ginger, cinnamon, nutmeg, turmeric, black pepper, chicken, turkey, processed sugar. Avoid most tropical fruit. Avoid anything that if placed on tongue is spicy.

*Cooling diaphoretics:*

- **Spearmint/Mentha spicata** More cooling than peppermint, mild diaphoretic. (*Peppermint, Mentha piperita* more warming diaphoretic than spearmint.)
- **Elder Flower/Sambucus Canadensis and Nigra** Promotes eruption, medium strength diaphoretic, bitter, cool, drying.
- **Boneset/Eupatorium perfoliatum** Very bitter, acrid, strongly venting, strong diaphoretic
- **Yarrow/Achillia millefolium** Bitter, acrid, mild diaphoretic
- **Echinacea spp**, I use purpurea. FLOWER is more venting outward, more about “release exterior”, more up-and-out, medium strength diaphoretic. a mild diaphoretic. Bitter, acrid, cooling. ROOT is more about deeper internal heat, more about down-and-out.
- **Burdock seed/Arcticum lappa**. Niu Bang Zi, goes to throat, root used in western herbalism, clears fire toxins internally and externally, promotes eruptions, medium diaphoretic.

*Topically applications:* Applying dried plants, either chewed or mashed with extracts, to affected area.

- Dried **Yarrow/Achillia millefolium** Bitter, acrid, mild diaphoretic. Can combine with Yarrow extract or other herbs from above. Change 2-3x daily, continue until all redness gone.
  - Case study of women only using Yarrow topically. Diagnosed with Lyme four times.
  - Importance of treating the unique person and the effects of Lyme simultaneously. Many of us have *heat internally*, so in order to treat the heat of Lyme often important to treat this internal heat.

*Cold and draining herbs*: that help protect fluids by clearing heat and tonifying fluids themselves:

CAUTION: Using too much bitter herbs for too long can weaken the Qi in general and the digestive system in particular. Should likely be used in small amounts in a formula (about 5-15%.) Use these herbs cautiously and sometimes with Qi tonics/adaptogens below.

- **Goldenseal/Hydrastis canadensis** Very bitter, cold
- **Barberry/Berberis vulgaris** bitter, cool
- **Oregon Grape/Mahonia spp, formerly Berberis spp**, Bitter, cool, draining.
- **Echinacea spp**, I use purpurea . *Flower* is more venting outward, more about “release exterior”, more up-and-out, medium strength diaphoretic, and *root* is more about deeper internal heat, more about down-and-out, a mild diaphoretic. Bitter, cooling. Both flower and root appropriate at this stage, but *I would emphasize flower at this stage.*
- **Dandelion/Taraxacum officinale**: Western herbalism often uses root, Chinese herbalism uses whole flowering plant and calls it Pu Gong Yin. Strongly to Liver and Gallbladder, also to Bladder. Bitter, cooling, draining. Diuretic to clear heat downward
- **Burdock root/Arcticum lappa**: clears heat and tonifies fluids, for heat and Yin deficient heat, cooling, draining. Diuretic to clear heat downward
- **Chaga/Inonotus obliquus**: in my opinion, it strongly clears heat, for fire toxins (it looks like a scorched mass). In Chinese herbalism call Hau Jie Kong Jun or Bai Hua Rong. Bitter, cold.
- Importance of treating this internal heat is that without this internal focus, condition can progress internally quickly. (When we have an internal condition that matches with something that’s introduced from the outside, things can quickly move internally.)
- *Antibiotics are cold and damp*, and are not releasing exterior. *Both cold and damp are Yin, and Yin descends downward and inward, which can potentially push things deeper into the body.* (Will talk about damp as 3<sup>rd</sup> stage.)
- 2<sup>nd</sup> treatment principle: **strengthening Qi** to make sure someone has the resources to vent things out.
  - when things are vented out, they are released through the *Wei Qi/Lung Qi* (ie surface immunity) and out through the skin. Person needs the Qi/vitality to do this. They also need the *blood, Yin* and the *fluids* to do this, as all of these are used to create the *Wei Qi/Lung Qi*.
  - for Qi deficiency: *Certain adaptogens*—

**Astragalus/Astragalus membranus**: lifts Qi up and out, very effective for venting

**Elecampagne/Inula helinium**: not venting but helps with transform damp, which can weaken Qi. (Phlegm is 3<sup>rd</sup> stage of progression.)

**Codonopsis/Codonopsis membranus**: which is moistening and a Qi tonic.

**American Ginseng/Panax quinifolius**: Possible use as it’s cooling and moistening, both which can help with heat but it does consolidate Qi and at this stage you want to vent.

**Licorice, Chinese and American/ Glycyrrhiza uralensis And Glycyrrhiza lepidota**. Qi tonic and moistening, major herb in Chinese herbalism. Often use as a small percentage of formula—5-10%

*Not recommended:*

**Asian Ginseng/Panax ginseng**: it’s too warming and consolidating (bringing energy inward)

**Eleuthero/Siberian Ginseng/Wu Jia Sheng**: Qi tonic, too warming

**Medicinal Mushrooms**: use with caution as they likely go to the Kidney and can bring the illness deeper.

- 3<sup>rd</sup> treatment principle: make sure bowels and bladder are open—*disinhibit the bowels and the bladder.*

Secondary to first two principles, but making sure that the body can clear things out via elimination is important. If person has significant internal heat or if condition is progressing quickly, may need to use *laxative and/or diuretics*.

*Diuretics*: Increase urination, open the bladder.

***Dandelion/Taraxacum off.*** Western herbalism often uses root, Chinese herbalism uses whole flowering plant and calls it Pu Gong Yin. Goes strongly to Liver and Gallbladder, also to Bladder. Bitter, cooling, draining. Diuretic to clear heat downward

***Plantain Seed/Plantago spp.*** To Bladder, bitter, cold drying, diuretic, drains heat downward

***Cornsilk/Zea mays.*** To Bladder and Kidney, cooling, drying as diuretic but also moistening, can use with other diuretics to protect fluids as they are drained.

***Goldenrod/Solidago spp.*** Goes to Bladder, Kidney, Lung. Bitter, cooling. Helps clear phlegm and damp in Bladder and Kidney and Lungs/Nose/Throat

*Purgatives and laxatives*: To strongly clear heat through the intestines. **Caution**: Using too much purging herbs for too long can weaken the Qi in general and the digestive system in particular—use with caution. (Can use Qi tonics/most adaptogens to protect Qi as needed.)

***Cascara Sigmoid bark/Rhamnus purshiana*** Purgative, strong, cold, use with some caution as it can weaken energy/Qi of intestines and digestive systems (Spleen Qi)

***Rhubarb root/Rheum spp/Da Huang*** Purgative, very strong, cold, bitter, use with caution as it can weaken intestine and digestive energy.

***Aloe vera gel (dried)/Lu Hui*** Purgative, very strong, very bitter, cold, strongly draining, tonifies Kidney Yin, use with caution as it can weaken intestine and digestive energy.

***Senna leaf/Senna spp.*** Laxative, mild, bitter, warm (not cold), OK to use in longer term as it is not so harsh and not cold.

***Cannabis seed/Cannabis sativa/Huo Ma Ren,*** Laxative, mild, moistening, neutral, safe to use in longer term, moistening to intestines

•• 2nd Caution: In addition to the issues of draining Qi downward, another issue with using laxative and diuretics is that they send energy downward into the intestines and bladder. At this first stage, the major focus is on venting the pathology up and out so use this downward focus with caution/awareness.

**2<sup>nd</sup> stage: Dryness/Yin deficiency**: a lack of fluids. Comes from the 1<sup>st</sup> stage/heat cooking off fluids. Signs/symptoms can include hot flashes/night sweats, sweating on chest, hands and feet (5 palm heat), consistently feeling hot, internal agitation. This stage can come soon after start of Lyme or can come weeks, months or even years later.

*Nutrition*: same as stage 1—avoid all hot and spicy food. coffee, onions, garlic, cayenne, ginger, cinnamon, nutmeg, turmeric, black pepper, chicken, turkey, processed sugar. Avoid anything that if placed on tongue is spicy.

*Mucilaginous/demulcent herbs:*

**Asparagus root/Asparagus officinalis** Tian Men Dong is Chinese herbalism. Moistening, cooling, to Kidney, Bladder, Lung.

**Solomon's Seal root/Polygonatum spp.** Neutral, moistening, sweet. Kidney, Lung, Spleen, maybe Heart.

**Slippery Elm Bark/Ulmus fluva** Sweet, neutral, cool, moistening

**Burdock root/Arcticum lappa:** clears heat and tonifies fluids, for heat and Yin deficient heat, cooling, draining. Diuretic to clear heat downward

**Raw and prepared Rehmannia/Sheng Di Huang Shu Di Huang (being grown in VT):** Sheng Di is more cooling and somewhat moistening while Shu Di is more moistening and somewhat cooling. Use Shu Di with caution as it is sticky

**California Figwort/Scrophularia californica and lanceolata** Garran and Holmes say clears heat at blood level, and Garran says tonifies Yin as well. I say cold and moistening. Similar/same use as Xuan Shen/ (Chinese) Scrophularia.

**Marsh Mallow root/Althea officinalis** Sweet, cool, moist, softening. *Use with caution* as it is very mucilaginous and sticky, can easily create phlegm

*Alteratives:* Build Blood, with Chinese medicine this mostly means building Liver Blood.

**Raw and prepared Rehmannia/Sheng Di Huang Shu Di Huang (being grown in VT):** Sheng Di is more cooling and somewhat moistening while Shu Di is more moistening and somewhat cooling. Use Shu Di with caution as it is sticky

**Nettle/Urtica dioica:** cooling and moistening, builds (Liver) blood

**Dandelion root or whole plant/Taraxacum off.:** cooling, moistening builds (Liver) blood

**Dang Kwei/Angelica sinensis, Chinese angelica:** is warming but a major building blood herbs in Chinese medicine.

•• for Qi deficiency: *Certain adaptogens*—

**Astragalus/Astragalus membranus:** lifts Qi up and out, very effective for venting

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**Not recommended: Asian Ginseng/Panax ginseng:** it's too warming and consolidating (bringing energy inward)

**Eleuthero/Siberian Ginseng/Wu Jia Sheng:** Qi tonic, too warming

**Medicinal Mushrooms:** use with caution as they likely go to the Kidney and can bring the illness deeper.

•• very likely continuing to use all of the other herbs from 1<sup>st</sup> stage.

**3<sup>rd</sup> stage: Phlegm:** which is too much Yin, an excess of Yin. This phlegm comes from a lack of fluids that is dryness, with the dryness coming from heat. *Bian Hua* is describing this progression.

- phlegm can be anywhere in body. Is heaviness, sluggishness in body/mind/spirit. From 5 Element/5 Phase view, phlegm associated with Earth (Late Summer) which is the Stomach and Spleen, so phlegm often in these two organs.

- as phlegm associated with Stomach and Spleen it is likely to be affecting digestion. Digestion (along with respiration) is how we create day-to-day energy. When digestion has phlegm, day-to-day energy is being weakened so people can start to feel fatigue.

- Stomach and Spleen also associated with thinking, so with phlegm, thoughts and cognition can start to become less clear and more muddled.

***This is the stage of 'brain fog' with Lyme.***

- 2 treatment principles of phlegm in Stomach and Spleen is to *transform phlegm* and *drain phlegm*.

***Nutrition: avoid all damp foods:*** all dairy, all refined sugar, tropical fruit, limit gluten, avoid all hot foods from above and this can create dampness through dryness

To transform phlegm, can use herbs spicy Qi tonics like ***Elecampagne/Inula helinium***.

To drain phlegm, use diuretics like ***Plantain leaf or seed/Plantago spp*** or ***Goldenrod/Solidago spp., Corn Silk/Zea mays, Dandelion/Taraxacum off.***

- phlegm often also in Lung and Large Intestine, as with 5 Element/5 Phase view they are associated with Metal (Autumn) which comes after Earth (Later Summer) in the flow of Qi between organs. So dampness/phlegm in Spleen, Stomach, Lung and Large Intestine possible. For transform phlegm Lung, use Qi tonic and expectorant like ***Elecampagne/Inula helinium***, for phlegm in Large Intestine use laxatives.

- ***mild laxative: Senna leaf/Senna spp,*** Laxative, mild, bitter, warm (not cold), OK to use in longer term as it is not so harsh and not col

***Cannabis seed/Cannabis sativa/Huo Ma Ren:*** Laxative, mild, moistening, neutral, safe to use in longer term, moistening to intestines

- ***strong/harsh laxatives: Cascara Sigrid bark/Rhamnus purshiana*** Purgative, strong, cold, use with some caution as it can weaken energy/Qi of intestines and digestive systems (Spleen Qi)

***Rhubarb root/Rheum spp/Da Huang*** Purgative, very strong, cold, bitter, use with caution as it can weaken intestine and digestive energy.

***Aloe vera gel (dried)/Lu Hui*** Purgative, very strong, very bitter, cold, strongly draining, tonifies Kidney Yin, use with caution as it can weaken intestine and digestive energy.

- as the phlegm is coming from dryness, which is coming from heat, the herbs from the first 2 stages are likely to be used.

**4<sup>th</sup> stage: Internal Wind:** too much movement in body/mind/spirit. Wind is responding to phlegm. Phlegm is heaviness, stickiness, an excess of Yin and Wind is an excess of movement, which is an excess of Yang.

- from the tradition in Chinese medicine that specializes in neurology (*Wai Ke* tradition), neurological conditions come from wind.
- Wind creates neurological conditions of all kinds—seizures, tremors, twitches, difficulty with speak, balance issues, numbness, coordination issues. Western diagnosis of Multiple Sclerosis, Parkinson’s disease, Turrets are about wind.
- In Chinese medicine including *Wai Ke* tradition, part of root cause of internal wind is (Liver) Blood deficiency, so alteratives mentioned above are important as they nourish blood.
- And, the cause of this internal wind is as a response of the phlegm, so this is also about Chinese diagnosis of **wind-phlegm**, which can be challenging to treat as wind can create significant neurological issues and phlegm is trapping the wind and making it harder to treat.
- Issue with wind phlegm is that if you clear the damp this can release the wind, making neurological issues increase. But if don’t clear damp, neurological symptoms might not improve.
- Because internal wind can be so disorienting, it can also affect the shen/the spirit of the Heart. This creates shen disturbance which is a form of spiritual imbalance.

*Nutrition:* Avoid all foods that create wind, especially chicken and turnkey which create heat and wind. Avoid all foods from above that create heat and dampness.

- Red meat (beef and pork) create blood to root wind and also quiets shen.
- 1<sup>st</sup> treatment principle: Subdue wind. Use certain anti-spasmodics
- **Valerian/Valeriana off:** subdues wind, settles spirit
- **Hops/Humulus lupulus** subdues wind, settles spirit
- **Kava/ Piper methysticum** – is more warming than the other 2 above so use with more caution. Subdues wind, settles spirit
- **Oyster Shell/Mu Li:** subdues wind, cooling, heavy, settles spirit
- **Di Long/Earthworm/Earth Dragon:** subdues wind.

*For Wind-Phlegm: Centipede/Wu Gong and Scorpion/Quan Xie*

- 2<sup>nd</sup> treatment principle: tonify Liver blood. More of a long term strategy as it takes weeks and months to begin to tonify blood.

**Raw and prepared Rehmannia/Sheng Di Huang Shu Di Huang:** Sheng Di is more cooling and somewhat moistening while Shu Di is more moistening and somewhat cooling. Use Shu Di with caution as it is sticky

**Nettle/Urtica dioica:** cooling and moistening, builds (Liver) blood

**Dandelion root or whole plant/Taraxacum off.:** cooling, moistening builds (Liver) blood

**Dang Kwei/Angelica sinensis, Chinese angelica:** is warming but a major building blood herbs in Chinese medicine.

*Overview of the sickness of climate change—The Sheng Hua of the climate crisis*

- **1<sup>st</sup> stage: HEAT** From the burning of fuel, greenhouse gases created, which traps sunlight reflected off plant's surface, increasing temperature. Western science has understood this dynamic since the 1890s and there has been public testimony about this since the mid-1980s.
- **2<sup>nd</sup> stage: DRYNESS** More recently, western science has come to understand that with *rising temperatures* has come a *global decreasing ability to sequester greenhouse gases*. In particular, the *oceans may be close to saturation levels*, there are *decreasing forests* to hold gases, and the *bogs/marshes are thawing* releasing more gases. From the view of Chinese medicine, this is a decreasing of Yin with the increasing of heat. Also, this stage involves global draughts like the ongoing, severe water shortage in California.
- **3<sup>rd</sup> stage: PHLEGM** Especially in the last 10 years, global increase in flooding from storms globally. The flooding is an excess of Yin, an imbalance in the climate's water
- **4<sup>th</sup> stage: WIND** The increase in storms globally, which is an increase in wind. The island nation of Vanatu experienced a storm with 170 mph winds that has wiped out almost all infrastructures for the whole country.
- The progression of Lyme mirrors the progression of climate change—the microcosm is the macrocosm, the little picture is reflecting the big picture.
- What can we do to address both? *Address the heat within us and within our country and culture.*

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# *Understanding COVID and Long COVID*

**Brendan Kelly LAc, Herbalist**

1. How do we define a successful treatment?
  - What do we value? Old or new? General or specific?
  - Sickness/ health as a thing? Sickness/health as a process?
  - How we see the world affects fundamentally how we practice and receive medicine.
  - What is COVID?
  - Viruses are cold from Chinese medicine view and cold is very treatable?
  - School of Cold/Shang Han Lun text is 1,800 years old.
  
2. How can we understand virus from Chinese medicine view?
  - Often start with signs/symptoms of chills, moves to alternating chills and fever
  - Bacterial infection starts with signs/symptoms of feeling hot and fever: heat (School of Heat/Wen Bing)
  - Important to match the condition with the tradition: essential to treating root issues
  - Many different traditions: not all will address root or branch issues with equal efficacy
  
3. What are our assumptions of treating COVID?
  - Research?
  - Proof of herbs treating COVID?
  - Do we need western, allopathic confirmation?
  - What are result for us with saying we treat COVID?
  - What if no western research about herbs treating COVID?
  - Standardization?
  - Issues with Integrative Medicine. Are we meeting in the middle?
  
4. Treat COVID without treating COVID.
  - COVID often starts with chills or alternating chills/fever: Shang Han Lun/School of Cold
  - Treating a Chinese medicine understanding of the condition
  - S/S COVID: From CDC website
    - Chills or fever
    - Cough
    - Shortness of breath or difficulty breathing
    - Fatigue
    - Muscle or body aches
    - Headache
    - New loss of taste or smell
    - Sore throat (also scratchy throat)
    - Congestion or runny nose
    - Nausea or vomiting
    - Diarrhea



5. Realities of COVID:

- 100 million people with COVID in US
- 1 in 5—20%—now have long-haul COVID: 20 million people
- About 3-4 million people out of work
- \$170-200 billion is lost wages. About 1% of GNP
- Health policy concern about this overwhelming system medically and financially
- Efficacy of allopathic treatments
- Chinese medicine traditions provide a clear understanding of branch and root issues.

6. Shang Han Lun/School of Cold:

- 1st stage: Tai Yang:
  - Chills
  - Aversion to wind and/or cold
    - possible slight fever
    - stiff neck
    - body aches
    - floating and tight pulse

Herbs:

***Gui Zhi Tang/Cinnamon Twig Decoction***

***Gui Zhi/Cinnamon twigs:*** Release wind cold, warming, promotes sweating. Substitute: Cayenne pepper/Capsicum annum (only 3-5% of formula)

***Bai Shao/Peony:*** Benefits the Yin/fluids and contains the nutritive Qi, slightly astringing. Substitute: Bai Shao/Peony

***Sheng Jiang/Ginger:*** helps release exterior, warming the interior. Substitute: Wild Ginger/ Asarum canadense

***Dao Zao/Dates:*** tonifies fluids and blood Substitute: Can use dates

***Zhi Gan Cao/Honey Fried Licorice:*** harmonizes, tonifies Qi, moistening. Substitute: Licorice/Gan Cao/Glycyrrhiza spp

Possible Modifications:

***Bai Zhu/Atractelodes:*** Warming, transforms phlegm, tonifies Qi. Substitute: Elecampagne/Inula helinium

***Lobelia/Lobelia inflata:*** Cooling,, ascending, strongly opens LU, for LU Qi constriction, asthma, chest tightness

***Astragalus/Astragalus membranous/Huang Qi:*** Warming, lifts Qi (lifeforce) upward, provides energy to help eject the virus

• **Issues with Gui Zhi Tang and substitutes with COVID:**

- COVID a virulent wind-cold /virulent Viral infection—can move quickly inward
- Often moves quickly past 1st stage/Tai Yang
- Can quickly move to 2nd stage Shao Yang
- Have used Gui Zhi Tang/Cinnamon Twig Decoction and substitutes with confirmed or suspected COVID but not often
- Even at suspected 1st stage/Tai Yang have used 2nd stage/Shao Yang herbs

### **Diet/Lifestyle:**

- Avoid all dairy: can create phlegm
- Avoid all gluten: can create phlegm
- Avoid/limit cooling foods:
  - Tofu
  - Lettuce
  - Tomatoes
  - Cucumbers
  - Seaweeds
  - uncooked/raw foods
- Eat warming foods with some caution:
  - Cinnamon
  - Ginger
  - Cayenne
  - Chai Tea
- Emphasize soups/stews
- Avoid onion and garlic as they open Lung
- Rest/Sleep
  
- **2nd stage of Wind-Cold / COVID: Shao Yang**
  - Signs/Symptoms:
    - Chills and fever, alternating chills and fever
    - Headache, muscle aches
    - floating pulse

### **Herbs:**

#### ***Xiao Qing Long Tang/Minor Blue Green Dragon***

***Sheng Jiang/Ginger:*** helps release exterior, warming the interior. Substitute: Wild Ginger/ Asarum canadense

***Dao Zao/Dates:*** tonifies fluids and blood Substitute: Can use dates

***Ma Huang/Ephedra:*** Induce sweating to release the exterior, disperse cold, disperse lung qi, for lung tightness, wheezing Substitute: *Lobelia inflata* which is cooling

***Gui Zhi/Cinnamon twigs:*** Release wind cold, warming, promotes sweating. Substitute: Cayenne pepper/Capsicum annum (only 3-5% of formula)

***Gan Jiang/Fried Ginger:*** Warming, releases exterior, promotes sweating, transforms mucous. Substitute: Wild Ginger/ Asarum canadense

***Xi Xin/Asarum:*** Warming, releases exterior, promotes sweating, transforms mucous Substitute: Wild Ginger/ Asarum canadense

***Wu Wei Zi/Schisandra:*** Astringing.. Substitute: Sumac berries/Rhus typhina

***Bai Shao/Peony:*** Benefits the Yin/fluids, slightly astringing. Substitute: Bai Shao/Peony

***Ban Xia/Pinellia:*** Dries dampness, transforms cold-phlegm, descends rebellious qi. Substitute: Elecampagne/Inula helinium

***Zhi Gan Cao/Honey Fried Licorice:*** harmonizes, tonifies Qi, moistening. Substitute: Licorice/Gan Cao/ Glycyrrhiza spp

**Modifications:**

***Bai Zhu/Atractelodes:*** Warming, transforms phlegm, tonifies Qi. Substitute: Elecampagne/Inula helinium

***Astragalus/Astragalu membranus/Huang Qi:*** Warming, lifts Qi (lifeforce) upward, provides energy to help eject the virus

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  - Tomatoes
  - Cucumbers
  - Seaweeds
  - uncooked/raw foods
- Eat warming foods with caution:
  - Cinnamon
  - Ginger
  - Cayenne
  - Chai Tea
- Emphasize soups/stews
- Avoid/eat with caution onion and garlic as they open Lungs
- Rest/Sleep
- 3rd stage of wind cold—Yang Ming
- The four bigs: fever, thirst, sweat, pulse.
- What made us susceptible to the heat/inflammation of COVID is the chronic heat/inflammation within us.
- We're hot and overstimulated, our culture is hot and overstimulated, the planet is hot and overstimulated.
- Wen Bing/School of Heat. Developed in 1300-1500s to treat epidemics. Authors stated that epidemics happens with large-scale cultural imbalance, specifically with heat.

**Herbs:*****Bai Hu Tang/White Tiger Decoction***

- For the four bigs in Shang Han Lun/School of Cold
- Very versatile formula.

Actions: Clears Yang Ming heat (Shang Han Lun), drains fire, generates fluids.

Signs/Symptoms: For four bigs: fever, sweat, pulse, thirst. Maybe headache, nose bleed, bleeding gums.

***Shi Gao/Gypsum:*** Very cold, sweet, releases exterior. Substitute: Echinacea spp

***Zhi Mu/Anemarrhena:*** “To know mother”. Clears heat, nourishes Yin Substitute: Burdock/Arcticum lappa root

**Jing Mi/Non-glutenous rice:** Sweet, neutral, moistening. Substitute: Mullein/Verbascum Thapsus  
**Zhi Gan Cao/Honey Fried Licorice:** harmonizes, tonifies Qi, moistening. Substitute: Licorice/Gan Cao/  
Glycyrrhiza spp

Additions:

Release exterior/create sweating/diaphoretics

**Lian Qiao/Forsythia:** Release exterior, treats fever, clears heat through skin. For sore throat Substitute:  
Yarrow/Achillea millifolium

**Jin Yin Hua/Honeysuckle:** Similar to Lian Qiao. Release exterior, treats fever, clears heat through skin.  
For sore throat. Boneset/ Eupatorium perfoliatum

Clear heat downward through Large Intestine:

**Da Huang/Rhubarb:** Drains/Purges heat and dampness through Large Intestine, drying.

Substitute:Rhubarb/ Rheum spp

Huo Ma Ren/Cannabis seed: Gentle laxative, moistening, clear heat through Large Intestine. Substitute:  
Can use cannabis seeds. Also Senna/ Senna spp/Fan Xie Ye

For dampness:

**Bai Zhu/Atractelodes:** Warming, transforms phlegm, tonifies Qi. Substitute: Elecampagne/Inula  
helinium

For tiredness

**Astragalus/Astragalu membranus/Huang Qi:** Warming, lifts Qi (lifeforce) upward, provides energy to  
help eject the virus

Diet/Lifestyle: Bitter taste clears heat

- Bamboo shoots
- Cabbage
- Broccoli
- Celery
- Cucumber
- Lettuce
- Tofu
- Mungbean
- Rest, sleep, do less

Case Studies: Active COVID

- women in late 20's, very physically active at work and in life.
- existing long-term Lyme diagnosis, frequent urinary tract infections
- originally had pain in neck, upper back, lower back, left forearm, abdomen, right knee. Pain up to 8/10
- issues falling and staying asleep
- Had been receiving acupuncture and herbs for about 12 months before COVID diagnosis
- Confirmed COVID diagnosis:

Signs and symptoms of:

- Fever and Chills
- Muscle Aches
- Headache
- Constant cough with sparse thick, yellow-white phlegm
- Shortness of breath, labored breathing with walking/working
- “Feels sharp in the lungs”
- Extreme fatigue
- Reduced appetite
- “Symptoms getting worse”

• Herbs:

- ***Xiao Qing Long Tang/Minor Blue Green Dragon***: for 2nd stage Shao Yang wind cold. Herbs from above with *Lobelia inflata* substituted for *Ma Huang/Ephedra*

Additions:

- ***Mullein/Verbascum Thapsus***: Lung Qi, Moistens Lung.
- ***Lobelia inflata***: Western herb, cooling, similar to *Ma Huang*, ascending, strongly opens LU, for LU Qi stagnation, lung tightness.
- ***Elecampagne/Inula helenium***: Qi tonic, warming, drying, expels phlegm, similar to *Bai Zhu/Atractylodes*.
- ***Valerian/Valeriana officinalis***: Western herb, warming, strong analgesic, moves blood, to address congealed blood/blood clots

Diet/Lifestyle:

- No dairy or gluten
- No raw food
- Beef to build blood to tonify Qi
- Avoid exposure to wind and cold
- In bed 9-10 hours nightly
- Limited work to ½ time

In 2 weeks, most symptoms resolved. In 4 weeks all symptoms resolved.

8. Issues with long-haul COVID: East and West

- Blood clots: congealed blood. Some analgesics like *Valerian/Valeriana off*.
- Feeling of glass in lungs: Lung heat: *Echinacea* spp dryness: *Mullein/Verbascum Thapsus*: phlegm: *Elecampagne/Inula helinium*
- Tiredness: Qi deficiency: *Astragalus/Astragalus membranous*, heat: *Echinacea* spp dryness: *Mullein/Verbascum Thapsus*: phlegm: *Elecampagne/Inula helinium*
- Neurological symptoms: internal wind. Some anti-spasmodics like *Valerian/Valeriana off*, *Hops/Humulus lupulus*
- Loss of sense of smell: phlegm in Lung/Large Intestine: *Rosemary/Salvia rosmarinus*
- Pins-and-needles feeling: Qi and blood stagnation. Some analgesics like *Valerian/Valeriana off*, *Crampbark/Viburnum opulus*
- Rash: heat. Cooling diaphoretics like *Yarrow/Yarrow/Achillea millefolium*, *Boneset/Eupatorium perfoliatum*

9. Opportunity of COVID:

- Recognizing our individual and collective condition—deep, systemic imbalance at a global scale
- Epidemic/pandemics happen for reasons: Wen Bing/School of Heat, epidemics tradition.
- Tens of millions of people in US have a chronic condition that natural medicine can treat. Allopathic options.
- The need for personal/cultural/ecological transformation.

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# ***Understanding the Roots Causes of Cancer: Western Herbs and Chinese Medicine***

**Brendan Kelly LAc, Herbalist**

## ***1. What is the purpose of using herbs?***

How do we define a successful herbal treatment/pharmaceutical treatment?

Is it a successful treatment if people return back to their life?

*Idea of medicine as applied philosophy.*

## ***2. What is cancer?*** Generally speaking from a western view is the over proliferation of unhealthy cells.

a. What are the emotions associated with the word *cancer*? How does this affect how we consider treating the condition?

b. From a Chinese medicine view, cancer includes *heat* and heat is very treatable.

## ***3. Realities of cancer in US***

- 1 in 2 men diagnosed and 1 in 3 women will be diagnosed with cancer. About 130 million diagnoses
- 1 in 4 men and 1 in 5 women will die from cancer. About 73 million deaths
- In 2020 about \$209 billion spent on cancer treatments. *For one diagnosis in one country in one year.*

## ***4. How does the language we use reflect our beliefs/assumptions about the world and medicine?***

a. What are the consequences of waging war on cancer?

b. What does it mean when we study if pharmaceuticals or herbs “kill cancer cells?” What happens to the cancer cells when they die? Where do these cells go?

c. What can be the “collateral damage” of waging war on cancer? Effects on

- *energy (Qi)*
- *long-term strength (Yang)*
- *a sense of peace and internal coolant (Yin)*
- *significant quality of life issues/side effects*

## ***4. Western medical view about cancer influenced by a fear of death.***

More than moderate fear creates either contraction or scattering of Qi (from fright).

b. Why do we fear death? What are we afraid of?

***Classically, Chinese medicine emphasized a genuinely holistic view:*** body/mind/spirit interconnected and connected to the people/environment/universe around us.

- a. With “organ”, there’s physical, mental/emotional and spiritual aspects.
- c. What is it like to not wage war with a cancer diagnosis? About clearing things out (including heat) *and* bringing things in (especially Yin/coolant). Often *both* approaches needed.
- d. The importance of *clearing through the skin, bowels, and bladder*—need to give things a way out. Sometimes using all three outlets at once.

6. **Many perspectives/traditions/lineages in Chinese medicine:** *Wen Bing/School of Heat* specializes in heat, is a particularly good view to apply to cancer.

- a. *Wen Bing* perspective developed starting in 1300 CE with epidemics.
- b. Cancer as a form of epidemic: a serious condition spreading quickly through a country and culture.
- c. Heat can come from external causes, internal causes, or both external and internal, or neither external nor internal.
  - *External cause of heat:* bacterial infection, exposure to heat in environment (sunshine, fire), exposure to toxins in air, water food, (radiation, chemicals, solvents etc.)
  - *Internal causes of heat:* emotions. Any excessive emotion can create heat: moderation/temperance important. Any unexpressed emotion can also create heat so we are seeking balance.
  - *Neither external nor internal:* Includes diet/food

d. There are 4 levels of heat:

- wei level (surface immunity level)
- qi level (transition from external to internal, level of big symptoms/big heat)
- nutritive level (fluids/nutrition and day-to-day energy level)
- blood level (deepest level).

*Different herbs/food/treatments go to these different levels. Important to address heat at the appropriate level.*

7. **Cancer and climate change:** the little picture and the big picture is the same picture. There’s a direct link between the warming of the planet and the rising rates of cancer—both are about heat, and a loss of yin.

a. *Overview of the sickness of climate change:*

- From the burning of fuel, greenhouse gases created, which traps sunlight reflected off plant’s surface, increasing temperature. Western science has understood this dynamic since the 1890s and there has been recent public testimony about this since the mid-1980s.
- More recently, western science has come to understand that with *rising temperatures* has come a *global decreasing ability to sequester greenhouse gases*. In particular, the *oceans may be close to saturation levels*, there are *decreasing forests* to hold gases, and the *bogs/marshes are thawing* releasing more gases. From the view of Chinese medicine, this is a decreasing of Yin with the increasing of heat—ie Yin deficient heat.
- Connected to Yin being coolant, Yin is also about latency, about keeping pathology from being expressed fully. Loss of Yin individually and globally is when sickness begins to appear more clearly and more on surface—*loss of Yin is a loss of latency*.
- Where is climate change coming from? From an overlying busy people and an overlying busy culture—ie *from us, and our institutions*. Our own pathology as gotten so severe that it has gone systemic, has gone global.
- What is the medicine for the sickness climate change? Clearing heat and bringing in coolant, individually



and collectively

- What is cancer? Heat that has gotten so severe that it is significantly affecting the body. When cancer metastasizes, it has spread systemically, which is a loss of latency. Climate change is advanced heat globally and cancer is advanced heat individually—*both are advanced stages of heat with a loss of latency/loss of Yin.*
- *What is a major part of the medicine of both of these scales of heat—to reduce and clear the heat, and bring in the Yin.*
- What is the opportunity of cancer and climate change? Motivation to change, as with all advanced symptoms. *Both can provide motivation to look at and address the underlying, root causes of the conditions.*

**8. Basic questions with treating cancer:** *Is the person able and willing to clear out the heat/pathology AND make the changes needed to address the root causes?*

a. If answer NO, then emphasizing creating dampness/phlegm to try to hold condition in latency—using sticking, heavy herbs like **Marsh Mallow root/Althea officinalis, Shu Di Huang/Rehmannia.** (See Nutritive level section below.)

If answer is YES, then treatment ideas and herbs include:

- 1<sup>st</sup> level: *Wei Qi level*-- clearing heat through the skin (clearing heat through the Wei Qi level), via COOLING *diaphoretics* because we're assuming that everything comes from heat from Wen Bing view.

*Chinese formula: Yin Qiao Wan/Honeysuckle and Forsythia Formula*, to vent wind heat invasion (ie acute bacterial infection)

*Cooling diaphoretics:*

- **Spearmint/Mentha spicata** More cooling than peppermint, mild diaphoretic. (*Peppermint, Mentha piperita* more warming diaphoretic than spearmint.)
- **Elder Flower/Sambucus Canadensis and Nigra** Promotes eruption, medium strength diaphoretic, bitter, cool, drying.
- **Boneset/ Eupatorium perfoliatum** Very bitter, acrid, strongly venting, strong diaphoretic
- **Yarrow/Achillia millefolium** Bitter, acrid, mild diaphoretic
- **Echinacea spp**, I use purpurea . FLOWER is more venting outward, more about “release exterior”, more up-and-out, medium strength diaphoretic, and ROOT is more about deeper internal heat, more about down-and-out, a mild diaphoretic. Bitter, acrid, cooling.
- **Burdock seed, Arcticum lappa.** In Chinese called Niu Bang Zi, goes to throat, root used in western herbalism, clears fire toxins internally and externally, promotes eruptions, medium diaphoretic.

**2<sup>nd</sup> level/Qi level:** Stage of the creation of significant heat, “bigger” and more internal symptoms. Treatment focus still includes venting, and also includes draining heat downward (“strengthening Yin”) and increasing coolant (“tonifying Yin”) **without** creating dampness

*Chinese formula example: **Bai Hu Tang/White Tiger Decoction*** Treats the “four bigs” of big fever, thirst, sweat and pulse, as well as heat in Stomach and Large Intestine. With cancer, could use for Stomach, Large Intestine and Skin Cancer.

*Venting Herbs: Emphasizing herbs that vent heat at both deeper and more external levels*

- From above: **Elder Flower/Sambucus Canadensis and Nigra, Boneset/ Eupatorium perfoliatum, Yarrow/ Achillia millefolium, Echinacea spp**, flower, **Burdock seed, Arcticum lappa**

*Cold and draining herbs:* that help protect fluids by clearing heat and tonifying fluids themselves: CAUTION: Using too much bitter herbs for too long can weaken the Qi in general and the digestive system in particular—use with caution.

- **Goldenseal, Hydrastis canadensis** Very bitter, cold
- **Barberry, Berberis vulgaris** bitter, cool
- **Oregon Grape, Mahonia spp, formerly Berberis spp**, Bitter, cool, draining.
- **Echinacea spp**, , ROOT is more about deeper internal heat, more about down-and-out, a mild diaphoretic. Bitter, acrid, cooling. Both flower and root appropriate at this stage, but *I would emphasize root more.*
- **Dandelion/Taraxacum officinale:** Western herbalism often uses root, Chinese herbalism uses whole flowering plant, called Pu Gong Yin. Strongly to Liver and Gallbladder, also to Bladder. Bitter, cooling, draining. Diuretic to clear heat downward
- **Burdock root/Arcticum lappa:** Using root at this stage. Clears heat and tonifies fluids, for heat and Yin deficient heat, cooling, draining. Diuretic to clear heat downward
- **Chaga/Inonotus obliquus:** In my opinion, it strongly clears heat and treats fire toxins (it looks like a scorched mass), in Chinese herbalism call Hau Jie Kong Jun or Bai Hua Rong. Bitter, cold.

*Purgatives and laxatives:* To strongly clear heat and fire toxins through the intestines. CAUTION: Using too much purging herbs for too long can weaken the Qi in general and the digestive system in particular—use with caution. (Can use Qi tonics/most adaptogens to protect Qi as needed.)

- **Cascara Sigrid bark, Rhamnus purshiana** Purgative, strong, cold.
- **Rhubarb root, Rheum spp, Da Huang** Purgative, very strong, cold, bitter, use with caution as it can weaken intestine and digestive energy.
- **Aloe vera gel (dried)/Lu Hui** Purgative, very strong, very bitter, cold, strongly draining, tonifies Kidney Yin, use with caution as it can weaken intestine and digestive energy.
- **Senna leaf, Senna spp**, Laxative, mild, bitter, *warm* (not cold), OK to use in longer term as it is not so harsh and not cold.
- **Cannabis seed/Cannabis sativa/Huo Ma Ren**, Laxative, mild, moistening, *neutral*, safe to use in longer term, neutral, moistening to intestines.

**3<sup>rd</sup> level: Heat in the Nutritive Level** (level of fluids and nourishment.) Treatment strategy includes those from above two levels, and adding more emphasis on tonifying Yin (increasing coolant) **without** creating dampness. (With cancer, can use with breast cancer and many other organ cancers.)

*Chinese formula example: Qing Ying Tang/Clear the Nutritive*

*Mucilaginous/demulcent herbs:*

- **Asparagus root/Asparagus officinalis** Tian Men Dong in Chinese herbalism. Moistening, cooling, to Kidney, Bladder, Lung.
- **Solomon's Seal root/Polygonatum spp.** Neutral, moistening, sweet. Kidney, Lung, Spleen, maybe Heart.
- **Marsh Mallow root/Althea officinalis** Sweet, cool, moist, softening. Use with caution as it is very mucilaginous and sticky
- **Slippery Elm Bark/Ulmus fluva** Sweet, neutral, cool, moistening
- **Burdock root/Arcticum lappa:** clears heat and tonifies fluids, for heat and Yin deficient heat, cooling, draining. Diuretic to clear heat downward
- **Raw and prepared Rehmannia/Sheng Di Huang Shu Di Huang** Sheng Di Huang is more cooling and somewhat moistening while Shu Di is more moistening and somewhat cooling. Use Shu Di Huang with caution as it is sticky
- **California Figwort/Scrophularia californica and lanceolata** Garran and Holmes say clears heat at blood level, and Garran says tonifies Yin as well. I say cold and moistening. Similar/same use as Xuan Shen/(Chinese) Scrophularia.

*Venting Herbs: Emphasizing herbs that vent heat at both deeper and more external levels. See stage 2/Qi level above for specifics. Elder flower, Yarrow, Boneset, Burdock Seed, Echinacea root and flower*

*Cold and draining herbs: See stage 2/Qi level above for specifics. Goldenseal, Barberry, Oregon Grape, Echinacea root.*

*Purgatives and laxatives:* To strongly clear heat and fire toxins through the intestines. CAUTION: Using too much purging herbs for too long can weaken the Qi in general and the digestive system in particular—use with caution. (Can use Qi tonics/most adaptogens to protect Qi as needed.)

- **Cascara Sigrif bark, Rhamnus purshiana, Rhubarb root, Rheum spp, Aloe vera gel (dried)/Lu Hui, Senna leaf/Senna spp, Cannabis seed/Cannabis sativa/Huo Ma Ren,** Laxative, mild, moistening, neutral, safe to use in longer term, neutral, moistening to intestines

*For fire toxins/extreme heat:*

- **Chaga/Inonotus obliquus:** in my opinion, it strongly clears heat and treats fire toxins (it looks like a scorched mass), in Chinese herbalism is Hau Jie Kong Jun or Bai Hua Rong. Bitter, cold, clears fire toxins.

CASE STUDY: Treating women in her early 60s with stage 2 ½ breast cancer for 9 months. Two tumors in one breast. No western treatments though periodic western diagnostic tests performed.

*Chinese diagnosis of:*

- heat and fire toxins in the nutritive level
- dampness and clumping, mostly in the Qi level, as heat is cooking the fluids to create the tumor (ie dampness from heat)
- congealed blood from heat (ie heat is cooking the blood)

*Treatment approach, with acupuncture and herbs*

- clear Nutritive, Qi and Wei level heat
- purge accumulation and fire toxins through intestines
- increase fluids and coolant (Yin)
- strengthen Qi, especially to protect energy with cooling and purging herbs

*Lifestyle changes:*

- reduced work significantly
- simplified life significantly
- limited significantly all sweets (as they create dampness)
- limited significantly all process foods
- eliminated eating all birds (chicken and turkey) as they are warming
- increased amount of pork and some beef, as pork is neutral and beef is somewhat warming
- eating lots of mung beans, which clear out heat and fire toxins.

*Results:*

- lost 30 pounds
- increase in energy
- tumor that was deeper and harder is more on surface and softer
- 50% reduction in size of tumor (1<sup>st</sup> time western oncologist has seen this in 20 years of practice without chemo and radiation)

4<sup>th</sup> level: *Heat in the Blood Level*. Treatment strategy changes here--no longer venting heat up and out, focus is on increasing fluids and clearing heat down, moving stagnant blood (from the heat cooking the blood) and purging. With cancer, can use for leukemia, bone cancer, Kidney cancer as well as other organ cancers.

*Chinese formula example: Xi Jiao Di Huang Tang/Water Buffalo Horn and Rehmannia Decoction* (Shui Niu Jiao/Water Buffalo Horn substituted for Xi Jiao Rhino horn) for treating heat in the blood, moving stagnant blood, and clearing toxicity.

*For heat in blood and to nourish Yin (coolant):*

- **Raw and prepared Rehmannia/Sheng Di Huang Shu Di Huang:** Sheng Di is more cooling and somewhat moistening while Shu Di is more moistening and somewhat cooling. Use Shu Di with caution as it is sticky
- **California Figwort/Scrophularia californica and lanceolata** Garran and Holmes say clears heat at blood level, and Garran says tonifies Yin as well. I say cold and moistening. Similar/same use as Xuan Shen/(Chinese) Scrophularia.

*For moving congealed blood (from blood being cooked by heat):*

- **Crampbark/Viburnum opulus:** moves blood, bitter, acrid, slightly cooling.
- **Motherwort/Leonurus cardiaca** Yi Mu Cao in Chinese medicine. Bitter, slightly cold, moves blood stasis.
- **Dandelion/Taraxacum officinalis** In my experience, root in particular to move congealed blood. Bitter, cooling, liver, bladder, gallbladder

*For fire toxins/extreme heat:*

- **Chaga/Inonotus obliquus:** In my opinion, it strongly clears heat and treats fire toxins (it looks like a scorched mass), in Chinese herbalism is Hau Jie Kong Jun or Bai Hua Rong. Bitter, cold.

*Purgatives and laxatives:* To strongly clear heat and fire toxins through the intestines. CAUTION: Using too much purging herbs for too long can weaken the Qi in general and the digestive system in particular—use with caution. (Can use Qi tonics/most adaptogens to protect Qi as needed.)

- **Cascara Sagrid bark, Rhamnus purshiana** Purgative, strong, cold, use with some caution as it can weaken energy/Qi of intestines and digestive systems (Spleen Qi)
- **Rhubarb root, Rheum spp** Purgative, very strong, cold, bitter, use with caution as it can weaken intestine and digestive energy.
- **Aloe vera gel (dried)/Lu Hui** Purgative, very strong, very bitter, cold, strongly draining, tonifies Kidney Yin, use with caution as it can weaken intestine and digestive energy.
- **Senna leaf, Senna spp,** Laxative, mild, bitter, warm (not cold), OK to use in longer term as it is not so harsh and not cold.
- **Cannabis seed/Cannabis sativa/Huo Ma Ren,** Laxative, mild, moistening, neutral, safe to use in longer term, neutral, moistening to intestines

CASE STUDY: treating “pre-leukemia”. Patient male in early 50s, rancher. Case study in my book.

- western practitioner ordered blood test after continued issues with fatigue, fever, night sweats, swollen glands on back of neck, weight gain
- similar blood work done 5 years earlier with white blood cell count of 22,000.
- more current white blood cell count was 42,000, with patient reporting that according to western practitioner a doubling of blood count in 5 years is a confirmation of Chronic Lymphocytic Leukemia (CLL).
- western practitioner advice was to wait to see if blood count reached 44,000, then start chemotherapy.
- patient chose to begin with regular Chinese medicine treatments.

*Chinese diagnosis:*

- Heat in the blood level
- Kidney Yin deficiency
- some clumping of heat in Large Intestine
- Fire toxins in Large Intestine
- congealed blood from heat

### *Treatment approach, with acupuncture and herbs*

- clear heat at blood level
- purge accumulation and fire toxins through intestines
- increase fluids and coolant (Yin)

### *Lifestyle changes— at least as important as the acupuncture and herbal medicine.*

- *worked less*: as a rancher, hired more help, reduced work to about 35- 40 hours/week from 60 or more hours weekly.
- *worked less hard physically*: has others on ranch do more of the demanding physical work. More than a mild sweat as a sign of too much work.
- *stopped eating beef*: beef is warming, substituted pork
- *stopped eating birds* as they are warming
- *stopped eating refined sugar*: no sweetened iced tea, no ice cream, no cookies, soda etc.
- *started eating more leafy green vegetables*: which are cooling generally
- *increased sleep*: to 9-10 hours night, from about 6-8 hours nightly.

### ***What were the results in 8 weeks of herbs and acupuncture?***

- Lost 30 pounds, returning to same weight from high school 30 years earlier
- Significant diminishment or elimination of night sweats, fevers and swollen glands in neck
- Significantly increased energy
- Increased mental clarity— “head fog” went away
- Improvement in home life and marriage
- Felt better overall: “I haven’t felt this good in 30 years.”
- White blood cell count dropped from 42,000 to 10,800, which is about a 75% reduction in 8 weeks.
- Above reduction was to about 50% reduction in white blood cell count from 5 years prior.
- Patient and family in the waiting room crying and hugging each other.

### **References**

- Dan Bensky texts: Singles and Formulas of Chinese Herbalism
- Peter Holmes, *The Energetics of Western Herbs, vol 1 and 2*
- Thomas Avery Garran, *Western Herbs According to Traditional Chinese Medicine.*
- Paul Unschuld, *Medicine in China: A History of Ideas*

### Classical Texts:

*School of Cold: Shang Han Lun*—Nigel Wiseman and Steven Mitchell co- translation

*School of Heat: Wen Bing Xue*, Jian Min Wen and Garry Seifert co-translators.

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# *Ethical Promotion: Sharing your work without selling your soul*

Camille Freeman LDN



## Ethical Promotion: Sharing your work without selling your soul

with Camille Freeman

For slides & additional resources, please see <https://www.camillefreeman.com/IHS23>

Many herbalists have a sense of dread when it comes to self-promotion. There's a good reason for this: **marketing strategies are often based on fear, deception, and manipulation of power dynamics**. If you can't find clients or customers, though, it is very difficult to stay in practice and serve people who could benefit from your work. In this session, we'll discuss how to identify potentially harmful marketing practices and **ethical alternatives to consider**. We'll also cover how to think **about marketing as service to your community**. You'll leave with a list of ideas that feel in alignment and well-suited to your own personality/practice.

### Fear- and Scarcity-Based Marketing

- Seeks to manipulate people into buying.
- Creates false scarcity and/or urgency
- Rooted in patriarchy, white supremacy, ableism, and heteronormativity
- Highlights and builds on the potential client's insecurity and fear
- Strengthens practitioner image and weakens potential client
- Overcomes client objections without consideration
- Me > Us

### Marketing Basics: The foundation

- Know what you offer and who might benefit from your work.
  - Know who you cannot serve safely/ethically and holding this boundary firmly in your marketing
- Clearly explain this in terms non-herbalists can understand
  - This includes creating services, offers, etc that are explained well and that are interesting to potential clients
- Consistently meet people who don't already know about you and your work.
- Invite these people to stay in touch with you.
- Stay in touch regularly with people who are interested in your work.
- Invite people who are interested in your work to work with you regularly
- Provide value and support to your community, even – especially – to people who will never become clients.

## Tips for knowing/explaining what you offer and who might benefit:

- Tap into your vision and mission. If you aren't clear on it, take your best guess. How can you contribute?
- Envision how people might change from your work. What is your intention? How will things be different when your work together is over?
- Listen to what language potential clients use and avoid jargon.
- The more specific and clear your offer is, the easier it is for someone to know if it is a good fit.
- Pilot services and programs before spending lots of time and money.
- Create based on your own personality and strengths. Your writing and offerings should sound and feel like they come from you.

## Tips for meeting new people who don't know about your work:

- Where are your potential clients? How can you be there as well?
- Classes and workshops are a wonderful way to meet new folks.
- Guest appearances on podcasts, blogs, and classes are another way to meet people.
- Connecting with other practitioners and developing referral relationships helps.
- Collaborate with other businesses or practitioners.

## Tips for staying in touch with people who are interested in your work:

- Gather contact information and share your own.
- Pick one or two places where you will connect regularly (e.g. email newsletter and Instagram)
- Show up in these places regularly. Post and connect with others.
- Your offerings here are a service to the community and to those who may never have the chance to work with you. Healing is possible through what you share.

## Tips for inviting people to work with you:

- Explicitly invite people to sign up periodically, either via your email newsletter, social media, or any other venues available to you.
- Keep track of people who have expressed interest and circle back with them every few months to invite them to join you.
- Do not hide your invitation at the bottom of a wall of text or as one small part of a larger message. Make it easy and obvious for people to sign up.

## A guiding question:

- How can you make it easier for people who are interested in this work to find you, connect with you, and remember that you exist when the time is right?

Attend our session for details, examples, a case study or two, and discussion! Please be in touch with questions or just to say hello: [info@camillefreeman.com](mailto:info@camillefreeman.com)



# *Leveling Up: The transformative power of perimenopause*

Camille Freeman LDN



## Leveling Up: The transformative power of perimenopause

with Camille Freeman

For slides & additional resources, please see <https://www.camillefreeman.com/IHS23>

When we envision perimenopause, we often think of the most common symptoms: hot flashes, brain fog, erratic periods, difficulty sleeping, and more. However, the process of going through perimenopause holds meaning well beyond these external manifestations. It is a **time of deepening, re-evaluation, transformation, and growth**. In this class, we'll learn about the physiological processes that explain perimenopausal symptoms, and how herbs can support these changes. We'll also discuss **the deeper and wider implications of this transition and how herbs can be used to make meaning and support the powerful transformative work that many people undergo during this time**.

### What is menopause?

- Menopause is normal, healthy, not pathological.
- “Menopause” = last menstrual period.
- Usually happens between 40-58 years of age; mean age is 51ish.
- If your cycle length changes by 6+ days this may be a sign that you are in the early stages of perimenopause

### What can you expect?

- Up to 20% of people are asymptomatic
- Menstrual symptoms: cycle becomes erratic; heavy bleeding is common.
  - Shorter cycles may indicate that FSH is rising
  - Longer cycles may indicate that ovaries are slow to respond to FSH and/or anovulation
- The “Core Four” symptoms:
  - Hot flashes/night sweats
  - Vaginal dryness/dyspareunia
  - Sleep disturbances
  - Adverse mood, depression/anxiety
- Increased risk of cardiovascular disease, cognitive disease, and osteoporosis
- Spiritual/emotional/symbolic transition: inner shifts aren't often discussed

## What hormonal shifts are happening in menopause?

- FSH begins to rise, usually without symptoms. Signals low ovarian reserve.
- Estrogen levels do not change in a linear fashion. They decrease over time (5-10 years) and eventually stay low after the menopausal transition is complete.
- Progesterone levels during the luteal phase drop.
- Symptoms and risks of CVD, osteoporosis, etc likely associated with lower estradiol levels and/or higher FSH levels.
- Testing is tricky and not super helpful, although new-ish AMH test may provide some insight.

## How are the adrenal glands involved?

- GABA is an inhibitory (calming) neurotransmitter. It also puts the brakes on HPA upregulation in response to stress.
- GABA is made from a molecule called ALLO, which is itself made from progesterone.
- ALLO is anti-anxiety and anti-depressant. More ALLO also = more GABA
- ALLO comes from the adrenals and the ovaries (corpus luteum).
- Estradiol likely increases ALLO levels.
- Cortisol levels are often elevated as we move through perimenopause.

## What symbolic and transformative changes might someone experience?

- Menopause marks the end of time/space/energy spent on menstruating, fertility and associated concerns.
- Often a time of release, re-evaluation, and new direction.
- Power dynamics change, relationship with self and society shifts
- Resistance and glorification of youth often bubbles up

## How can we support this transition?

- Emotional/spiritual/symbolic work is key. How do we mark the transition to a new stage, with the new set of strengths and setbacks? Which herbs symbolize and facilitate this movement?
- The “health food store herbs” do have a place – sage, black cohosh, and other phytoestrogens.
- Nervines! Many symptoms are neurological, not hormonal.
- Adaptogens may support the transitions mentioned above.
- Consider bone, cardiovascular and brain health.

Thank you for your interest in this topic! Please be in touch with questions or just to say hello: [info@camillefreeman.com](mailto:info@camillefreeman.com)

*Healing Trauma with High Desert Plants -  
Decolonizing the motherline to reclaim sovereignty*

**Cathy Skipper**

This talk is about my journey into building a relationship with myself and simultaneously with the ecosystem of the High desert in Northern New Mexico.

Context

The death of everything I knew before could have easily been a physical death, luckily it was a death within life. My old life and the parts of myself that I attached to it were becoming humus for new growth. They had to die so transformation could take place. As in any gestation and rebirth, we do not know how it will unfold.

A series of events led me to relocating to Taos, New Mexico and deepening my healing journey.

- 1) I had two re-birthing sessions with a French chiropractor whose specialty was moving newborn babies through the physical motions they didn't experience when they were born via cesarean. He agreed to work with an adult. These two rebirthing sessions, I believe set the rest into motion.
- 2) Shortly after my mother died
- 3) My father threw away all my material belongings that I'd stored temporarily in his house in France.
- 4) I met my life partner
- 5) I moved to Taos, New Mexico and a day later I received an emergency message from my French gynecologist apologizing for making a mistake. I was diagnosed with stage 2 cervical cancer.
- 6) The father of the youngest of my four sons alienated my son and I for three years.

This was a turning point in my life and although I didn't know it at the time, the beginning of a long journey (six years) into the underworld. (Babies and seeds gestate in the dark/below ground).

The flora of Northern New Mexico was for the most part like nothing I knew in Europe. I was a stranger in a strange land. I had been teaching herbalism and botany in France and now I found myself with cancer and not familiar with the local flora. I also felt that through respect for place and the ancestors of place, I needed to step slowly. I had to trust.

I moved into an earthship at 9000 ft altitude in the mountains North of Taos.

“I gaze into the distance at the layers of mountains lining the end of the landscape and follow them round to the left where they come right up to the earthship, curling around in a semi-circle like a huge, sleeping dragon guarding the end of the plateau. From this vantage point, the sleeping dragon to me marks not only the end of the plateau, but the end of the world. I know the world is round and logically there has to be more of it on the other side, but somehow my mind wants me to believe this is it. There's nothing beyond this point. I've been searching for home all my life—for that elusive sense of belonging that resonates with a certain place, but is really felt deep inside, like an anchor that keeps you grounded and safe.

Now I've come to the end of the road. I can't go any further in my quest for home so I suppose I've arrived. Maybe that is why they call this place "the land of enchantment."

My personal journey was to discover and heal my motherline and find my place in the world. This process was long and deep. The motherline is our soil and our ground. I believe our soul flows through the motherline - eternal and embodied.

"You can't know who you are until you know where you came from."

The environment of the high desert supported and guided me in this ongoing journey, I slowly became more rooted in my lineage and simultaneously rooted in place.

"You can't know who you are unless you are in connection with where you are."

I realized that the motherline and the ecosystem are dynamic, living systems that we are a part of and also connected to each other.

My underworld relationship with the plants was an interweaving of the unseen in both myself and the plants and animals. Yes, I connected with them in the upper world, in real life, in materiality but the heart of the healing relationship was with the beings and the worlds that lie behind the material manifestation of the plants.

Although a part of this journey was obviously my own individual healing, it had larger implications and resonance. Slowly as I built relationship with place and its plant and animal inhabitants, I realized this was a collective healing relationship that transcends not just place and species but time too. The interconnectedness of the whole became more and more apparent.

Healing the feminine through decolonizing the motherline. Our motherline is our embodied, inner ecosystem. Healing the feminine through building relationship with the land/earth is a mutual relationship of give and take. By beholding place and ancestors of place, they become conscious of themselves and vice versa, we behold our roots. By beholding the soul of the plants, animals and trees that make up the ecosystem we are a part of, they recognize themselves and vice versa.

As my relationship and understanding of my own motherline journey became clearer, so did my relationship with the land - the two are connected at the source. Through healing the motherline within the context of the high desert, I was reconnecting with the universal wildness or original energy of all life. This energy is home, we each find our way through our individual stories/motherlines and the places where we connect with nature and the wilderness. I believe this is the way we become aware of our inter-connection to all life. It is through the feminine, the mother, matrix, matter, the Great Mother.

This journey was highlighted by my moving to a completely different and alien geography/flora than that which I knew. As much as I was discovering unknown territory through unveiling my motherline, I was also being guided by a new ecosystem. I was being asked to transcend all that I thought I knew, all that I thought I was.

This journey was not just about connecting with particular plants but about entering into relationship with the whole. Yes, there were certain plants and trees that I became closer with, but always in the wider context of the whole ecosystem. In the same way as my journey into my motherline took place holistically - through an awareness of how all aspects of my psyche (physical, emotional, mental, spiritual, collective unconscious) were affected by and could heal through this story.

The relationships that I developed on this land were unique to me. In the same way as a relationship with another human being is unique to the two humans involved so it is with our relationship to the land and all who live on it.

I want to share in this presentation the relationships that grew from the land and helped me understand and heal myself and my motherline. Each plant, tree and animal I bonded with taught me something about myself and what I needed to know and understand for my journey. These are unique teachings but in sharing them I hope they will inspire others to enjoy developing trust and connection with the lands they live on and all that live there.

The tools I use for this work are medicine making, aromatic medicine making, journeying, journaling, meditation, plant and animal communication, psychedelic medicine, dream work, and of course immersion in nature.

The plants I worked with supported the deep transformation that I went through during my six years in the underworld. They were my guides, allies, teachers and friends. This was a journey of trust - of learning a new flora whilst healing myself and my motherline. Decolonizing the motherline work resonated with understanding what the land here has been through. As I was re-tracing and returning energetically to my ancestral roots, I was also learning about the roots of this land, its ancestors and its stories through the plants. As I slowly found my own maternal roots, I simultaneously for the first time in my life, felt real roots growing from me into this land. I was being reborn restructured by my ancestral connection and the high desert.

We will explore in class the plants that accompanied me on this journey as an ecosystem. I worked with three trees (pillars/structure), one plant anchor, one middle-world plant and one plant spirit in aromatic form. Within this structure, I also made and worked with desert plants energetically and in the form of flower essences.

Aromatics (I will share these in class so everyone can smell and experience them through guided inner work.)

Pillars - Juniper, Ponderosa pine and Pinon pine)

Earth/underworld - Yerba Mansa

Middle-world - Osha

Spirit/cosmos - Sagebrush

## Flower Essences

Apache plume - Develops intuition and heightens receptivity to subtle messages.

Banana yucca - Reconnect with self and others

Cliff Fendler Bush - Opens the heart doorway.

Curly Cup Gumweed - “The wound is the place where the light gets in.”

King Cup Cactus - Alignment and commitment

New Mexico Beardtongue - “Patience is the reward of patience.”

Nylon cactus hedgehog - Deep inner Strength

Perky Sue - True expression from ancestral wisdom (clan)

Prickly Pear Cactus - Personal space and boundaries

Sego Lily - “The feminine is rising”

Whole-leaf Indian Paintbrush - “re-align the inner fire”

# *Soul Healing with Sacred Oils*

**Cathy Skipper**

A liter or quart of essential oil requires hundreds if not thousands of kilos or pounds of plant matter. If I can connect with the healing resonance of plants without even picking them, how can I justify working with these highly concentrated plant extracts?

My answer to that question is embodied in my work. I use aroma to work deeply with the psyche. Our sense of smell is the most profound portal into our unconscious psyche. The healing work that I teach at AromaGnosis ([aromagnosis.com](http://aromagnosis.com)) is a combination of aroma, psychology, plant consciousness, spirituality, and personal journeying for healing the mind, emotions, soul and restoring our living connection to the plant world. In short, I work with the unconscious psyche with scent as our guide and for that I have found that essential oils of the proper quality are the most powerful allies.

Perfumed oils and aromatic plants have been used for thousands of years to transform consciousness and expand states of mind. All over the world, complicated and often secret aromatic formulas were at the center of religious ceremonies. The bible has over two hundred references to perfumed oils, incense and aromatic substances that were used for healing the mind, body and soul and connecting to the divine. The Ancient Egyptian myth of creation has the aromatic blue lotus in a central role.

The sense of smell touches the unconscious most directly. All our senses, except our sense of smell, are filtered through a part of the brainstem called the thalamus. The thalamus filters and modulates the sensory input before it enters the cerebral cortex and consciousness. Your ears can focus on a quiet conversation in a noisy place, due to the thalamus. You don't feel the clothes on your skin right now, due to the thalamus. Your eyes only see what your brain tells them to see, through the thalamus. If the thalamus did not actively filter, we would be overloaded by sensory input.

Our sense of smell is different. Odors travel to the back of the nose where they come into contact with millions of olfactory neurons that connect directly to the limbic system, which is responsible for memory and emotion. Certain scents disrupt the Default Mode Network, which is responsible for our habitual frame of mind. Disrupting this habitual frame of mind is only one way aroma expands consciousness. The way these neurons encode scents is like a melody. Like certain transcendent melodies, certain aromas can give us goosebumps and that numinous sense we are being touched. Aromas reconnect us to ourselves, to Nature, to Spirit, which is why I call them the Molecules of Connectedness.

We don't just smell with our nose. We have olfactory receptors in every organ. We literally smell with our skin, with our kidneys, with our heart. There are over nine hundred genes in the human genome that encode olfactory receptors. And that is just the family of receptors called Olfactory Receptors (OR). There is another entire family of receptors called Transient Receptor Potential Channels (TRPC), which encode the feeling of coolness of mint and apparent heat of capsaicin and many other as yet to be discovered sensations.

If you think of each receptor as the letter of an imaginary alphabet, imagine what beautiful poetry, what complex ideas you could form with such an alphabet. Our English alphabet pales by comparison. We have, most of us, become completely unconscious of smell. We've lost our instinct and our deep connection to Nature through scent. Yes, some may eloquently talk about beautiful aromas, essential oils or perfumes, but that is an intellectual construct, using language. What if we were still native speakers in the language of scent?

In many spiritual traditions the word for spirit is the same as the word for breath and air, e.g. pneuma in ancient Greek, ruach in Hebrew, etc. Even the English word awe carries this between its meaning and its sound. When we say awe, we make a slow, open-mouthed exhale, a spirited breath. The first thing we do when we are born is that we inhale and the last thing we do as we die is exhale. The air we exhale is inhaled by others. Plants turn our exhaled carbon dioxide into oxygen which we in turn need to breathe.

We are connected to all living things through the air we breathe. The air is between and within all of us and forms a giant presence around and within us all, a great spirit that we are all part of. If spirit is air, then the volatile aromatic molecules could be seen as the 'neurotransmitters' of this spirit, or messengers within the spirit realm. In Alchemy this is Mercurius, the ever-changing messenger, reconciler of opposites, as hard to capture as a scent or the wind.

Recently, I thought deeply about why I work with essential oils and asked myself if it is still sustainable. I decided that the olfactory work with aroma is one of the most powerful ways of working with plants and at the same time, if we just smell the oils, a little goes a long way. If we just smell the aroma, a bottle of a few milliliters can last for years.

I have committed to only working with aromas by smelling them. To me, this is the most suitable and powerful route and it is sustainable. This means, I make no more products with essential oils. I no longer use them as or teach about their use in cosmetics, healing balms, medicine balls, syrups, massage, etc. If you use the oils in the way I teach, their effect is extremely powerful, and a bottle can last you a lifetime.

In this class, I will be presenting a sacred oil that resonates with each aspect of the psyche and guiding an experiential experience of feeling into the anatomy of the psyche through these oils.

## The Anatomy of the Psyche

The psyche is real

“By psyche I understand the totality of all psychic processes, conscious as well as unconscious.” Jung

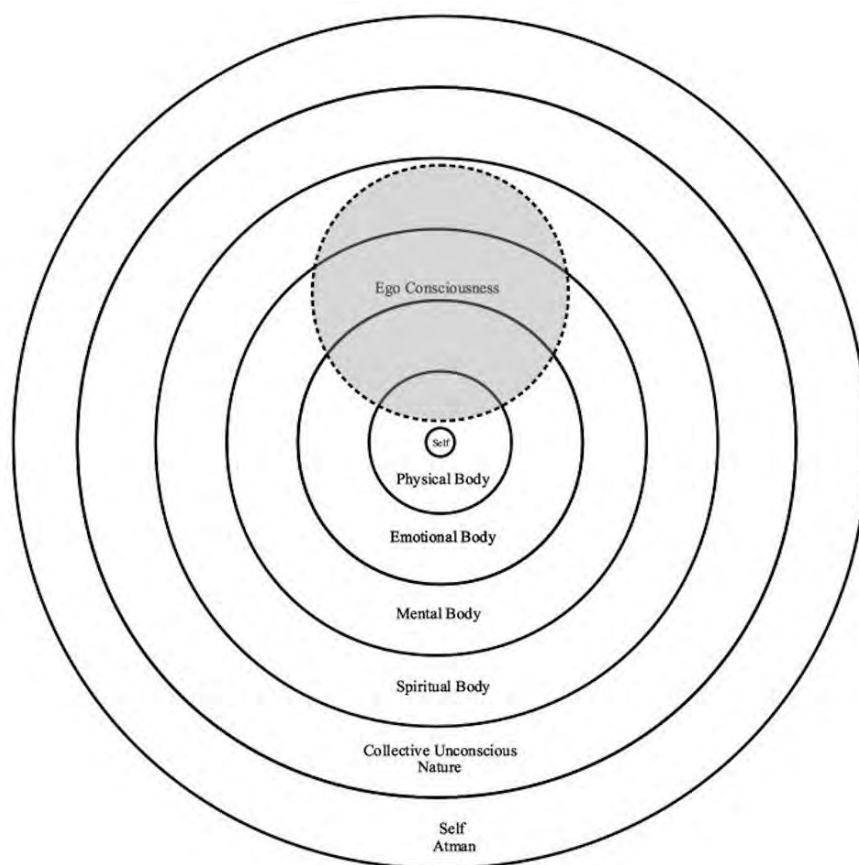
*What is the psyche?*

The etymology of the word psyche is rich and varied, including “animating spirit” from the Latin, “the soul, mind, spirit, breath, life form Greek (psykhe) and referred to the “human soul” in Jewish influenced theological writing. Psyche and Eros is a love story from Classical mythology, Psyche is a beautiful woman who personifies the human soul (psyche means “soul” in Greek).



Just like we all have the same physical organs (heart, kidney, bones) more or less, our psyche has an anatomy of 'organs' and processes, that is more or less the same for everyone too. The psyche in Jung's view is not separate in each human being (like the basement of a house) but rather is an invisible, all-pervading realm out of which reality arises. In the way an organism rises out of a single cell through the text of the DNA, so reality arises from the collective unconscious through the 'texts' of archetypes (and related concepts). Unlike in Freud's view, where the unconscious is something to be completely processed, understood and thereby dominated by the conscious, Jung feels that a mystical union of conscious (ego) and unconscious needs to take place, they need to be 'equal' partners as in a marriage.

As we can draw in a diagram the different body parts or systems such as the liver or the digestive system, we are able to draw in the form of the diagram below the different parts of the psyche that make up the Self. Although it can be hard to begin with for the ego to believe that there is more to the psyche than that which it is conscious of, this model helps us to expand our narrow view to beyond the ego and gradually this knowledge can be felt to filter through into our consciousness in subtle ways. Each separate component of the psyche has its own way of manifesting or making itself known



The ego is the part of the psyche that allows us to function as individual human beings in the world, it holds our personality and identity and filters and organizes our thoughts, feelings, emotions, sensations through the personality. The ego has access to all that we remember and decides what to allow into consciousness, that which the ego does not select returns to the unconscious. The ego maintains a connection to the unconscious, which will counterbalance the conscious elements selected by the ego through dreams, intuitions etc. It is an error to think we fully know ourselves by the ego alone as it is only aware of what is conscious and as you have seen in the diagram above, we are much more than what we are conscious of being.

Every plant we work with is a living embodiment of what that plant knows and is, each plant has its own signature, consciousness unique to it. When we smell a plant oil with intention, the plant becomes our teacher, we begin to build a relationship with the plant, we invite it into our lives. If we connect regularly with it and allow its energy to navigate our whole psyches, the plant will help us become more aware of unconscious aspects of ourselves and the plants' knowledge and wisdom will imprint itself upon us. Plants also have the ability to identify the energetic blockages and stagnations we are holding in our dense and subtle bodies from our own wounding and traumas including our inherited ancestral traumas. Plant aromas can also help us to more fully understand and work with these blockages, traumas etc thus helping us become more whole.

We will explore these aspects of the psyche together through the sacred oils mentioned below followed by a discussion.

Physical Body - Matter, matrix, mother, mother-earth - Ruh-Khus (wild vetiver harvested along the Ganges) and Indian valerian.

Emotional Body - The heart doorway. "To feel is to heal". Rose attar

Mental Body - Thoughts, beliefs, memory, analysis - Rosemary

Spiritual Body - light body, bridge between denser material aspect so the psyche and the collective unconscious - Palo Santo

Collective unconscious - common psychic realm shared by all human beings where instincts, memories and ancestral memories are stored - Labdanum

# ***Back Story to Yerba Mansa, Myth and the Dark Goddess***

**Cathy Skipper**

*This excerpt from my up-coming book is the back story of my subsequent journey into Yerba Mansa, la Llorona and decolonizing the motherline of which I will be sharing in class.*

“Here she is.” Florian says pointing to a blanket of orange, withered, moisture-less stems adorned with last summer’s rust-colored papery leaves covering the ground. We’ve come down to the Rio Grande to collect a plant I’ve never seen before, known by the name of Yerba Mansa.

An herbalist friend from the UK emailed when she found out I was in New Mexico to tell me to look for this great herb growing along the rivers of the Southwest. I tell Florian and he says, “I know exactly where that plant grows.” We decide to go and find it. In the couple of months I’ve been in New Mexico, the Rio Grande is one of my favorite places to come and today is no exception. Like a huge serpent slithering through high desert forests, arid deserts plains and deep gorged out valleys, she brings life, possibility, and much needed freshness to these sacred desert lands.

It’s just the right time of the year to harvest the roots. All the plant’s life force has left the dead vegetative parts and is quietly hiding out in the underground rhizome. I kneel on the thick carpet of last summer’s copper-colored Yerba Mansa foliage, tawny-gray cottonwood leaves and the thin yellow coyote willow leaves. This comforting layer of decaying debris keeps the soil warm during winter whilst slowly feeding her. I brush away the decomposing matter, opening her up until I find a clump of dried stems rising from the dark humid soil. I follow them deeper into the lush, moist, riverside earth and start to dig until my hands feel the gnarly, ribbed texture of the root, well anchored to the soil like a tooth into a gum. I feel along the hard tuber burrowing underneath to loosen her grip, and soon realize that the Yerba Mansa plant is not an isolated plant, instead she’s made up of a whole network of rhizomes all joined together by long thin stolons like strawberry plants. Somewhere here there is a mother plant that has given birth to this huge community of aromatic roots.

As I dig into the dark, loamy, moist soil, feeling my way with my fingers, it exudes a musty, earthiness interwoven with a spicy, camphorous, swampy aroma. I haven’t even excavated a root yet and I can smell its medicine and feel its power. Yerba Mansa impregnates the whole area reminding us we are in her place, her earth. I finally manage to pull out the first root and as I do so, I notice peeking out of the top of each rhizome, a brand-new shoot with four deep red tips, two long and two short that remind me of a snail’s optical tentacles, searching for the light. Even though the plant is wintering, these tiny shoots are full of vital life force. They are her way out of the earth when the time is right, when the warmth of spring activates her desire to grow and reach her potential. But for now, she is in the underworld.

All this reminds me that today is Imbolc, the Celtic festival that celebrates the return of the sun after winter and the beginning of the agricultural year. Imbolc comes from the Gaelic word ‘oimelic’ meaning ewe’s milk and symbolizes the milk of life flowing again. Even though it’s still very cold, seeing the shoots getting ready underground remind me that although the darkness is still here, the first signs of new life are already under there, waiting to emerge. In a few weeks, this great mother plant and all her offspring will be bursting into life again and greening the riverside. It’s the ideal time to harvest this root medicine.

As I carry on digging with my hori-hori, one by one pulling out of the ground my precious harvest, I become aware of a female presence. I turn around but of course, no-one is there except Florian and our dog Socorro, who is having a fantastic time running backwards and forwards from the river, plunging in and then shaking himself too close to us for dry comfort.

My thoughts go to the women of this place, those who harvested this plant generation after generation as part of their yearly ritual. I sense them quietly coming down to the bosque doing the same gesture as I am. It's as if they are digging for this root medicine with me. Through touching this earth with my bare hands and harvesting these ancient roots, I'm receiving my first initiation into Southwestern medicine. I'm being guided.

Ow! I'm suddenly brought back to reality by the sharp, serrated edge of the hori-hori as it snags into the skin and flesh of one of my fingers. I know I'm cut, but at first I don't feel anything. My hand is safe in the moist, warm, homely soil. Slowly, I bring it up into the light of day and am surprised there's no sign of blood. I watch as the grains of earth fill the cut. The rich, dark soil feels like an antiseptic cleansing and staunching the gash. After a few seconds, bright red blood begins to flow through the plug of earth that has formed in the wound. The blood mingles with the soil on my hand and runs along my finger onto the wooden handle of the hori-hori and then drips onto the leafy ground. As I watch it merge with the bare soil and the leaf mulch, I realize, I'm leaving a part of myself here. Then I remember I forgot to bring an offering and realize, "this IS the offering." I am now interwoven with Yerba Mansa and this special place through my blood.

I go back to digging and pulling on the stubborn roots that don't give themselves up easily, until my basket is full. My blood still reminding me that this medicine is going deep. Finished, I fall back onto the ground, fulfilled and tired. As I sit there, enjoying the closeness of the huge river and the silence, I'm stirred from my thoughts by the sound of wings flapping. I look up and close overhead a large flock of sandhill cranes fly over, their loud, soft purring in unison resonates through me. I stand up to watch them pass, feeling honored to witness the oldest living birds in the world bless our harvest. As they fly off into the distance, we prepare to leave. We kick the soil back into the holes we made and drag the leaves over the bare soil, careful to leave things exactly as they were when we arrived. The only sign of our presence is the now familiar aroma of the Yerba Mansa roots wafting along the riverside.

As we turn to leave, our dog Socorro refuses to follow us. I look round to see him planted to the spot at the bottom of a tree barking at something manically. What's going on? Frustrated, I reluctantly turn back towards my stubborn dog. I look up trying to see what's grabbed his attention, thinking it's probably a squirrel. There's nothing there, just bare, winter-naked branches standing before us. Socorro still refuses to leave and continues to growl at the unclad tree. Finally, I catch him by the collar and pull him away. As I do so, I think to myself, "That's the spirit of the women linked to the Yerba Mansa." Dogs have such strong instincts.

Back at the earthship, whilst dusk settles on the plain below and the last, thin sliver of bright, red, and yellow sunlight outlines the furthest point on the horizon, my old copper alembic, recently arrived from France, is gently humming away on the stove top. Although from what we quickly glean through a rapid Google search, most herbalists make an herbal tea or tincture out of Yerba Mansa roots, we decide to distill our beautiful aromatic harvest. We're into scent and so as the roots have such a strong aroma, it feels like the right way to extract this plant's medicine.

Slowly, as drops of aromatic water and essential oils gently trickle out of the alembic into the receiving vessel, the earthship fills with her pungent, earthy, slightly spicy scent. The steam moves around the space easily, swirling her aromatic signature into every crook and cranny.

We are being impregnated by Yerba Mansa's loamy perfume.

As night falls, Florian goes up to bed. I however cannot settle.

"I'll switch the still off when it's finished," I tell him. I know I won't be able to sleep. Something is stirring within me. This unique, musty fragrance is hitting me in a way I can't describe and nudging me into feelings I'm not sure I want to feel.

"Don't stay up too late." he says.

"I won't," I reply, but I'm already somewhere else far away in my head.

I get my journal and settle down at the table in our kitchen dug into the rock of the mountain. The small wood stove chugs its warmth into the cave-like space making it cozy and intimate. I sit staring out of the massive, slanting windows over the valley full of jet-black nothingness except for the odd twinkle of faraway house lights or tiny moving car lights in the distance. As I sit with the night, a dark weight promptly drops over me like a heavy, leaded cloak.

I felt it coming on like a migraine, except it's not a migraine. It's an internal campaign of self-disgust, which is why I stayed here alone to meet the night rather than going to bed with my love. I didn't want to pollute our bed with my unwelcome shadow.

I can't move when this old acquaintance appears. It's excruciating and burdensome. It sings of 'not enoughness,' 'unworthiness' and most of all a nasty tasting 'self-hatred.' It looms over me like a huge, dark, scary ghost that won't go away. It has an odious texture that puts my teeth on edge. I know from experience when this shadow self opens its massive jaws, grabs me, and pulls me into its hungry, devouring mouth, I have no choice but to surrender. I remember it intimately from years of pre-menstrual syndrome that controlled half of my cycle each month and forced me into what felt like an interminable darkness and total inability to function. Although, I know instinctively tonight it isn't hormone induced.

Why is this happening tonight? I think to myself. It's not as if anything happened to trigger it. We had a great day. My mind jumps all over the place trying desperately to avoid facing this black hole inside me but it's much stronger than I am and I can't get away from it. It feels like I'm having a bad trip. It's as if I've taken magic mushrooms or something. I'm in my right mind but I feel like I'm not in my right mind. Fuck, I wish this would stop!

Alone with the drip, drip, drip of the alembic, it's not just the yerba Mansa being distilled. I feel like I'm being unapologetically churned up, thrown around in a closed container and heated to the point of exhaustion with her. The essence is being separated from the dark heaviness, the lead-like 'nigredo' as they say in alchemy.

Distillation. Transformation. Purification.

I jot these three words down on the middle of a blank page in my journal. As the volatile, aromatic plant molecules, the 'Molecules of Connectedness,' continue to saturate the house, they lead me deeper into the underworld.

I don't want to face this part of my shadow. My body fires up with the tension of needing to move, to escape, but there's nowhere to go. In the past, these are the moments, I'd hurt myself. Physical pain was somehow better than this enormous scary monster of uncontrollable shame and self-criticism that just takes me over from the inside. It's agonizing. I desperately want a way out, to get away from myself. Just as this inner pressure to self-annihilate becomes overwhelming, a quieter but wiser, inner voice appears from out of nowhere to save me. This witnessing part of myself that doesn't get involved in dramas, that

can never be wounded, manages to make herself heard and she reminds me what I'm experiencing is dissociation. I do it unconsciously to avoid facing this part of myself. I try to flee the present by leaving my body and hiding out in random thoughts. The wise voice calmly reminds me there's nowhere to go, I can't escape myself. What I resist will persist.

In the past by the time I was in this type of state, I wouldn't be able to hear this inner voice of reason or if I did, I'd ignore it. I didn't like its advice. It was easier to give 'free rent' to the extremely loud inner tyrant. But today is different, I'm ready. It's time.

I suppose, this is what is called an A-HA moment. For the first time in my life, I'm consciously (and that's where the emphasis is here) witnessing my own survival strategy playing out before me. When in danger, fight, flight, or freeze are the common responses.

I usually flee!

Then, just like a psychedelic trip, another wave hits me.

I suddenly remember I've got cancer. Weird sensations, as if I can feel the cancer cells eating away at me, get louder and louder. I scribble away in my diary trying desperately to move the sensation on, change what's happening, integrate what's coming up. I feel as if the Yerba Mansa has taken me by the hand and is guiding me slowly through the darkest parts of myself so I can see them.

Before I know it, I'm taken over by fear. I strain to stop my body shaking, to control what's happening. I don't want to feel it, it's overwhelming. Then, I remember, "the unconscious never gives you more than you can handle.

The fear doesn't budge. I have no choice. I sit with it. I try to open to it, befriend it. I frantically write down every thought that arises. Thank-God for journaling, I think to myself as I sense a certain clarity starting to arise through the words that are sprawling, illegibly across the pages.

And then suddenly I get it! It's perfectly clear. I'm scared of dying of cancer. I'm scared of never seeing the red and orange sunset again...the indescribable wild beauty of nature...my children's smiles...the silent snow falling on the mountain...the universal love in a stranger's eyes as they meet mine for that one never to be repeated second. I'm scared of never feeling the unconditional love our dog gives me or the trust I've found with another human being and the relief of finally being understood, those unplanned moments of joy and laughter that bubble up from deep within like underwater hot springs. I'm frightened of never experiencing all the little things that fill me with joy and remind me of what a gift it is to be alive.

I don't want to die, I say softly to myself.

The silence in the house envelopes me. As Florian dreams his dreams upstairs, I know to dream mine, I must love myself through these awakened nightmares. I must feel the ache, cry the tears, honor the fears, face the unworthiness, embrace the darkness outside and within, and caress the obscurity as the outdated parts of myself die. I need to feel all this, own it, and even love it. No more running away.

As a still, fresh calm comes over me like the now soft, gentle warmth of the stove, a small inner hearth begins to glow in my belly. The painful, underworld journey is finally over for tonight and something's shifted.

I'm at a turning point.

I realize, I don't have to die just because I have cancer. It's just a timely signpost at a crossroads in my life. I am dying, but not physically. I must die to the old so I can be reborn.

I close my journal and get ready to go to bed. I'm strangely grateful that this weirdest of nights has shown me the darkest, most frightening, shadowy parts of myself, because the parts that sneak up to haunt me when I'm not expecting them have less power over me now. I don't need to give them power anymore by resisting them. Tonight I looked them in the eye. I saw them face on. As I reflect on this, a stream of thoughts and phrases that I've been studying from Carl Jung's depth psychology start to make some sense. "Until you make the unconscious conscious, it will rule your life and you will call it fate" and "There is no coming to consciousness without pain." Instead of just being clever words, they are now starting to make sense. I get the feeling that tonight, I've opened a door that is going to help me on the journey ahead.

I switch off the distillation, grateful for the contents of the receiving vessel, now full of aromatic water and essential oil freshly extracted from the Yerba Mansa roots.

"Are you still down there?" Florian's voice breaks the thick, velvety silence.

"Yes."

"What's the time?"

I look at my phone. It's 2 O'clock in the morning. I've been down here journaling for three hours.

"It's time for me to come to bed," I reply.

As I switch off the lights, I hear Florian say, "I've just had a really psychedelic dream."

We lie together looking at the vast night sky. The upstairs of the earthship, like the downstairs, has a wall of huge windows on its south side. Our bed lies just below them, which makes it ideal for stargazing. We call it 'the control center,' because we feel like we're in a spaceship riding the night sky.

"What a dream!" Florian says, "It was super psychedelic, full of colors and extraordinary visuals. There was an amusement park and I navigated it through a kind of virtual reality. Then there was a maze of ice caves, and I followed a passage and ended up in a crazy, huge, covered mall. It was bonkers."

"Wow!" I reply, still reeling inside from my own experience. Florian thinks I was just journaling downstairs but whilst he was having a psychedelic dream, I was having a very trippy ride too. I don't feel like explaining it to him though. I mean, I wouldn't know where to start even if I wanted to.

We lie back and stare into the star-filled sky and I realize the familiar constellations look very different tonight. The sky is alive in a way I've never seen before. Stars and planets seem to be zooming towards us. Everything is moving and throbbing with energy. The whole sky is brighter than I've ever seen it before. It's alight. The milky way is immense, and every single star is beating with intense luminosity and life. I lose myself within it all.

"It looks as if Venus is coming straight for us," I say aloud, whilst still keeping my eyes on the celestial display.

"I know, the sky is crazy tonight." Florian replies, "Look at the Pleiades! The seven sisters are actually dancing."

"What's going on?" I exclaim.

"I'm not sure. It feels as if we're on something."

"I know. That's what I thought when I was downstairs. Do you think it's the Yerba Mansa?"

"It could be, although I haven't heard of it being in any way psychedelic. We'll investigate it tomorrow."

I did realize one thing,” he continues, “Yerba Mansa makes me think of the Doña.”

“What do you mean?”

“I think Yerba Mansa is related to the myth of La Llorona. They both inhabit the same places along the Rio Grande and Yerba Mansa’s white flowers are symbolic of La Llorona’s white dress.”

“Who’s La Llorona?” I ask, knowing nothing about Southwestern mythology.

“Well that’s the thing,” Florian replies, “I think Yerba Mansa is the shadow of the shadow. She’s the hidden benevolent, powerful side of the dark feminine nature spirit.”

“What do you mean?” I can feel myself getting frustrated, I need to know.

“Well, the story I’ve heard about La Llorona is that she is this wailing, native female ghost who killed her own children by drowning them in the Rio Grande. She is doomed to forever wander along the river wailing for the souls of her dead children. Some versions say that she will take the souls of other children who she finds down by the river, too.”

“Oh God,” I reply, “That’s such a horrible story.”

“I know, but I think it’s been changed. I think she may have been raped by a conquistador or something like that and that’s why she killed her children.”

I feel a tug inside, a knowing that there’s something amiss with it. Even if a conquistador was the father of her children, I don’t think she’d kill them. There’s more to this story than meets the eye. And what a myth that makes a mother such terrible and frightening murderer. Something doesn’t add up.

Although I’m deeply perturbed by this story, I’m too tired to reply or think about it now. I go back to surfing the night sky and quickly fall asleep.

When morning comes, neither of us can stop thinking about last night’s out-of-the ordinary experience. Florian starts Googling studies on Yerba Mansa, meanwhile, I dive into the world of myth. I’m desperate for clues about what the story of La Llorona is really about. We’re on a mission.

“Well, here’s a study that isolates the constituents of Yerba Mansa,” Florian says, reeling off a list of molecules, “ $\alpha$ -pinene,  $\beta$ -phellandrene, 1,8-cineole, piperitone, methyleugenol, (E)-caryophyllene and elemicin.”

Having studied essential oil chemistry during my training as an herbalist, I recognize them all except the last one.

“What’s elemicin?” I ask.

“I’m not sure, except, I know it’s in elemi essential oil.” Florian replies still totally absorbed in his quest.

A few moments later, he breaks the focused silence again, reading excitedly from his laptop. “Elemicin is an allylbenzene essential oil found in large quantities in *Zingiber niveum* and an elemicin chemotype of Cinnamon myrtle essential oil. It is also found in the essential oils of nutmeg, ginger grass, elemi and many other plants. It’s believed to be partially responsible for the hallucinogenic effects of nutmeg.”

“And look at the structure,” he says, thrusting his laptop towards me and pointing at a diagram of the molecule that looks like a child’s drawing of a spider crawling across the screen. “It’s very close to safrole, which is used to make MDMA.”



“So, does that mean last night we did get high from the Yerba Mansa fumes?” I ask.

“There’s a good chance,” he replies, but in his usual grounded, Capricornian manner, he wants to be sure. He takes back his computer and returns to the world of psychedelic and aromatic molecules.

Meanwhile, every website that mentions La Llorona. of which there are many, tells the story in a very similar way to Florian’s recounting last night. But I still sense that there’s something more, something hidden about this myth. The more I delve into it, the more I realize whatever it is I’m looking for is deeply buried. I get the feeling whoever deformed this story had no intention of the original meaning being found.

“Wow, listen to this study,” Florian says looking up from his computer once more, “This is great, Specific bioactivity against uterine and cervical cancer cell lines was demonstrated with steam-distilled oil of Anemopsis root tissue. These results support the traditional, cultural use of Anemopsis extracts to treat uterine cancer.”

“That’s crazy, this really is my medicine.” I reply, thinking about the way I was guided to Yerba Mansa. It’s weird, but I’m not really interested in the scientific studies of how she can help the physical body. I think her healing is much deeper than that. I get the feeling that she and La Llorona are leading me on a journey that I can’t even imagine yet – a journey deep into the feminine.

# *Thuja and Pawpaw ~ A Materia Medica Review for Cancer Care*

Chanchal Cabrera MSc,FNIMH,RH(AHG)

## **Summary:**

These two trees are both native to north America, and both have powerful anti-cancer actions, yet they could not be more different. One is a grand and imposing evergreen of the northern climates, the other a shrubby, scrubby, deciduous under story tree of semi tropical zones. Their traditional uses, their phytochemistries and their pharmacology, are very different and yet they both have powerful action in cancer care as active cytotoxics. This in-depth discussion will consider tradition and modern research, history, safety and clinical applications of these two important tree medicines.

## ***Thuja occidentalis***

Common names: Eastern arborvitae, northern white cedar (used interchangeably with *T. plicata* or western red cedar)

Plant family: Cupressaceae

Parts used: Young leaves and growing tips harvested in spring

This is a large and stately conifer from the northeastern Americas, now naturalized into Europe and widely planted around the world as an ornamental. Although nomenclature was unreliable in the 1500s and other trees could be contenders, it is believed to be the “tree of life” that was given by the indigenous people to save the lives of some sailors of Jacques Cartier’s ill-fated voyage in the winter of 1536 when they were dying of scurvy. The decocted boughs of *Thuja occidentalis* contain appreciable amounts of vitamin C, as well as arginine, proline, and other amino acids that act as synergists in connective tissue to reduce the symptoms of vitamin C deficiency.

Ancient peoples of the Mediterranean cultures burned the aromatic wood of related species along with sacrifices; indeed, the name “thuja” comes from the Latin form of the Greek word *thero* (to sacrifice). In the Pacific Northwest, the indigenous species *T. plicata* is used interchangeably with *T. occidentalis* in medicine, with comparable research in both species.

The Indigenous peoples of the Pacific Northwest called *Thuja plicata* the grandmother of the forest, as it was often the oldest and the largest tree in the forest and provided for so many of their needs. The resin-infused wood is rot resistant and was used for building canoes, totem poles, and the ridgepole of the longhouse. The soaked and beaten bark fibers were used to make clothing and matting. Scored and steamed, hand-adzed planks were used to make the unique bentwood boxes of the region. The idea of the thuja tree as a generous and benevolent grandmother, helping the people who love her, is borne out today in a more literal way by research by Dr. Suzanne Simard at the University of British Columbia. She established that these venerable old trees, with a huge photosynthetic capacity, are making a lot more sugars than they require for their own energy needs and are in fact “feeding” sugars via mushroom mycelia into the root systems of nearby seedlings that are still struggling to grow up above the competition on the forest floor.

## **Therapeutic Actions**

- Astringent/cicatrant
- Stimulating expectorant
- Diuretic
- Antifungal
- Antiviral
- Moth and insect repellent
- Antineoplastic/antimitotic

## **Traditional Uses**

The green spring tips have long been known for their antifungal and antiviral action. They can be boiled up to make a tea for washing dirty wounds, cleansing the sickroom, or used as a gargle for throat infections, and the steam can be inhaled for sinus and lung infections.

Thuja was traditionally used as a blood cleanser or depurative, especially for old, festering sores and for benign skin growths. It was considered a stimulating expectorant and decongestant remedy, used to treat acute bronchitis and other respiratory infections. It was also used as a diuretic and astringent to treat acute cystitis, bed-wetting in children, and incontinence.

Thuja bough teas or extracts were recommended in gynecology for amenorrhea, leukorrhea, endometrial overgrowth, ovarian cysts, polyps, and uterine prolapse and were used as a douche for cervical dysplasia, yeast or bacterial overgrowth, herpes, and genital warts.

Extracts were applied topically over stiff or painful joints or muscles as a counterirritant, improving local blood supply and warming the joint. Powdered cedar tips were used as a snuff or lavage for postnasal drip and for nasal polyps.

Thuja also has a long and established history in homeopathic medicine, in which it is a key remedy for skin and genitourinary conditions with growths (such as warts, skin tags, fibroids, or uterine polyps), and especially as a depurative or blood cleanser where benign or malignant growths were considered to be a sign of blood dyscrasia.

It is also recommended in homeopathy for people with low self-esteem and feelings of unattractiveness and worthlessness, for sharp left-sided headaches in the temple or forehead, and for a sensation that something is alive and moving in the abdomen, among other things.

The main active ingredients are found in the oleoresin, which occurs at up to 4% in the leaf tips. It can be steam distilled and has particularly high levels of a monoterpene hydrocarbon called pinene, as well as monoterpene ketones such as carvone, (-)-thujone, isothujone, and alpha- and beta-thujone. These provide an antimicrobial action and promote granulation and tissue repair. They are antiparasitic, antifungal, and antiviral.

There is some concern about neurotoxicity from prolonged dosing, so this means thuja should be taken in pulsed doses of 1 month on and 1 month off, alternating, and should be used only as an effector herb for specific conditions, not as a long-term tonic herb.

The essential oil also yields at least seven diterpenoids. There are thousands of different diterpene molecules found in plants, including, for example, the taxanes from Pacific yew and the ginkgolides from *Ginkgo biloba*. The diterpenes from thuja are poorly researched to date but are generally considered to offer anticancer action and to control rates of cell proliferation.

Large polysaccharides (sugars) may be extracted by boiling the leaf tips and may be partly responsible for enhanced immune surveillance.

Tannins provide the astringent and cicatrant properties that aid in wound healing and in treating prolapse, and flavonoids provide an antioxidant and anticancer effect.

### **Modern Research**

A wealth of research available today validates the therapeutic claims of the past and explains the mechanisms of action of this herb. For the most part, the traditional uses and the Eclectic medical recommendations are entirely supportable and still relevant today. Volatile oils high in terpenes are directly antibacterial, antiviral, and antifungal; tannins are astringent and cicatrizing; diterpenes and polysaccharides are immunomodulating and anti-inflammatory.

### **Actions and Uses Supported by Research**

Anti-inflammatory effects include downregulation of IL-6, TNF- $\alpha$  expression, and COX-2  
Antibacterial action is against both gram-negative and gram-positive bacteria  
Antifungal and antiviral, including against candida, HIV, and herpes virus  
Hepatoprotective, gastroprotective, and antiulcerogenic (reduces gastric acid production, promotes regeneration of the gastric epithelium)  
Antidiabetic, hypoglycemic • Improve lipid profile (increased HDL fraction), antiatheromatous  
Antipyretic  
Redox regulating (radioprotective, antineoplastic)

The anticancer activity is due in part to the diterpenes that mediate stress responses and inflammation, but also due to a synergy of constituents that cause antioxidant or redox-regulating effects. In vitro studies show that alpha- and beta-thujone fractions are proapoptotic through the induction of ROS and p53 activation, leading to caspase-driven apoptosis.

Flavonols from thuja trigger caspase-3-mediated apoptosis as well.

Overall, the alpha and beta-thujone fractions decrease the cell viability and exhibit a potent antiproliferative, proapoptotic, and antiangiogenic effects in vitro. In vivo assays showed that alpha- and beta-thujone inhibit neoplasia and inhibit angiogenic markers, including VEGF.

### **Dosing**

Tincture: Up to 3 mL three times daily of 1:5 tincture made with 60% EtOH. Tincture should be taken 1 month on, 1 month off. A full dose of 9 mL at 1: 5 tincture daily is equivalent to 1.8 g dried herb daily.

The European Agency for the Evaluation of Medicinal Products (EMA) gives the content of thujone in dried twigs as 7.6 mg/g, consisting of 85% alpha-thujone and 15% beta-thujone. The maximum daily dose is suggested as 1.25 mg thujone/kg body weight, equivalent to 68 mg thujone/ 55 kg person per day, or 9 g per day of dried herb.

Topical treatment: It can be used topically as well, without limitation on unbroken skin, or in alternating-month doses in cases of open lesions.

The green twigs can be macerated (soaked) into a carrier oil that is then used as the base of lotion, liniment, or salve. Alternatively, the distilled essential oil can be incorporated into a lotion, liniment, or salve.

This plant extract may be used over any smaller skin cancers or surface lesions from systemic cancer, in a douche for dysplastic cervical cells, and for any fungal or viral infections of the surface of the body.

### **Toxicity**

Thujone is a constituent of many commonly used herbs, such as wormwood, yarrow, thuja, and sage. This compound is mildly neurotoxic and its presence in liqueurs such as absinthe may have contributed to widespread toxicity and abuse syndromes in the early twentieth century.

The first sign of toxicity from thujone is a headache. Thujone inhibits the gamma-aminobutyric acid A (GABA<sub>A</sub>) receptors of the brain, causing excitation and convulsions in a dose-dependent manner.

Care should be exercised when giving thujone containing herbs in high doses to epileptics. These herbs include thuja (*Thuja* spp.), sage (*Salvia officinalis*), tansy (*Tanacetum vulgare*), wormwood (*Artemisia absinthium*), and some types of yarrow (*Achillea millefolium*). High and prolonged doses of the above herbs are hence best avoided, unless they are low-thujone varieties.

Metabolism of thujones is mainly through CYP2A6 enzymes in the liver, followed by CYP3A4 and CYP2B6. This could be affected by drugs or other herbs that induce or inhibit them, so care should be taken when prescribing thuja for internal use that potential drug interactions have been considered.

### **Clinical Pearls**

There is variation in the composition of essential oils of *Thuja occidentalis* from different trees and different locations. It is recommended to harvest from several trees in a location and from several locations to avoid a single tree or location that may have particularly high or low concentrations.

### ***Asimina triloba***

Common name: Pawpaw

Plant family: Annonaceae

Parts used: Seed, fruit, twigs

Pawpaw is the largest fruit native to North America, with a creamy, custardy texture and a flavor reminiscent of banana, mango, and pineapple. A fiber from the inner bark is used for making strong rope and string, and a yellow dye is made from the ripe flesh of the fruit.

Pawpaw is the only temperate species among the 120 genera and more than 2,100 species in the family Annonaceae; the rest are tropical or subtropical.

Several members of this family contain neurotoxic long-chain fatty acid derivatives known as acetogenins, including annonacin from the tropical soursop or graviola fruit (*Annona muricata*), which also shows anticancer activity.

Pawpaw contains more than 50 acetogenins, found in all plant parts, but concentrated mostly in the seed. These are derivatives of long-chain (C-32 or C-34) fatty acids and are part of a large class of naturally occurring polyketides exhibiting potent anticancer activities. Polyketides are secondary metabolites from bacteria, fungi, plants, and animals. Polyketides have diverse biological activities and pharmacological properties and are the building blocks for a broad range of drugs, they are antiproliferative and inhibits multidrug resistance.

Acetogenins from pawpaw polyketides are powerful inhibitors of the enzyme NADH ubiquinone oxidoreductase involved in cellular respiration and thus cause inhibition of ATP production, as well as inhibition of multidrug resistance.

Acetogenins are especially effective in cases where chemoresistance is due to ATP-dependent efflux pumps. In commercial use, polyketide-based drugs are used as antibiotics, antifungals, cytostatics, anticholesterolemics, antiparasitics, animal growth promoters, and natural insecticides.

Some well-known examples include erythromycin A (antibiotic), rapamycin (immune suppressant and mTOR inhibitor), lovastatin (anticholesterol), and resveratrol (redox regulating and chemoprotective).

The antiproliferative activity of pawpaw is higher in unripe seeds than in ripe ones and depends on acetogenin content.

The leaves also contain toxic annonaceous acetogenins, making them unpalatable to most insects. The one notable exception is the zebra swallowtail butterfly, whose larvae feed on the leaves. This confers protection from predation throughout the butterfly's life, as trace amounts of acetogenins remain present, making the insects unpalatable to birds and other predators.

The bark contains other acetogenins, including asimin, asiminacin, and asiminecin, but the seed is the most potent medicine. Interestingly, at least in laboratory research, more than 30 known acetogenins seem to be selectively cytotoxic to one or only a few cancer cell lines. For example, squamotacin is selective for prostate cells only, while the 9-keto acetogenins are selective for pancreatic cells. In clinical practice, this is a strong argument for using whole herb extract to provide the full range of active compounds.

### **Clinical Applications of *Asimina triloba***

Antitumor, pesticidal, antimalarial, antiparasitic, antiviral, and antimicrobial Shampoo for treating infestations of head lice, fleas, and ticks, Ointment for treatment of oral herpes (HSV-1) and other viral skin infections Soak or lotion for scabies or chiggers.

**Adverse Effects** The pawpaw fruit is edible, but some people get stomach upset after eating it. Intravenous infusions of annonacin in rats showed neurotoxic effects at between 3.8 and 7.6 mg/kg per day for 28 days, but that is not a delivery method that herbalists would use, so it is difficult to extrapolate to oral consumption of seed extracts.

Neurotoxicity and symptoms of atypical Parkinsonism (postural instability, frontal lobe dysfunction, gait disturbance, accumulation of tau proteins in the midbrain, and poor response to treatment with L-dopa) has been associated with eating the fruit of *Annona muricata* (soursop), which contains annonaceous acetogenins, but this has not been reported in the fruit or seed of *Asimina triloba*. Possibly, this is due to more limited consumption of pawpaw, which is localized and seasonal, as the toxicity appears to be a cumulative, chronic problem caused by daily or almost daily consumption of the tropical species over several years.

Researchers suggest that the neurotoxicity of soursop is caused by a synergy between the neurotoxic benzyltetrahydroisoquinoline alkaloids and the specific types of acetogenins that are peculiar to *Annona muricata*. They also suggest possible unknown genetic factors that predispose some people to atypical Parkinsonism.

None of these findings have been reported from clinical use of pawpaw seed extract, but the possibility should not be discounted. Assessment may be challenging if pawpaw is being used concurrently with chemotherapies that may also contribute to neurological and central nervous system dysfunctions.

**Dosing** The dried fruit pulp yields around 300 mcg of acetogenins per gram of dry weight. A typical dose for treating cancer would be 8–10 mg acetogenins twice daily, equivalent to approximately 30 g (1 oz.) of dried fruit twice daily. This is generally recognized as safe, with no abnormalities in liver, kidney, electrolyte, blood sugar, or bone marrow functions. A powdered seed product would be dosed much lower, as acetogenins are present in higher amounts in seed than fruit, and such products may be used in research but are not generally recommended for use in clinical practice.

**Clinical Pearls** An analysis of acetogenin content of young pawpaw tree twigs showed up to 1,000 times variability, which suggests that when harvesting it is useful to collect materials from as many individual plants as possible to avoid a predominance of plants that are low or high producers.

A human trial in the early 2000s gave a standardized extract providing 17 mg acetogenins daily to patients with breast, lung, prostate, lymphatic, and colorectal cancers and determined that it was effective whether used alone or as an adjuvant with other treatments including IGF-1 and insulin potentiation. Tumor markers decreased, tumor size diminished, energy improved, weight stabilized, metastases were inhibited, culminating in increased longevity. No abnormalities were found in liver, kidney, electrolyte, blood sugar, or bone marrow functions.

Neither the fruit nor the seed of this plant are commercially available in tincture form; presumably a moderately high amount of alcohol would be required to extract the acetogenins. Due to the need for carefully calibrated doses with this herb, it is recommended to use a standardized extract where the acetogenin content has been reliably determined by lab analysis.

## SAMPLE FORMULAS

*All Tinctures 1 : 2*

### ANTI-VIRAL FORMULA FOR WARTS

Thuja tincture	15 mL
Taheebo tincture	10 mL
Chelidonium tincture	15 mL
Fresh dandelion stem juice	5 mL
Fresh garlic juice	5 mL
Essential oil of lavender	20 drops

Apply directly to warts 3 times daily

### CYTOTOXIC ANTI-CANCER BLEND

<i>Tabebuia avellanae</i> / ( <i>Handroanthus impetiginosus</i> (taheebo)	20 mL
<i>Chelidonium majus</i> (celandine)	20 mL
<i>Viscum</i> sp. (mistletoe)	10 mL
<i>Thuja occidentalis</i> (cedar)	10 mL
<i>Phytolacca</i> sp. (pokeroot)	10 mL
<i>Taxus brevifolia</i> (Pacific yew)	10 mL
<i>Asimina triloba</i> (pawpaw)	10 mL
<i>Arctium lappa</i> (burdock seed)	10 mL

1 mL 2 – 3 times daily in water

### ANTI-VIRAL, ANTI – CANDIDA PESSARIES

Thuja tincture	5 mL
Taheebo tincture	5 mL
Fresh garlic juice	5 mL
Calendula infused oil	10 mL
Sea buckthorn fruit & seed oil	5 mL
Cocoa butter	50 g
Coconut butter	20 g
Essential oil of lavender	40 drops

Use disposable molds. Keep in the fridge.



## **DOUCHE FORMULA**

Calendula

Plantain

Lavender

Yarrow leaf and flower

All equal parts

Make a strong tea with 3 Tbsp./ per cup of boiling water

Add 5 mL tincture of thuja.

Steep 15 minutes or till cool enough to use.

Insert vaginally with a rectal syringe (not a douche bag), lying down if possible, with a rolled towel under your hips to raise the pelvis and retain it 10 minutes or more.

## **DETOX AND LIVER FORMULA – DEPURATIVE**

*Arctium lappa* (burdock ) 15 mL

*Mahonia aquifolium* (Oregon grape) 15 mL

*Echinacea* sp (Echinacea) 15 mL

*Sanguinaria canadensis* (bloodroot) 10 mL

*Stillingia sylvatica* (Queens delight) 10 mL

*Chelidonium majus* (celandine) 10 mL

*Fucus* sp. (kelp) 10 mL

*Larrea* sp. (chapparal) 5 mL

*Thuja occidentalis* (cedar) 5 mL

*Phytolacca* sp. (pokeroot) 5 mL

100 mL

Dosed at 25 drops in ¼ cup warm water sipped before each meal

# Case Reviews ~ Polycystic Kidney Disease

Chanchal Cabrera MSc, FNIMH, RH(AHG)

Kidney cysts from genetic defects are a common cause of end-stage renal disease, in children and adults. Autosomal dominant polycystic kidney disease (ADPKD) and autosomal recessive polycystic kidney disease (ARPKD) are the two main forms of cystic kidney diseases.

Three key mechanistic processes that feature in CKD are inflammation, fibrosis, and oxidative stress. Common contributing factors in CKD are aging, male gender, diabetes, hypertension and lifestyle – obesity, inflammation, drugs etc

ADPKD is most commonly caused by an alteration in one of two genes called *PKD1* and *PKD2*.

Polycystin-1 and polycystin-2, proteins encoded by *PKD1* and *PKD2*, respectively may affect cellular metabolism through direct effects on mitochondrial function which alter the redox state and cellular levels of acetyl-CoA, resulting in altered histone acetylation, gene expression, cytoskeletal architecture and response to cellular stress, and in an immunological response that further promotes cyst growth and fibrosis.

Multiple metabolic pathways (fatty acid oxidation (FAO), glycolysis and glutamine metabolism) are dysregulated in PKD models; evidence suggests that polycystin-1 (PC1) might regulate mTOR activity.

Raises the possibility of using mTOR antagonists to control cyst formation – no trials yet

Managing cardiovascular risk associated with chronic kidney disease, minimizing the risk of infection, and preventing acute kidney injury are crucial interventions for these patients, given the high burden of complications, associated morbidity and mortality.

## TESTING

(estimated) Glomerular Filtration Rate

Creatinine clearance

Urinary kappa light chains

Microalbuminuria

Serum beta2 microglobulin

Preservation of kidney function can improve outcomes and can be achieved through dietary and lifestyle adjustments, as well as pharmacological interventions.

A plant-dominant, low-protein, and low-salt diet may help to mitigate glomerular dysregulation, and preserve renal function for longer, possibly while also leading to favourable alterations in acid-base homeostasis and in the gut microbiome.

Drugs that alter blood flow and haemodynamics in the kidney (eg, renin–angiotensin–aldosterone pathway modulators) can preserve kidney function by reducing intraglomerular pressure independently of blood pressure and glucose control, whereas other drugs (eg, non-steroidal mineralocorticoid receptor antagonists) might protect the kidney through anti-inflammatory or antifibrotic mechanisms

## Clinical Herbal Strategies

*Heal and repair lining cells of nephrons –*

Connective tissue repair : horsetail, gotu kola, plantain, corn silk, golden rod

*Promote kidney function, Increase glomerular filtration rate –* Diuretics : dandelion leaf, nettle leaf, cleavers, boldo, corn silk, marshmallow  
Tonics & Restoratives : stinging nettle seed, pellitory, parsley piert

***Urtica dioica*** stinging nettle

Leaf : diuretic, depurative, mineral rich nutritive

Seed : kidney trophrestorative

Root : SHBG stimulant, prostate normalizer

In a study of aflatoxins in chickens, stinging nettle seed extract showed a protective hepatorenal effect, probably acting by promoting the antioxidative defence systems.

***Zea mais*** corn silk

Demulcent osmotic diuretic

Has allantoin : cell proliferent - tissue repair and healing

Corn silk is a traditional herbal medicine used in many parts of the world for the treatment of edema as well as for cystitis, gout, kidney stones, nephritis, prostatitis.

Corn silk extract contains maysin, a type of luteolin glycoside specific to corn, a biologically active substance with high antioxidant and anticancer activities.

It shows anti-obesity, anti-cancer, anti-allergy, antioxidant, anti-asthma, and anti-dementia effects

Corn silk ethanolic extract has a high total phenolic content and total flavonoid content. Seventeen kinds of phenolic have been detected especially Ferulic acid.

Effective phytochemical and antioxidant activity, strong antimicrobial properties.

Enhanced superoxide dismutase (SOD), and Total Antioxidant Capacity (TAC), Lipid peroxidation liver functions, kidney functions, and histopathology of the kidneys. Corn silk has renoprotective and hepatoprotective effects. Oral administration of Corn Silk Methanolic Extract protected rats against acetaminophen renal toxicity through its antioxidant, anti-apoptotic, and anti-inflammatory protective mechanisms.

To determine subacute toxicity, corn silk extract was orally administered to mice over a 4-week period, and then body weight, water and food consumption, and organ weight were determined. In addition, urine and serum analyses were performed. In the acute toxicity study, no death or abnormal symptoms was observed in all treatment groups during the study period. Body weights did not show any significant change compared to those of the control group.

Lethal dose of corn silk extract was estimated to be more than 2,000 mg/kg. In the 4-week subacute toxicity study, there was no corn silk extract related toxic effect on body weight, water intake, food consumption, urine parameters, clinical chemistry, or organ weight. Histopathological examination showed no abnormality related to the administration of corn silk extract at 500 mg/kg.

#### **Possibility of using natural agents to influence epigenetics**

response to cellular stress

redox regulation

histone acetylation

MTOR inhibition

#### **Natural Agents That May Modulate Histone Protein Deacetylation**

Butyrate (10 g/day)

Baicalin from Baikal skullcap

Biotin

Curcumin from turmeric

Diallyl disulfide from garlic

Garcinol from Garcinia cambogia

Grapeseed cyanidins

Lipoic acid

Apigenin from parsley

Rosemary

Silymarin from milk thistle

Sulforaphane and other cruciferous isothiocyanates

#### **Natural Agents That May Inhibit mTOR**

3,3'-diindolylmethane (DIM)

Curcumin from turmeric  
Diosgenin from wild yam  
EGCG from green tea  
Genistein from soy  
Pomegranate  
Resveratrol

#### **Natural Agents That May Aid Redox Regulation**

Vitamins A, B6, B12, C, E, beta-carotenes, folic acid  
R+ alpha-lipoic acid  
Coenzyme Q10  
Curcumin from turmeric  
MSM (methylsulfonylmethane)  
NAC (N-acetylcysteine)  
Omega-3 fats from fish oil (DHA,EPA)  
Polyphenol antioxidants (flavonoids)  
Resveratrol  
Selenium  
Zinc

#### **Plants with demonstrated benefits in chronic kidney disease**

Rheum officinale; Radix pseudostellariae; Coptis chinensis; Carthamus tinctorius; Salvia miltiorrhiza with Bidentate achyranthes. Polyherbal; Shen shuaining capsule  
Reduced SCr, BUN; increased Hb; improved signs and symptoms in patients with CKD.  
Rheum species Capsule (350 mg) Reduced blood glucose, blood urea, SCr, urine protein; increased Hb, urine volume and GFR.  
Rheum palmatum; Baoshen pill. Improved serum albumin, lipoprotein and apolipoproteins.  
Rheum officinale; Powder plus ACEi Decreased SCr, BUN and CKD.

#### **Salvia miltiorrhiza**

- Root is rich in caffeic acid, salvianolic acid A and B, rosmarinic acid
- Reduces accumulation of methylguanidine and guanidinosuccinic acid levels (oxidation products) which accumulate in uremia.
- Magnesium lithospermate B decreases blood urea nitrogen, serum creatinine,

methylguanidine, guanidinosuccinic acid and inorganic phosphate in uremic rats

Magnesium lithospermate B activates the kallikrein-kinin system in the rat kidney to promote the production and secretion of prostaglandin E2, inducing dilation of the renal vascular system, increase in renal blood flow and glomerular filtration rate. PGE2 also inhibits proliferation of mesangial cells (in glomeruli) and acts antagonistically against vasoconstriction brought about from Thromboxane A2.

Magnesium lithospermate B may help prevent the development of hypertension through excretion of urinary sodium and by improving renal hemodynamics.

Three components of Salvia, salvianolic acid A, B and rosmarinic acid all have antioxidant activity

The cAMP-targeting drug tolvaptan, a selective vasopressin 2 receptor antagonist/ inhibitor, normally prescribed to treat hyponatremia associated with congestive heart failure, or liver cirrhosis, is currently the only drug approved for the treatment of patients with rapidly progressive Autosomal Dominant Polycystic Kidney Disease (ADPKD) in Europe, Japan, Canada, and the United States (NIDDKD, 2012).

Other drugs used 'off label' include angiotensin-converting enzyme inhibitors, angiotensin II receptor blockers and calcium channel blockers, generally only delay the progression of CKD.

#### **Angiotensin-Converting Enzyme Inhibiting Herbs**

- Allium sativum (garlic) bulb
- Crataegus spp (hawthorn) herb
- Ganoderma lucidum (reishi) fruiting body
- Lespedeza capitata (round-headed lespedeza) herb
- Salvia miltiorrhiza (Chinese sage, dan shen) root

### **Nephroprotective Herbs**

- *Parietaria judaica* (pellitory-of-the-wall) herb
- *Rheum palmatum* (rhubarb, da huang) root
- *Silybum marianum* (milk thistle) seed and silymarin extract
- *Urtica dioica* (stinging nettle) seed

### **Immunomodulating/Adaptogenic Herbs with a tropism to the kidney**

- *Astragalus membranaceus* (astragalus, huang qi) root
- *Cordyceps* spp (cordyceps, dong chong xiao cao) mycelium
- *Codonopsis* spp (codonopsis, dang shen) root
- *Glycyrrhiza glabra* (licorice) and *G. uralensis* (gan cao) root

In autosomal dominant polycystic kidney disease (ADPKD), arginine vasopressin (AVP) accelerates cyst growth by stimulating cAMP-dependent ERK activity and epithelial cell proliferation and by promoting Cl<sup>-</sup> dependent fluid secretion. Dysregulation of cyclic AMP signalling is a driver of cystogenesis.

### **Clinical pearl**

Forskolin is a lipid-soluble diterpene from the roots of *Coleus forskohlii* that activates the intra-cellular enzyme adenylate cyclase which increases intracellular levels of cyclic AMP.

**Coleus may be theoretically contra indicated in ADPKD**

## Formulas and blends with kidney restorative qualities

Panax ginseng, Astragalus membranaceus, Cassia cinnamomi, Glycyrrhiza uralensis with Rheum palmatum. Polyherbal; Dahuang decoction	Reduced BUN, Cr and improved quality of CKD patients.
Astragalus membranaceus Roots; Tablet (15 g)	Decrease Pr/Cr; increased serum albumin and complete remission of proteinuria.
Tripterygium wilfordii with Irbesartan Triptolide (1-2 mg); with Irbesartan (150-300 mg)	Significantly reduced excretion of proteins; decreased connective tissue growth factor and TGF- $\beta$ 1.
Grape (Vitis viniferae) Seeds powder (350 mg)	Increase GFR; decreased proteinuria, depressed triglyceride and prevent anemia.
Cordyceps sinensis Fruiting body; Capsule (2 g)	Ameliorate glomerulosclerosis, renal interstitial fibrosis; decrease triglycerides, lipoproteins, TCH, possess renoprotective and curative effect on CKD.
Bupleurum root; Pinellia tuber; Alisma rhizome; Scutellaria root; Ginseng; Poria sclerotium; Polypoms sclerotium; Astractylodes lancea rhizome; Jujube; Glycyrrhiza; Cinnamon bark with Ginger.; polyherbal	Significantly reduced urinary protein excretion, hematuria and normalized proteinuria.
Curcuma longa with Boswellia serrata; Extract (824 and 516 mg)	Decreased PGE2 and ameliorated inflammation in patients with CKD.
Coptis species - Berbarine (0.1 g).	Significantly reduced inflammation, Oxidative stress , renal damage biochemical markers (urine albumin/creatinine ratio, urinary osteopontin KIM-1); improved renal hemodynamics
Beta vulgaris Roots (300 mg); Concentrated juice	Reduced peripheral systolic, diastolic, mean arterial pressure and also reduced renal resistive index significantly.
Lespedeza capitata Tincture	Potential benefit for patients with acute and chronic renal failure.
Glycyrrhetic acid food supplement (500 mg)	Decreased serum potassium concentration and frequency of severe hyperkalaemia
Silybum marianum - Silibinin (350 mg)	Restored imbalance of thiols in patients with end stage diabetic nephropathy.

## Case review

Woman, 65 years old

First herbal appointment fall of 2017

Bilateral polycystic kidney disease. Genetic type unknown.

First identified by ultrasound 28 years ago, no treatment initiated and slow but steady progression since then.

Recent ultrasound confirmed multiple cysts in both kidneys as well as cysts now seen in liver.

### Current symptoms

Abdominal distention

Frequent urination - 3 – 4 x at night

Hypertension resistant to treatment. BP up to 200 / 140 and causing headaches.

Reduced somewhat now on medication but drug dose is restricted due to poor kidney health.

### Current medications

Olmesartan (angiotensin II receptor blockers)

Hydrochlorothiazide (diuretic)

both drugs prescribed recently for hypertension

### blood work 2018

Glucose and hemoglobin A1c normal indicating good blood sugar control so kidneys are not leaching sugars and there is no diabetes

Cholesterol panel and liver enzymes all normal indicating the liver is compensating for the cysts and coping well

Electrolytes and minerals normal

Parathyroid normal so not at risk of kidney stones from diminished filtration

Urea, uric acid and creatinine are elevated and glomerular filtration rate is low, all indicative of progressed kidney disease and failure of the kidneys to adequately filter the blood and clear metabolic wastes.

### Other current health concerns

Left shoulder pain recently and some low back pain from occupational use

Recent foot and ankle pain – presumed to be a form of gout from uric acid load

Anxious, easily agitated or upset, sensitive to time pressure. Recent irritability and low tolerance of others

Severe varicose veins, especially on left lower leg.

Heavy, dragging sensation in legs, aching and tired legs. Daily symptoms for many years but worsening recently.

Notable lower leg and foot cramps for which she uses magnesium supplements that do help.

Strong appetite, eats every 2 hours or becomes anxious. Recent loss of interest in food as told to follow a bland, low salt diet for BP.

Gas, bloating and digestive discomfort from eating raw or cold foods. Preference for cooked, salty and starchy foods.

Mild hemorrhoids and night time rectal itching.

Headaches, sore throat and rhinitis [running nose] from exposure to drafts

Frequent head colds, 4 – 6 times a year

Daily phlegm and clearing throat a lot in the mornings, sticky white mucus, no sinus congestion.

### Goals and objectives

#### *Initial priorities*

Manage kidney disease and preserve remaining kidney function, delay decline

Lower blood pressure

#### *Second phase of treatment*

Address varicose veins and leg cramps

Reduce anxiety and irritability

Protect and support liver

Improve mood and mental outlook, reduce anxiety

### DAYTIME TINCTURE FORMULA

Parietaria diffusa (pellitory of the wall) 30

Withania somnifera (ashwagandha) 10

Rhodiola rosea (Arctic rose) 10

Avena sativa seed (milky oats) 10

Galium aparine [cleavers] 10

Schizandra chinensis [five flavor fruit] 10

Apium graveolens (celery seed) 10

Silybum marianum [milk thistle] 10

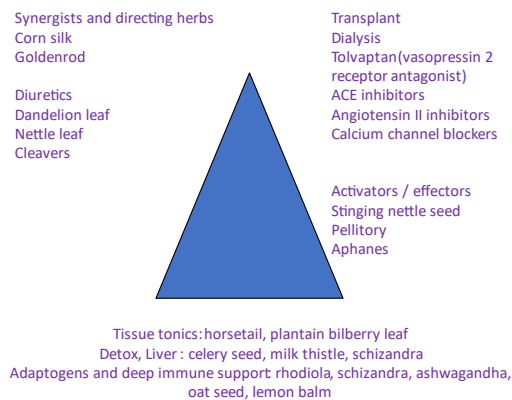
100 mL per week

Dosed at 7.5 mL [1 ½ tsp] in hot water twice daily - before breakfast and lunch.

## TEA FORMULA

Cleavers	100 g
Corn silk	100 g
Bilberry leaf	100 g
Dandelion leaf	75 g
Lemon balm	25 g

Put 4 heaping tablespoons in a pot with 3 ½ cups of boiling water. Steep overnight. Strain off in the morning and drink 3 cups through the day. Can be warmed again, but do not boil. Flavor to taste with honey, lemon, cinnamon, and other teas such as Green tea, Red zinger, chai spice or others as desired.



NAC N-Acetyl Cysteine.....250 mg  
Vitamin E (67 mg ATE) (from d-alpha tocopheryl acetate).....100 IU  
Vitamin C (ascorbic acid).....54 mg  
Selenium (from selenium glycinate).....50 mcg  
Hawthorn and CQ10  
Coenzyme Q<sub>10</sub> (ubiquinone).....100 mg  
L-Carnitine.....150 mg  
Hawthorn Extract (12:1 (fruit).....75 mg (5% procyanidins)  
Taurine.....50 mg  
Magnesium (from magnesium bisglycinate).....20 mg  
Calcium / Magnesium : 500mg of calcium (citrate) and 200mg of magnesium (citrate)  
1000 IU of vitamin D3  
High potency B complex giving 100 mg each of basic Bs

Fish oil giving approx. 600 mg EPA and 300 mg DHA  
Multi vitamin / mineral  
Cordyceps mushroom 3 caps twice daily

Patient mostly out of the practice until 2020.  
Continued to take most of the recommended program despite no office visits  
Generally slow decline, no crises  
Returned wanting to strengthen the program

4 years later :

No more shoulder, low back, foot or ankle pain since retiring.  
Heaviness of legs from varicose veins and some edema is contributing to increased falling.  
Considering surgery for veins.  
Leg cramps still present but reduced to 3 – 4 times weekly (from 8 or 10 times).  
Still some abdominal bloating after certain foods but enjoying a wider and healthier diet now than in the past.  
Sinus congestion reduced but still present. Not treated.  
Hemorrhoids still present. Not treated.  
Medical monitoring is just through bloodwork every 6 months or so. No follow up on liver cysts seen on last scan, told they are a normal part of the cystic kidney condition.

## Review of 2020 blood work

Creatinine was around 140 – 150 for a couple of years but jumped to 219 now  
Estimated GFR has dropped from 30 in 2017 to 20 in 2020. Renal specialist suggests dialysis starting at 15.  
Urea is slightly elevated indicating slow progressive loss of kidney function  
Albumin is normal, no other liver function tests were done.  
Red blood cells and hemoglobin were both low at beginning of herbal treatment but not retested recently.  
Urinary microalbumin was high in 2017 but not retested recently

Amended treatment plan :



***Aphanes arvensis*** rosaceae

Parsley piert

Grows native to Europe, - Sweden to Spain, east to Turkey, the Caucasus and Iran. Grows in arable and dry stony ground and old walls on acid and basic soils.

It was a traditional remedy for dispersing gravel and stones in the kidneys and deposits in joints, and eaten as a salad green as it is a useful source of vitamin C and minerals.

It gets the name parsley piert from the French, *perce-pierre* which means piercing stones, and this is a name for it in English too, Parsley Breakstone or Parsley Piercestone.

The whole herb is astringent, demulcent, diuretic and refrigerant. Leaves are used mainly as an infusion in the treatment of kidney and bladder complaints (including cystitis and recurrent urinary infections).

It has a potent diuretic action as well as a soothing demulcent on the urinary tract and is of benefit in all cases of painful urination. It may be used where there is water retention, especially where this is due to kidney or liver problems.

*A. arvensis* possess strong antioxidant activity and protective effects with little to no cytotoxic effect.

***Crataeva nurvala*** – three leaved caper

Capparidaceae family

The genus *Crataeva* was named in honor of the Greek botanist “*Crataevas*” and includes about 70 species dispersed mainly in the warmer parts of the world. Widely distributed in India and tropical and subtropical parts of the world.

Over 3000 years of use in Ayurvedic medicine for symptoms of kidney failure.

Wide range of benefits according to folkloric use for a blood purifier, for breathing problems, fever, metabolic disorders, wound healing, memory loss, and weak immune system.

Used as an anti-periodic, bitter tonic, diuretic, laxative, and oxytocic drug.

Leaves are stomachic, a very good counter-irritant, rubefacient (external use), febrifuge, and tonic (internal use) and are used in rheumatism. Leaves along with root paste have been used in abscess, cervical adenitis, edematous wounds. Leaf pulp shows significant benefit in spleen enlargement, when applied on stomach. An appetizer and cholagogue useful in anorexia, helminth infections, hepatic ailments, flatulent dyspepsia, and tumors

Stem bark has been widely incorporated in various formulations recommended for kidney stone, prostatic enlargement, and bladder and urinary manifestations. The stem bark has anti-inflammatory effects and stimulates appetite, bile secretion, and bowel movements.

Anti-inflammatory effect

*C. nurvala* ethanol extract inhibits signal transduction extracellular kinase signals in rat macrophages, inhibiting the inflammatory response triggered by lipid polysaccharides. Non-cytotoxic concentrations of the extract considerably decrease the production of nitric oxide and interleukin-6, in macrophages inspired by lipid polysaccharides.

Lupeol, one of the constituents, when administered topically, reduces inflammation animal studies and decreases the invasion of cells in the inflammatory tissues of mouse ears by reducing the level of myeloperoxidase (specific markers of neutrophils). Lupeol application (5 to 9.37 mg kg<sup>-1</sup>) has shown to produce maximum inhibition (57.14%) of inflammation.

Anti-urolithic property

In albino rats, *crataeva* bark decoction was effective in preventing stone formation. It also decreased the pH of urine making it acidic. In another study, lupeol (50 mg/kg) produced strong in vivo anti-urolithiatic effect.

Decoction of this plant (800 mg kg<sup>-1</sup>) also increases contractile strength and decreases the remaining urine load in patients with an enlarged prostate.

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# *Mushroom Medicine: Challenges and Potential*

**Dr Christopher Hobbs PhD**

## **Introduction**

Fungi are extremely ancient organisms, and tremendous diversity exists in many habitats throughout the world. Most of the scientific work performed on fungi with regard to their medicinal and healing effects can be thought of in two categories: antibiotics and immunomodulators.

A landmark discovery in human history was that various soil fungi contain powerful antibiotics, apparently to protect themselves from bacterial infections. These antibiotics have saved literally millions of lives, starting with penicillin discovered in 1928, and streptomycin in 1943. While these medicines have been mostly beneficial, many decades of their medical misuse and overuse, plus their widespread inclusion in animal and dairy products, have created a global emergency: the arrival of antibiotic-resistant superbugs that might cause pandemics that could wipe out millions.

But the relationship between fungi and humans is far older than the potent 20th-century antibiotics described above. Many other fungi have been used in healing and medicine, going back over 3,000-4,000 years, and possibly further back to the Stone Age (Peintner & Pöder 2000). Instead of soil organisms, these medicines were and are derived from “higher” fungi, the macrofungi that produce visible fruiting bodies – commonly known as mushrooms – for the distribution of their spores.

Besides humans’ long relationship with them for use as medicine and food, mushrooms are also recognized as pathogens, perhaps as best evidenced by the body’s innate recognition of specific compounds that all fungi carry as part of their cell walls: beta-glucans ( $\beta$ -glucans).

## **Fungal $\beta$ -glucans and the Immune System**

Also found in some plants and bacteria,  $\beta$ -glucans are glucose polymers occurring in many sizes and shapes. The major active compounds for immunomodulatory and antitumor effects are the  $\beta$ -D-glucans, which often occur in a triple helix conformation. Many structural variations of these bioactive mushroom cell wall carbohydrates exist in different species, but all have a main chain consisting of linked  $\beta$ -D-glucopyranosyl units along which are randomly dispersed single  $\beta$ -D-glucopyranosyl units attached by linkages giving a comb-like structure (Bohn & BeMiller 1995).

Just as shape plays a role in  $\beta$ -glucans’ activity, so do size and solubility. Larger forms of the  $\beta$ -glucan molecules derived from the cell walls of fungi, especially in their native triple helix form (Bohn & BeMiller 1995), or particles of these, seem to be more potent than smaller molecules. Water-soluble  $\beta$ -glucans have also been widely studied and shown to have a variety of immunostimulatory (activate immune functions) or immunomodulatory (regulate immune functions) effects (Batbayar et al 2012, Rice et al 2005). An extract of a mushroom fruiting body, such as *Lentinula edodes* (shiitake) or *Trametes versicolor* (turkey tail), might contain up to about 40-50 percent or higher  $\beta$ -glucans.

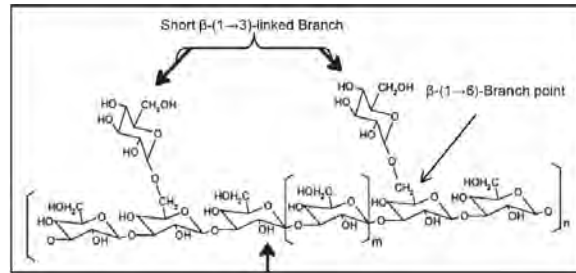


Figure 1: An example of the molecular structure of soluble yeast  $\beta$ -glucan (Waszkiewicz- Robak B 2013)

### Choosing Medicinal Species

Since all mushrooms contain  $\beta$ -glucans, and  $\beta$ -glucans are recognized by the human immune system through ancient cellular evolutionary interactions, it stands to reason that all mushrooms are immunomodulating and immunostimulating. Despite this, we focus on well-known medicinal species like *Trametes versicolor* (turkey tail), *Lentinula edodes* (shiitake), and *Grifola frondosa* (maitake), because these are commonly available and have a long history of use, or perhaps because of their striking appearance as in the case of *Ganoderma lucidum* (reishi). Reishi has been valued for its beautiful shape and bright varnished appearance for many centuries.

Based on my research and experience, I prefer to use turkey tail and shiitake above other species, simply because they have a larger body of clinical trials and long traditional use. Reishi has a very long history of use, but is only supported by clinical reports from China (which reported that the mushroom tea administered to people yielded better outcomes than expected), not rigorously-designed clinical trials. Human clinical trials with larger sets of volunteers taking the remedy vs. those having a placebo for at least 12 months, and following up for at least five years, are needed. These studies are ongoing in Asia and in the U.S., where preliminary evidence is promising. I do not rely upon animal studies mainly because of the wide range of differences in activity of  $\beta$ -glucans and other compounds as well as the way the liver metabolizes them in different species.

I do recommend use of *Inonotus obliquus* (chaga), *Auricularia polytricha* (wood ear), *Hericium erinaceus* (lion's mane), and other up-and-coming species as well, but limited scientific research and information about traditional use of these mushrooms are available.

Once inside the human body, the primary effect of  $\beta$ -glucans seems to be activation of the immune response to alert the host to the presence of, and to inhibit, infectious pathogens. Is it serendipity that mushrooms that are edible and nutritious contain compounds that stimulate the immune system, but without the threat of disease?

How do fungi act as immunostimulants? The mechanisms are still not clearly defined, but  $\beta$ -glucans are absorbed in the gut, where they bind to gut-associated lymphatic tissue (GALT) binding sites without intestinal absorption. Additionally,  $\beta$ -glucans bind to macrophages associated with the gut barrier, acting on several immune receptors including Dectin-1, complement receptor 3 (CR3) and toll-like receptors (TLR-2/6), triggering a group of immune cells including macrophages, neutrophils, monocytes, natural killer cells and dendritic cells (Goodridge et al 2001). Due to these actions, both innate and adaptive immune responses can be modulated by  $\beta$ -glucans, and phagocytosis (the engulfment of pathogens and foreign substances to break them down or clear them) can be enhanced (Chan et al 2009).

Most  $\beta$ -glucans cannot be digested, and so have to be captured by macrophages, internalized and fragmented within the cells, then transported by macrophages to the marrow and endothelial reticular system. The smaller  $\beta$ -glucans fragments are subsequently released by the macrophages and taken up by other immune cells which leads to diverse immune responses.

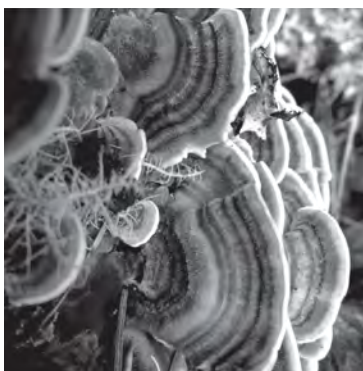
In summary, when specific fungal, bacterial, or other microorganismal markers are detected in the gut, a large number of immune system mechanisms, likely both humoral and cellular, are activated (Batbayar et al 2012). These processes stimulate the immune system's vigilance to attack viruses, abnormal cells, and of course, pathogenic fungi and bacteria. The terminology for pattern- recognition of fungal  $\beta$ -glucans by our immune system, recognition that has developed over evolutionary time, is pathogen-associated molecular pattern (PAMP) (deSmet et al 2013).

### **Preparation and Dosage**

For maximum activity, delivery of mushroom medicine via water-based extract or micropowder is best. These methods of administration are preferable to alcoholic extract because  $\beta$ -glucans and proteins are not alcohol-soluble, and alcohol interferes with hydrogen bonding, altering the tertiary structures to the point where immunomodulatory activity is reduced (Bohn & BeMiller 1995). For these reasons, I do not recommend tinctures for immune disorders, cancer, or viral syndromes. On the other hand, some mushrooms contain small weight molecular compounds (e.g., reishi triterpenes) which have demonstrated sedative, anti- allergenic, hepatoprotective and other activity, and these compounds are soluble in alcohol. The tincture may be useful in these cases.

Based on extensive clinical and personal experience, I'm convinced that a high dose is necessary where there is a need for strong immunomodulation or stimulation and one is dealing with a serious ailment such as cancer. The average dose used in many clinical trials for cancer support with chemotherapy is about 5 to 6 grams per day of enzymatically processed mycelial extract, such as the *Trametes versicolor*- derived pharmaceutical products Polysaccharide peptide (PSP) or Polysaccharide K (PSK), which are produced in liquid culture using fermentation technologies. These products are highly refined and concentrated protein-bound polysaccharides that are often characterized as drugs and are in no way comparable to crude mycelium produced on grain.

For prevention, about 25 grams of shredded or powdered crude mushroom fruiting body as a decoction (drink 1 strong cup, twice daily for maximum effect, and less for prevention or maintenance), or 2 to 3 grams per day of a water-based extract (a minimum of two "00" capsules twice daily, equaling a total of 2 grams) should be sufficient for most people. This dose applies to finely-powdered fruiting body, steamed or otherwise, though steaming the powder or shredded mushrooms first, then drying and powdering may be preferable for reducing the possibility of digestive disturbance. The idea is to get the particles as fine as possible to allow for greater surface area exposure and absorption. About twice this dose is appropriate for treating more serious conditions (typically used as adjuvants with other drugs, remedies, or functional medicines like CoQ10), depending on the user's body weight and sensitivity.



*Trametes versicolor* (turkey tail)

Pharmacodynamically,  $\beta$ -glucans stay in the blood for some time (Rice et al 2005). For instance, after 24 hours, 20 percent of laminarin was still detectible in the blood serum. This means that some activity likely continues throughout the day with oral intake. Still, mushroom extracts act as short-acting mitogens, which means that they have to be taken frequently for full benefits. In my experience, a divided dose of half in the morning and half in the evening works best. A dosage of three times a day offers maximum effects, but this frequency seems to create a problem with compliance for most patients.



*Pleurotus ostreatus* (oyster mushroom)

Since I wrote the first edition of my Medicinal Mushrooms book in 1987 (second edition in 1995, Botanica Press, published by the Book Publishing Company in Tennessee), I've been experimenting with medicinal mushrooms both inside the clinic and out, personally and with friends and family. I've been combing the research for many years as well. After all this time I still have questions: Which species make the strongest medicine?

What form of extraction — water-based decoctions or steaming the powdered fruiting bodies — will be more potent? Definitive studies to help resolve these issues are still needed.

Are the fruiting bodies stronger than the mycelial product? Based on my sense of taste and my clinical and personal experience, I always prefer the fruiting bodies for making medicine because this reduces the possibility that a significant amount of grain or other substrate such as straw will be present in the finished product, thereby reducing the amount of active ingredients and increasing levels of starch or other inactive common molecules.

## Medicinal Mushrooms as a Dietary Supplement

What can one really expect from a full dose of medicinal mushrooms added to the diet daily? Mushroom medicines are widely recommended for prevention of cancer, as an adjuvant treatment for cancer with chemotherapy, or for some people perhaps by itself, as a standalone treatment (though no clinical trials here). First of all, keep

in mind that chronic metabolic illnesses like cancer, liver diseases, viral syndromes, immune weakness, and especially chronic immune weakness in general, are conditions that have likely settled into the body deeply over years, and so are very difficult to treat. Medicinal mushrooms are not panaceas or magic bullets and may be of limited benefit in some cases.

A total program for health is needed: diet, meditation, mindfulness and spiritual practice, exercise, handling and reducing stress as well as possible, herbs, body work, and counseling.

Medicinal mushrooms should be used as regular dietary supplements that can offer proven and decided benefits, while being exceptionally safe. It's important to take them daily and very regularly for full health benefits. I believe that anyone or nearly anyone with cancer, viral syndromes and immune weakness can obtain some benefit from medicinal mushrooms. From my experience, the regular addition of edible mushrooms (especially oyster mushrooms, shiitake, maitake, wood ear, porcini, chanterelles) can provide a significant health benefit for balancing blood lipids, blood sugar, immune function, weight, and overall nutrition.

Recently I've been focusing on the nutritional and health-giving benefits of mushrooms added to the diet regularly, and even daily. Mushrooms are amazing dietary supplements simply for their nutritional value alone. Almost all mushrooms should be cooked before eating. That's because mushrooms contain a lot of indigestible long-chain polymers like chitin, an amino polymer found in crab shells. You can imagine how tough a crab shell is to digest. In fact, the irritating qualities of the larger molecular weight polymers in raw mushrooms can cause stomach upset readily. After cooking, mushrooms yield a lot of valuable health-giving nutrients such as trace minerals including copper, zinc, and many others. Mushrooms also contain rather high amounts of macro minerals such as potassium and phosphorus.

For food or nutritional purposes, stick to the fleshy fungi that are soft and tender like *Pleurotus ostreatus* (oyster mushrooms), shiitake, various *Agaricus* species, or *Auricularia polytricha* (wood ear). I believe that the many varieties of oyster mushrooms are the most digestible of all. These mushrooms yield valuable soluble fiber and some insoluble fiber; in fact they are one of nature's foods highest in fiber. Fiber helps move the bowels, removes toxic waste products, regulates blood cholesterol levels, and interacts with the immune system and gut microflora in beneficial ways. Some mushrooms also contain an amazing amount of protein. For instance, shiitake and oyster mushrooms contain up to one quarter usable protein (Khan et al 2008). This protein is quite high quality, and in some cases rivals egg protein. Many mushrooms are also very tasty, especially *Boletus edulis* (king bolete), *Cantharellus cibarius* (chanterelle), oyster mushrooms, maitake, and many others. Considering their high-fiber, low-carbohydrate and high-protein content, plus other nutritional properties and their delicious flavor, mushrooms are really the ideal diet food. Eaten regularly, mushrooms will provide all of these nutritional and health-giving benefits, along with the medicinal actions.

Most medicinal polypores like reishi or *Ganoderma applanatum* (artist's conk) are hard as a piece of wood. You can cook them all you want and pound them too, but they just will not tenderize. Fortunately, the medicinal qualities of these fruiting bodies can be liberated by boiling or other methods of extraction.

## A Note about Foraging

Wild mushroom hunters must bear in mind that some species are quite toxic, or even lethal. As the old saying goes, “There are old mushroom hunters, and bold mushroom hunters, but there are no old and bold mushroom hunters.” I have eaten over 50 wild species and have lived to

tell the tale. This is because I make sure of the identity of the mushroom I’m about to eat and take few chances. Special attention should be paid to the world’s most poisonous mushrooms, such as *Amanita phalloides*. Anyone daring to forage mushrooms in the wild should be able to recognize these deadly species without doubt, paying attention to all their subtle characteristics such as spore color, stem shape and texture, and whether the gills (if present) connect to the stem

or are free. Considering all wild mushrooms, very few are lethal, but all it takes is one. Take a class, get some good books with lots of pictures, and for medicinal mushroom identification you can check out my book by the same name, or others.

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# *Mushroom Spirit Medicine*

Dr Christopher Hobbs PhD

## **Health Benefits of Magic Mushrooms**

\*Michael Pollan, *How to Change Your Mind*

Points he made in the book

Ingestion of *Psilocybin* species and other entheogens can temporarily dissolve the (sometimes) tyrannical (or trickster) ego  
This allows time to see one's plight, symptoms, diseases subjectively and realize we don't have to identify with them  
Or, it allows us to find equanimity, peace with serious illness, intractable symptoms  
To connect with a sense of oneness with "spirit," to feel a sense of awe (many report this), to feel profound feelings of connectedness, a lack of separateness, loneliness, isolation  
Guided psilocybin journeys have been conducted by experienced guides since the 1960s, mostly underground  
More published studies than meets the eye—supporting the beneficial role for treatment of depression, anxiety, the existential crises that might arise from serious and life-threatening illness--cancer

## **Classic Reading List**

*Soma* Gordon Wasson, Valentina Pavlovna Wasson  
Mushrooms, Russia, and History, same authors  
Hallucinogenic Mushrooms of North America Ott, Bigwood  
Psilocybin Mushrooms of the World Paul Stamets  
How to Change Your Mind Michael Pollan  
Sacred Mushroom of Visions Ralph Metzner  
Food of the Gods Terence McKenna  
Plants of the Gods Schultes, Hofmann, Christian Rätsch

## **Decriminalization of Psilocybin**

Psilocybin has been listed as a Schedule 1 drug in the U.S., restricting its use for research and therapeutic purposes.

In 2006, the first modern controlled clinical study on the effects of psilocybin was conducted by Griffiths and his group at the Dept. of Psychiatry and Behavioral Sciences, John Hopkins University  
They found that psilocybin was well-tolerated and led to "mystical experiences," that participants said were among the most spiritually meaningful of any in their lives  
Since then, nearly 20 further clinical trials that included about 2,000 human volunteers have been conducted, showing positive effects for

- behavioral disorders
- cancer-related anxiety and depression
- major depressive disorder
- addiction treatment and recovery
- cluster headaches
- enhancing one's spiritual life and purpose

## **Regulation**

Decriminalizing and Legalization  
Psilocybin currently listed by the federal government as Schedule 1  
After very promising recent clinical trials strongly supporting efficacy and safety, as well as low addictive potential, many researchers and regulators are calling for psilocybin to be rescheduled as class IV (prescription drugs)  
Recently the cities of Denver, Santa Cruz and Oakland, California passed laws to decriminalize psilocybin with the view of making it available for personal use and supervised clinical applications  
Oregon became the first state to decriminalize psilocybin, early November 2021; California on the brink?

## **Genera known to contain Psilocybin**

Psilocybin, psilocin, baeocystin  
Psilocybin, psilocin content highly variable, some species contain nearly undetectable amounts

Psilocybe  
 Stropharia  
 Gymnopilus purpuratus  
*Paneolus subbalteatus*  
     Apparently rare in the  
     genus (this species has  
     minor amounts)  
 Conocybe appendiculate, *C.*  
*cyanopus* (not recommended)  
 Inocybe aeruginascens  
     confirmed by Stijve &  
     Kuyper, but this genus  
     is not recommended  
     because some species  
     are toxic, containing  
     muscarine  
*Pluteus salicinus*—European  
 species  
     Positive for psilocybin  
     but other species  
     tested were negative

### Standard Doses of psilocybin

The median oral dose for average person is 7 mg or about 1 g dried (10 g fresh) *P. cubensis* (less for more potent species). The toxicity of psilocybin is low (LD50 for mouse = 280 mg/kg), especially when compared to its effective dose (for man = 0.02 mg/kg) (Chilton, 1978; Amsterdam *et al.*, 2011).

Recommended maximum dose under most circumstances is 150 mg psilocybin (<10 g dried mushroom)

Structural similarity to serotonin

Psilocybin is detectable in the blood after 7 days  
 Quality—best to accurately identify your own growing in the environment, or grow your own; mushrooms from the street can vary widely in psilocybin content, and others species can be substitute (Bigwood & Beug, 1982)

### More about Dose

Microdose

Low = 50 mg – 100 mg

Medium = >100 – 500 mg

High = >500-1000 mg (1 g)

1 gram is considered a “museum dose”

Therapeutic doses

Low = >1 gram – 2 grams

Medium = >2 grams – 4 grams

High = > 4 grams – 6 grams

Heroic = >6 grams – 30 grams

[very high doses are rarely taken by “psychonauts”]

### How Does Psilocybin Work?

Getting “Pssilly!”

Psilocybin rapidly dephosphorylated in the body to psilocin

Agonist for several serotonin receptors  
 psilocin indirectly increases the concentration of the neurotransmitter dopamine in the basal ganglia

Psilocybing induces changes in glutamate that cause subjective experiences of ego-dissolution

### Nootropics

Improves cognitive function, particularly executive functions, memory, creativity, or motivation, in healthy individuals

Caffeine, nicotine

Psilocybin

Stimulates repair of neurons, helps create more neural network connections

Helps strengthen existing connections

Herbs

Rhodiola, Ginseng, Bacopa

### Neurotropics, Neurogenesis, Neuroplasticity

Psilocybin...research shows it can act to increase neuroplasticity in the brain and CNS

Increasing formation of new network connections

Strengthening connection

psychedelics stimulate hippocampal neurogenesis as well as synaptogenesis, spinogenesis and dendritogenesis in the prefrontal cortex

Together, these effects help restoring resilience to chronic stress and lead to modulation of the major connectivity hubs of the prefrontal cortex, hippocampus, and amygdala.

### Psychedelics—increase in neuroplasticity

Serotonin

Regulates mood, happiness, and anxiety; when serotonin is normal:

Happier, calmer, more focused, less anxious, more emotionally stable

helps control your bowel movements and function  
control sleep and waking  
Serotonin is released to help heal wounds  
Helps control sexual functions

### **Physiological Effects**

Increased body temperature  
Pupil dilation  
Hair erection  
Pleasant or less commonly, apprehensive mood  
Spontaneous laughter  
Muscle weakness  
Drowsiness  
With higher doses, spontaneous colored visions  
“dream-like” state  
If apprehension is present, recovery is typically from 2-6 hours  
Very low acute, apparently chronic toxicity

### **History of Psilocybin Use**

Consumption of hallucinogenic mushrooms in ritual ceremony may be 3,500 years old (Carod-Artal, 2015; Wasson & Wasson)  
Widespread throughout Mesoamerican cultures, including southern Mexico  
Tepantitla mural in Teotihuacán, 500 CE shows fungi  
First written reports from early 1500s from monks, later Spanish soldiers  
16<sup>th</sup> century historians (Durán, Sahagún, Motolinia) described their use in detail  
Mushrooms were eaten with honey, along with chocolate  
The visionary mushrooms, called teonanácatl, were eaten for their prophetic visions; priests used them, but also warriors, healers, others  
Mushroom stones were carved, paintings

### **Schultes, Wasson, Hoffman**

In 1939, the American anthropologist Jean Johnson was the first outsider to observe the shamanistic use of psilocybin mushrooms in southern Mexico  
Blas Pablo Reko, Richard Schultes (1938) collected 3 samples of “sacred mushrooms,” which Schultes deposited in the Harvard herbarium.

Rolf Singer (late 1940s), German mycologist (and later, Gaston Guzman, later identified one of the samples as *P. caerulescens*).

The true scope and identity of the shamanistic use of *Psilocybin* mushrooms, for many centuries, perhaps millenia, was finally uncovered by Gordon and Valentina Wasson, first in 1952.

### **Summary of Amsterdam et al., 2005**

Study of the “harm potential of psilocybin use” sponsored by the Netherlands government (CAM)

Netherlands—cannabis and its products and psilocybin mushrooms are considered “soft drugs.”

#### **Conclusion**

CAM concluded that physical and psychological dependence potential of psilocybin was low (lowest of all drugs)  
Toxicity low-moderate  
Public health impacts, criminal aspects negligible

### **Contraindications or Supervision**

#### **Recommended**

Psychological imbalances (without supervision)  
Pre-existing medical conditions with use of pharmaceutical drugs

Depression, anxiety, psychosis, bipolar, suicidal thoughts, etc.

Pre-existing heart conditions

Concomitant use of alcohol, especially heavy use; alcohol and MAO-inhibitors can intensify effects

Set and setting has been shown to be important

Use not recommended in stressful settings, perhaps better in a natural setting with lower levels of sensory input

Driving and operating machinery not recommended

### **Medical Benefits: Science Review**

> 1000 clinical papers published on classic psychedelics, collectively involving approximately 40,000 patients between 1950 and the mid-1960s (Grinspoon, 1981)

Most compelling evidence supported benefits for 1) end-of-life existential pain in cancer patients, and 2) addiction

Later, the media circus and strong interest by the “counter-culture” of the 1960s through 1970s brought about government involvement, shutting down most formal research. Yet practitioners of psilocybin and LSD therapy remained underground

### **Guides (Facilitators)**

Lay, underground guides working since 1960s  
Psychotherapists, counselors, people who undergo training courses  
2-year programs currently, followed by apprenticeships  
Entheogenesis  
Set protocols followed  
MDMA, ketamine, 5-MEO, psilocybin  
Set and setting, afterwards, consider and reassess experiences and insights

### **Therapeutic Benefits in Clinical Studies 1**

Cancer-related psychiatric distress  
Depression, anxiety (Grob *et al.*, 2011)  
+  
0.2 mg/kg oral (15 mg for 154 lb individual)  
More recent study (n=51; Johnson *et al.*, 2016) used high-dose vs. low dose psilocybin in a DBPC study, and after 5 weeks and after 6 months follow-up, the high-dose regime resulted in “numerous improved clinical outcomes” in 80% of the patients and complete remission in 60%, for patients with mood disorders subsequent to cancer diagnosis  
The presence of a mystical-type experience was associated with better outcomes  
Ross *et al.*, 2016 (RDBPC crossover, n=29, 0.3 mg/kg vs. active placebo, niacin); similar results; no major side effects

### **Treatment-Resistant Depression**

Small open-label pilot study (n=12; 10 mg oral 1<sup>st</sup> session, 25 mg 2<sup>nd</sup> session)  
Every individual participant showed reduction in depression severity at 1 week that was sustained in the majority for 3 months

5 of 12 were in remission at the final 3-month follow-up. Psilocybin did not cause any unexpected or serious adverse events  
Carhart-Harris *et al.*, 2016

### **Psilocybin for Smoking Cessation**

Open-label pilot study (n=15; 6 months follow-up)  
Moderate (20mg/70kg) and high (30mg/70kg) doses of psilocybin within a structured 15-week smoking cessation treatment protocol  
12 of 15 participants (80%) showed seven-day point prevalence abstinence at 6-month follow-up  
Standard treatment = <35% success

### **Microdosing**

Dennis van der Meijden isn’t aiming to see the face of God...or embark on a sacred journey. He has been “microdosing” psilocybin for 3 years  
What the Dutch graphic designer, producer, and rapper (under the professional name Terilekst) gets from his twice-weekly “microdoses” of psilocybin is more modest  
It sharpens all the senses and makes him slightly more conscious  
He doesn’t exceed 0.4 grams, because 0.5 made him “a bit too joyful and a bit too philosophical.”  
Psilocybin microdosers (including hundreds on Reddit) report that the mushrooms can increase creativity, calm anxiety, decrease the need for caffeine, and reduce depression.  
James Fadiman introduced the notion of microdosing and devised a widely followed protocol for it, and three years after microdosing psychedelics became the latest Silicon Valley “productivity hack,” all the evidence

### **Genus *Psilocybe***

Small to medium saprophytic fungi  
Cap often viscid (wet), peelable pellicle, brown, gray, yellow-brown  
Gills attached, irregular lengths, darken when mature  
Stems, often slender, bluing  
Spore print, purple-gray to purple brown, sometimes darker  
Some veil material, often degraded

### *Psilocybe semilanceata*

Most abundant psychoactive mushroom on the coasts of n. Cal. To Alaska (along with *P. cyanescens*)

Grows in very wet months on rotting sedges/grass with applied dung (elk, cow)

Golden tops when dry (hygrophanous)

### *P. semilanceolata*

Scattered to abundant, especially in recently grazed cow pastures

Along the Pacific coast where and when rain is ample, fall, early winter

Fruiting is cyclical—some years massive, some, none at all!

World's most widely-distributed species (Guzman)

Contains psilocybin, psilocylin, baeocystin from about 0.25-2.0%

Most popular European species, also with Oregon hippies

### *P. pelliculosa*

Similar-looking to *P. semilanceata*, but grows in forests in bark and duff

Good picture of the stretchy pellicle on some *Psilocybe* species

### *Psilocybe cyanescens*

Common on bark chips in gardens, and landscaping, pots and boxes with plants, trees

Often highly potent

Besides usual characters, wavy orange-tawny to buff cap is characteristic

### *Psilocybe azurescens*

Often cultivated, along with *P. cubensis*

Potent species, up to 1.8% psilocybin, 0.5% psilocin, 0.4% baeocystin

Other Species of *Psilocybe* on Pacific coast

### *P. cyanofibrillosa*

### *P. allenii*

(David Arora lists others in *Mushrooms Demystified*, but taxonomy is out of date)

### Inocybe, Psilocybin & Muscarine

Some of the species are known to contain muscarine and have led to poisonings; occurs at random

However, these species contain psilocybin, etc. and do not contain muscarine; caution recommended with this genus

### Muscarine

Muscarine is an alkaloid, strong parasympathetic n.s. stimulant (Puschner, 2013)

Symptoms, sweating, lacrimation, bradycardia, blurred vision, vomiting, abdominal pain, etc. (within 2 hours)

Occurs in the genera *Amanita*, *Clitocybe* (s.l.), *Mycena*, *Entoloma*, *Omphalotus*, *Inocybe* (widespread in N.A.)

Oral lethal dose is between 40 and 495 mg; based on between 0.1-0.33% dry weight, a single fruiting body can be lethal

### Other Common Look-Alikes

*Galerina marginalis* (potentially lethal)

*Panaeolus* (*P. semiovatus*, *P. foenisecii*) reports vary on edibility, likely not dangerous

*Psathyrella* spp.; common, a few reported as edible, but many have not been tested

*Stropharia ambigua* widely common; reported edible but bland; edibility of other species questionable, some reported toxic

### *Amanita muscaria*—Fly Agaric

Grows on all continents except Antarctica  
Considerable chemical variability between populations

Mycorrhizal with conifers

Sometimes massive fruitings in early winter to mid-winter

Associated with Santa Clause legend

Wasson's hypothesis that *A. muscaria* is the ancient Soma

### *Amanita* Characteristics

While gills that don't turn dark when old (can yellow though), spore print white

Universal veil

After opening

Forms patches and spots

Stipe ring of various kinds

Volva

*Amanita* species

Some are lethal, some are visionary, some are edible

Fly Agaric and Santa Claus

Santa claus with *A. muscaria* present  
On wall of El Dorado Country Planning  
Department  
Do Raindeer Fly?

### **Santa the Shaman**

#### ***Amanita muscaria*—Shamanistic Use**

##### **Siberia**

1738 (Strahlenberg)

“...Those who are rich among them, lay up large provisions of [fly-agaric] mushrooms, for the winter. When they make a feast, they pour water upon some of the mushrooms and boil them. They drink the liquor, which intoxicates them.”

“The poorer who cannot afford to lay in a store of these mushrooms post themselves on these occasions around the huts of the rich to catch the water, holding a wooden bowl to catch the urine, which they drink greedily.”

##### Siberia

“they eat certain fungi in the shape of fly-agarics and thus they get drunk worse than on vodka...to them the very best banquet.” (1874)

“Sometimes for their enjoyment they also use the *mukhomor* (fly agaric), the well-known mushroom that we ordinarily use for poisoning flies.

It is first soaked in the must of *kiprei* (*Epilobium angustifolium*) which they drink, or else the dried mushrooms are rolled and swallowed whole, which method is very popular.

##### Symptoms of *A. drunkeness*

Shaking of the extremities after 30-60 minutes  
Hallucinations

The visions are terrifying or felicitous, depending on temperament

Some jump, some dance, others cry

However these symptoms are usually from overdose

Those that take a small quantity “...experience a feeling of extraordinary lightness, joy, courage, and a sense of energetic well-being...”

##### *Amanita muscaria* & *A. pantherina*

##### *Amanita pantherina*

Avoid this species, which is reported to contain muscarine

Cap usually not vivid red, but distinctly brown

##### Killing Flies with Fly-Agaric

Still practiced in parts of Slovenia (Lumpert & Kreft, 2016)

Added to milk—release ibotenic acid

Flies become intoxicated, drop into liquid and die

##### **Edibility of *A. muscaria***

See Rubel & Arora, 2008, a great read about the history of cultural uses of *A. muscaria* as food

Mushroom caps are sliced and par-boiled

Water is drained (1-2 times)

Leached slices are stir-fried in butter, olive oil, salt, etc.

No publications can be found that actually report on death from *A. muscaria*, according to the authors

## *Other Ways To Take Herbs*

Constance DiNatale

### **Liver Cookies**

These cookies use gizzards and celery to cool and drain Damp, carrots to support Stomach, milk thistle to strengthen and support Liver function, Yu jin (Curcuma) to invigorate Blood and move Blood and/or Qi Stagnation, egg yolk for lecithin and choline, and nutritional yeast for a source of B vitamins.

1.5 pounds chicken gizzards, remove any green lining

2 carrots

2 celery stalks

1 garlic clove

1 TB nutritional yeast (optional for B vitamins)

1 tsp soy sauce

1 egg

2-4 TB glutinous rice flour

10gm Yu jin (Curcuma) powder

8gm milk thistle extract powder (Silymarin)

Place coarsely chopped celery, carrots and garlic clove into food processor and pulse until chopped like the size of small coleslaw. Remove the vegetables and place in bowl. Process the gizzards and pulse until it resembles ground meat. Add to the vegetables, along with the remaining ingredients. The mixture should hold together like slightly wet meatballs. If the mixture is very wet, add more rice flour. Use a TB measuring spoon to measure approx. 40 small meatballs on two cookie sheets lined with parchment paper, and bake in a preheated 375° oven for 25 minutes or more. The longer it cooks, the drier they get. Let cool on the pan. Store refrigerated in containers for up to 6 days. Freeze the rest. They will ooze a bit so a paper towel may be placed under them in the storage container.

Feed 1 cookie twice daily for a Cocker sized dog. If 40 cookies are made, each will contain approx. 250mg of Curcuma and 200mg of milk thistle extract.

Curcuma may upset some animal's stomachs so do not feed excessive amounts. Curcuma is used specifically for Qi and/or Blood Stagnation and is not used if Stagnation is absent. It should also be left out if the patient has strong signs of Yin deficiency.

Replace Curcuma with powdered Bai shao (White Paeonia) and/or Gou qi zi (lycium berries) for Yin and Blood Deficiency. Both can also be added to the recipe as it is written with Bai shao helping to relieve pain from Liver stagnation, Gou qi zi to tonify Kidney and Liver Yin and benefit dry/deficient eyes. Both herbs nourish and support the Liver. Use 10 gm Bai shao powder and 20-25gm gou qi zi berries. Add 6gm powdered burdock root (Arctium) as a good alterative and for a nutritive effect.

Use whatever herbs you like for treating specific liver conditions, and be sure to calculate the dose of the herb per cookie so the animal is not overdosed.

## Chicken Soup with Herbs

Chicken is warming and supports the Spleen and Stomach. Chicken enriches Qi and Blood, and dark-skinned chicken tonifies Kidney. It helps support Wei Qi. The shitakes enhance the immune system and tonify Qi. Lotus seeds support the Kidneys, Spleen, and Heart and are used for insomnia, calming the Shen, poor appetite, diarrhea, and frequent urination.

2-3 pounds chicken pieces

6 to 10 dried or fresh shitake mushrooms (soak dry mushrooms ½ hour)

25 to 30 dry lotus seeds (Lian zi)-soak overnight\*\*\*

6-8 pieces astragalus (Huang qi)

2 qt water

1 inch knob fresh ginger sliced

2-3 TB soy sauce (low sodium can be used)

optional 2 TB wine or vermouth or 1 TB rice or white vinegar

Slice the mushrooms. Bring the chicken and water to a boil, adding a pinch of salt if desired. Skim off any scum and reduce to a simmer. Add the additional ingredients except the soy sauce and cook for 30-35 minutes until the chicken is cooked through and the lotus seeds are soft. Remove from the heat and add soy sauce to taste.

Additions:

6-10 jujube (Da zao) to strengthen Stomach and Spleen, tonify Liver and Heart Blood, and tranquilize the mind. Jujube is often used for anemia as it treats Qi and Blood deficiency. Most Da zao has seeds so be prepared to fish them out and de-seed before feeding to an animal.

10gm *Angelica sinensis* (Dang gui) tonifies and invigorates Blood. It is useful for anemia, pain, and trauma.

20gm lycium/wolfberries (Gou qi zi) tonify Liver and Kidney Yin and are useful for eye issues, back pain, tendon and ligament problems, insomnia, and increased thirst.

Use this recipe for Spleen Qi Deficiency, weakness, emaciation, chronic diarrhea, or frequent urination. It can help with insomnia, and helps boost the immune system.

## Heart Mini Muffins

These nourish Heart Blood/Spleen Qi. The fruits aid digestion, though the heart is rich, and the protein can be changed to a lighter more digestible protein (white fish, white meat chicken) if the digestion is poor. Poria promotes diuresis, so is useful for fluid or Damp signs, or to promote the Spleen health, but may be replaced if there is a problem with incontinence.

30 gm longan fruit (Long yan rou) ‘flesh of the dragon’s eye’

30 gm lotus seed (Lian zi) soaked overnight\*\*\*\*\*

30 gm jujube (Da zao, Hong zao) or sour jujube (Suan zao ren)

optional 10 gm hawthorn berry (Shan za)

1-3 TB poria powder (Fu ling) –can crush the whole herb to powder as well

1 # beef heart or chicken heart



Just cover the fruits with water in a small saucepan and bring to a boil. Simmer covered slightly ajar about 30-45 minutes until the lotus seeds are softened and the jujube is falling apart with pressure. Watch to be sure the water does not get low, but keep the volume small. Remove the fruit to a bowl. Continue to simmer the liquid until it is thickened, if it is not already. Let fruit cool and remove seeds from the jujube and hawthorne, if used.

Preheat the oven to 375°. Process the heart in a food processor until it resembles ground meat. Add the poria powder, fruits, and thickened liquid and blend. It should be a tacky wet batter like brownie mix.

Spoon into lined muffin or mini muffin tins and bake 10 minutes for minis and 20 minutes for regular tins.

Store in a closed container in the refrigerator. These are super rich and should be fed ½ to 1 mini twice a day max for a little dog or cat, and a few for a larger dog. Cut the regular food back a bit if feeding to smaller animals.

Longan fruit tonifies Heart Blood and Spleen Qi

Lotus calms the Shen, nourishes Heart, Kidney, and Spleen, helps with frequent urination and chronic diarrhea

Jujube tonifies Spleen Qi and Heart Blood. It calms the Shen and helps with poor appetite and weak Spleen function. Suan zao ren nourishes Heart and Liver Blood and Heart Yin, and can have a more calming and cooling effect.

Hawthorn, Shan za, supports heart function, invigorates Blood and transforms Blood Stasis,

Poria drains Damp, tonifies Spleen Qi, and calms the Shen.

Beef heart nourishes Yin, tonifies Blood and Qi and calms Shen. Chicken heart has similar properties but is not as potent as cow heart.

Additions and replacements:

A slice of Chinese or American Ginseng can be decocted with the other herbs. These are both strong Qi tonics, and the American Ginseng is useful if Yin deficiency is evident.

Rice flour or other flour can be used as a thickener.

Herbs to add as powders in place of the Chinese herbs:

Motherwort (*Leonurus cardiaca*) to tonify Heart Qi and relieve chest pain. Holmes lists Motherwort as a 'neurocardiac relaxant with a mild depressant action', making it especially helpful for palpitations and for the nervous animal and for tackycardia.

Hawthorn leaf, flower, and optional berry (*Crataegus oxyacantha*) tonifies Heart Qi, invigorates Heart Blood, and tonifies Heart Yin, promoting rest. This is also a neurocardiac tonic. It reduces food stagnation, especially for fats and proteins, and lowers cholesterol.

Ginkgo leaf (*Ginkgo biloba*) invigorates Heart Blood and Qi and improves circulation throughout the body.

Add enough powder to dose as desired. If the patient is a Labrador and the dose desired is 500mg Hawthorne BID, and the recipe made 24 cupcakes, add 12 gm Hawthorne powder and feed 1 cupcake BID.

## ***Gu Syndrome: A Valid Concept for Poorly Responsive Conditions***

**Cynthia Lankenau DVM,RH(AHG),CVA,GDVCHM,ACCHVM,MS(TCVM)**

*Gu* Syndrome is an ancient medical concept which is a valid clinical approach for chronic super-infections by funguses, parasites, viruses, and other microbes that are often hard to detect. *Gu* is the ancient Chinese symbol for extreme pathological yin--the dark side of life, the worst nightmare of any human being. It represents darkness, rotteness, slithering vermin, poisonous snakes, betrayal, black magic, backstabbing murder, and in medical terms, progressive organ decay accompanied by torturous pain and insanity.<sup>1</sup> Many of today's diseases that are difficult to treat and hard to resolve are examples of *Gu* syndrome, including all chronic hard to resolve and resistant worm infestations, tapeworms, roundworm, hookworm, whipworm, and other degenerative infection, filariasis, liver flukes, trichinosis, systemic candidiasis, brucellosis, all types of chronic and debilitating nervous inflammation, Lyme disease, and other borrelia infection, tick fever, babesiosis, ehrlichiosis, Rocky Mountain Spotted Fever, rickettsia, bartonella, tick-borne encephalitis, other forms of chronic encephalitis, and meningitis, malaria, anaplasmosis, West Nile Fever Virus, Feline and Equine herpes, FIP, and cases of Equine Head shaking and chronic upper respiratory diseases.

*Gu* syndrome has been relatively ignored in modern times. Except for an academic study by Paul Unschuld, most Chinese scholars generally dismiss it as an 'ancient, feudalistic and superstitious' belief in demons and exorcist practices that have little or no value in modern clinical practice.<sup>2,3</sup> When looking deeply at these ancient texts, a very modern problem was described: Super-infections, that is, these demons are systemic funguses, parasites, viruses, spirochetes, other hidden pathogens, the toxins they produce and the biofilm they generate. The original meaning was a type of *Yin* (Hidden) evil that is doing harm to people's mental and physical wellbeing, feeding off you and doing harm, Malicious super infections. Often, it is seen as a situation where a seemingly simple SP *Qi* deficient patient does not respond or worsens with SP *Qi* tonics; nothing works. It is important to recognize that this is not a normal Spleen *Qi* deficiency; even though it has the physical signs of that pattern, yet they become clinically worse on typical SP *Qi* Tonics such as Chinese Ginseng, *Ren Shen*. It is felt that herbs such as *Ren Shen* enhance the life force and activity of the '*Gu* Spirits'. Often a violent reaction to *Ren Shen* is one of the main diagnostic features of the disease.

The pictogram for *Gu* portrayed either two or three worms squirming in a vessel.<sup>4</sup> Many traditional medical tests define *Gu* as the verminous manifestation of evil that appears when a wide variety of toxic worms and insects are locked into a vessel, where the last remaining worm has absorbed all the toxicity of all the worms. So, a situation where the vessel is the human body, filled with thriving parasites that eventually bring about a state of extreme stagnation and mental and physical decay. It involves either a particularly vicious parasite or an extremely aggressive helminthic protozoan, fungal, spirochete or viral afflictions that have become systemic often involving a patient with a compromised immune system.<sup>3</sup>

The diagnosis of *Gu* not based on western medical diagnosis and not either 5 element theory, 6 layers from the SHL; or even the *Wen Bing* (most closely related to *Gu*) Fever school. Since this is a chronic super infection with the possibility of many pathogens, the way to diagnose *Gu* is when you are seeing a case that has chronic digestive problem often with concurrent neuromuscular symptoms with additional mental symptom which is adversely affecting the constitution and is not responding to well thought out formulas. Progressing state of mental and physical exhaustion indicating damage to the Yuan *Qi* with a history of parasitic infections, protozoan infection or a 'never well since' history is a strong indication that

*Gu* syndrome is a real possibility. The distinct association of mental symptoms with system parasitism is highly informative from both an anthropological and a medical perspective. *Gu Zheng* can be translated as demon syndrome equally as well as it can be rendered as parasite syndrome. Traditional physicians recognized that patterns who acted ‘possessed’ often needed to be ‘exorcised’ with the application of ‘demon expelling substances’ such as garlic and other herbs, most of which have anti-parasitic effects. This archaic thought process is completely supported by advanced medical insight into the complex way in which parasites interface with our hormonal system. In human research, modern medicine has acknowledged that psychiatric disorders are more prevalent in less developed countries where parasitic loads are more endemic, and that individual patients afflicted by parasites are more likely to exhibit changes in mental status. Also there is generally an improvement in psychiatric patients following parasite treatment.<sup>5</sup> Modern medicine has recognized a connection between parasitic affliction and psychopathology.<sup>6</sup> Christof Kock has shown that some protozoa when infecting the brain will shape your behavior in ways most suited to the pathogen, even if it leads to the suicide of the host.<sup>2</sup> In the veterinary field, epileptic puppy often can be linked to high roundworm load. *Toxocara canis* and *Toxocara cati*, is more present in epileptics than in others.<sup>7</sup>

There are two basic types of *Gu*: digestive, or brain. Typical *Gu* looks like an Acute protozoan infection, abdominal cramping, and pain, vomiting, bloody stools except non-responsive and very chronic in nature. GI signs seen can be chronic diarrhea, loose stool or alternating diarrhea and constipation, explosive bowel movements, abdominal bloating, or ascites; abdominal cramping and/or pain; intestinal bleeding with poor or excessive appetite, or peculiar food craving.<sup>2</sup> Often an extremely poor appetite only in the morning is a prominent symptom. When the nervous system is primarily affected, there is chronic nervous system inflammation, (these can also have GI symptoms), mental depression, with a flip to hyperactivity to fits of rage, unpredictable onset of strong yet volatile emotions (head shakers); inner restlessness, insomnia; muscle soreness, muscular heaviness, weakness, wandering body pain, physical heat sensation, cold night sweats, aversion to bright light. sense of confusion or muddledness; visual and/or auditory hallucinations; epileptic seizures; a sense they are possessed.<sup>3</sup> Heiner Fruehauf feels that over 25% of our chronic patients suffer from *Gu* syndrome. Constitutional signs involve the progressive degeneration of the animal with mental and physical exhaustion, signs of *Yuan Qi* damage. There is a history of past parasitic infections, nematodes, protozoal infections, or spirochetes, or viruses. Pulse can be floating or choppy; with stagnation seen in the sublingual veins; the base of the tongue is damp with a red tip or red ‘parasite dots’ on the top of the tongue. These parasite dots (*Chong Ban*) are the little red dots that generally are on the front third of the tongue, sometimes extending to the middle. These are said to be indicative of worms and other parasites. They are a sign of ‘localized heat’ amidst the dampness, a typical pattern for parasitic infections.<sup>5</sup>

The *Gu* syndrome should always be considered when confronted with ‘mystery patients’ who suffer from a multiplicity of mental and physical symptoms that cannot be clearly diagnosed either by allopathic medicine or standard TCVM. Of course, always consider with this patient has been afflicted by systemic or persistent fungal infections, systemic parasite infections, chronic viral infections. As veterinarians, we see cases like this all day long. Dogs with chronic ear infections; cats with chronic nasal or ocular discharges, any species with chronic nematode infestation, or horses with chronic nasal discharges are all clearly indicated cases. Western therapies for these disorders are generally based on the simplistic assumption that parasitic microorganisms represent a type of excess that needs to be killed off. This approach may improve the situation temporarily but are usually abrasive and weaken the animals’ constitution and cannot be tolerated. Also, this approach may actually be responsible for the occurrence of *Gu* Syndrome by weakening the animal. Modern research has shown that strong antiparasitic drugs although successful initially in eliminating the majority of micro-parasites form the digestive tract, can force yeasts and protozoan organisms to become systemic weakening havoc in the internal organs.

Summary of Characteristics: *Gu* pathogens are malicious and can be life-threatening; usually enter the body through the mouth or other orifices; it is a type of toxin; virulent epidemic quality (corroborated by the metabolic byproducts of parasitic organism that have a toxic effect on the body). They thrive in already deficient animals and once established further harm the body's source *Qi*; they operate in the 'dark,' are hard to know when contracted which can make the diagnosis difficult. One critical point is that you must focus on *Zheng Qi*; those with *Gu* syndrome are deficient people, they are the ones who have those dark susceptible areas. *Gu* syndrome today are indicated in those tough, mystery patients where no treatment has helped to any lasting degree. It is also important to recognize though that *Gu* syndrome is 'like oil leaking into a bag of flour', it usually takes a long time to treat as it is everywhere in the body, months at the least. The only factor is that *Gu* is always is a situation where there is often a life threatening deficient with an excessive toxic overload.<sup>5</sup>

The most suggested therapeutic approach in treating *Gu* patients has been herbal formulas. *Gu* patients can be difficult to treat as there is always a mixture of deficiency and excess. Patients who have only recently contracted *Gu* might still be strong enough to be treated with strong excess removing herbs. Therefore, if the *Zheng Qi* is not in a state of deficiency, then even though submerged pathogenic *Qi* may be severe, the disease can be treated easily, and treatment results will be swift and complete. Usually though there is already a weakened system. The *Zheng Qi* will become weaker daily if unable to overcome the *Xie Qi*. Mild cases will turn into severe cases, and severe cases will turn into life-threatening cases, 'until there is no getting up from the sick bed anymore'.<sup>3</sup> There must be a selection of an anti-*Gu* medication with a special selection of tonics that boost the body's *Yuan Qi*. These tonics must serve a dual role of strengthening the patient's defenses while still having an anti-parasitic effect. It is agreed that regular tonics especially ginseng should never be used for they enhance the life force and activity of the '*Gu* Spirits'.<sup>2</sup> If the *Zheng Qi* is in a state of extreme exhaustion, then the pathogens cannot be faced directly, and only the nourishing *Yin* method should be employed as *Yin* tonics can 'put on brakes of immune over reaction'.<sup>3</sup> The traditional *Gu* approach, therefore, is the result of a carefully crafted program that utilizes blood movers to push through barriers of accumulated phlegm and blood exposing the parasites and making them vulnerable for attack; aromatic antiparasitic herbs that create an uninviting milieu for the invaders; and finally, tonic substances that stimulate the body's own scavengers which feed on foreign organisms.

Treatment of *Gu* syndrome can be based on Lu Shunde's *Zhi Gu Xin Fang*, New approaches to *Gu* therapy which was written in 1823.<sup>3</sup> The basic formula is based on *Su He Tang*, Perilla and Mint Decoction. This formula provides a time-honored and safe approach to many chronic inflammatory diseases and 'mystery diseases' of modern times. The therapeutic principles are to drive out the chronic parasitic (*Gu*) poisons with aromatic herbs, disperse chronic wind and damp (*Gu* toxins love to live and grow in damp), tonify deficiencies of Blood, *Qi*, and *Yin*; and remove Biofilm. This formula has indications for both GI and Brain symptoms of *Gu*. Indications include Chronic and debilitating digestive distress, constant flu sensation, joint and/or muscle pain, chronic neurological symptoms; greatly enhanced sensitivity to noise and/or smell, altered taste; gradually increasing mental-emotional symptoms including sudden mood swings, feeling possessed, anxiety, insomnia, depression, OCD. Tongue is Red, with damp yellow coating; pulse is full and potentially rapid. Western indications first phase of treatment for all types of chronic and debilitating intestinal parasitism, including protozoan infections, ameba, giardia, blastocyst infection; worm infestations, tapeworms, roundworm, hookworm, whipworm, and other degenerative infection, schistosomiasis, filariasis, sheep and liver flukes, trichinosis, systemic candidiasis, brucellosis, all types of chronic and debilitating nervous inflammation, Lyme disease, and other borrelia infection, tick fever, babesiosis, ehrlichiosis, Rocky Mountain Spotted Fever, rickettsia, bartonella, tick-borne encephalitis and other forms of chronic encephalitis and meningitis, anaplasmosis, West Nile Fever Virus, Feline and Equine herpes, and FIP.<sup>5</sup>

Table 1: Ingredients and actions of *Su He Tang* (Perilla and Mint decoction):

Dosage	Common name	Chinese Pin-Yin	Action
9-15 g	Perilla leaf	<i>Zi Su Ye</i>	“Kill the snake with surface relieving material”, anti-parasite, anti-fungus
9-15 g	Field Mint	<i>Bo He</i>	‘Kill the snake with surface relieving material’, anti-parasite, open orifice, create clarity
9-15 g	Angelica root	<i>Bai Zhi</i>	‘Kill the snake with surface relieving material’; anti-parasite, anti-fungus
6-12 g	Forsythia fruit	<i>Lian Qiao</i>	‘Kill the snake with surface relieving material’; anti-parasite, disperse accumulation and prevent the development of local heat; resolves toxic damp; prevent invasion of pathogen into heart layer
6-12 g	Bupleurum root	<i>Chai Hu</i>	Clear liver toxicity; clear toxic heat and stagnation in the <i>Shao Yang</i>
9-15 g	Angelica sinensis root	<i>Dang Gui</i>	Soothe the liver, resolve stagnation of <i>Qi</i> and Blood; tonify and regulate Blood with aromatic/anti-parasitic substance
6-12 g	Cnidium root	<i>Chuang Xiong</i>	Soothe the liver, resolve stagnation of <i>Qi</i> and Blood with aromatic/anti-parasitic substance; anti-pain
6-9 g	White Peony	<i>Bai Shao</i>	Soothe the Liver, resolve cramping and pain; tonify and regulate Blood
9-15 g	Astragalus	<i>Huang Qi</i>	Tonify Spleen and Lung <i>Qi</i> without tonifying parasites; fortify and astringe the surface; moderate auto-immune responses
12-15 g	Fleece flower root	<i>He Shou Wu</i>	Tonify the Liver and Kidney with anti-parasitic material; relieve fire toxicity and detoxify system by enhancing bowel movements
9-15 g	Glehnia root	<i>Bei Sha Shen</i>	Nourish <i>Yin</i> and clear restlessness from the Lung and Heart; strengthen the stomach and generate fluids with anti-protozoan material
6-12 g	Fresh Rehmannia root	<i>Sheng Di Huang</i>	Clear heat and cool the Blood; nourishes Kidney <i>Yin</i> and moderates auto-immune responses
12-15 g	Sweet Wormwood herb	<i>Qing Hao</i>	Clear Dampness and toxicity; anti-spirochete, anti-protozoan, anthelmintic
6-12 g	Cassia seed	<i>Jue Ming Zi</i>	Clear Heat and soothe the Liver, detoxify by moistening the intestines and promoting bowel movement
3-15 g	Sophora flower	<i>Huai Hua</i>	Cool blood and stop bleeding; purge Liver fire; anti-protozoan

This remedy treats all types of *Gu* Syndrome-Chronic protozoan infection or any chronic Gastro-intestinal disorder, with chronic, constant bloating and mental/emotional instability of all kinds, or convulsion. Also, it can be used with a common cold, with coughing and uprising *Qi*. Also think of this remedy for those animals with chronic upper respiratory symptoms with a tight abdominal wall. It is very well suited for all situations where the animal exhibits signs of hidden excess, heat, or dark urination but have reacted unfavorably after taking tonic herbs. Rarely though, the author has found that when first starting this formula or a similar one, there is an up flaring of diarrhea. 1/4 the dose for several days before increasing, the situation appears to be a flare up of the internal *Gu*.

A modification of *Su He Tang* is *Jia Jian Su He Tang*, Modified Perilla and Mint Decoction from the New Remedies to Treat *Gu* Syndromes, *Zhi Ga Xin Gang* was first published in Lu Shunde's Qing dynasty publication on *Gu* (Parasitic Possession) syndrome. This formula is more suitable for more deficient constitutions that have been suffering from long-standing viral, spirochetal, or protozoan infections. This formula drives out the chronic parasitic (*Gu*) poisons with aromatic materials, disperse chronic wind and damp, tonify deficiencies of Blood, *Qi*, and *Yin*, warm internal cold in depleted organ systems, and remove biofilm. The typical clinical symptoms are animals with a weak constitution, chronic and debilitating digestive distress, ascites, testicular swelling with pain, alternating diarrhea and constipation, irregularly shaped feces, food allergies, joint and/or muscle pain, with chronic neurological symptoms; with increasing mental/emotional symptoms. The tongues seen in these cases will be pale, with a damp white coating with a feeble and deep pulse.

Table 2: Ingredients and actions of *Jia Jian Su He Tang*

Amount	English name	Chinese Pin-Yin	Action
9-15 g	Perilla leaf	<i>Zi Su Ye</i>	'Kill the snake with surface relieving material', anti-parasite, anti-fungus
9-15 g	Field Mint	<i>Bo He</i>	'Kill the snake with surface relieving material', anti-parasite, open orifices and create clarity
9-15 g	Angelica dahurica root	<i>Bai Zhi</i>	'Kill the snake with surface relieving material', anti-parasite, anti-fungus
12-21 g	Angelica sinensis root	<i>Dang Gui</i>	Soothe the Liver, resolve stagnation of <i>Qi</i> and Blood; tonify and regulate Blood with aromatic/anti-parasitic substance
9-15 g	Cnidium root	<i>Chuan Xiong</i>	Soothe the Liver, resolve stagnation of <i>Qi</i> and Blood; tonify and regulate Blood with aromatic/anti-parasitic substance; anti-pain
9-15 g	Astragalus root	<i>Huang Qi</i>	Tonify Spleen and Lung <i>Qi</i> without tonifying parasites; fortify and astringe the surface; moderate auto-immune responses
9-15 g	Unprocessed licorice	( <i>Sheng</i> ) <i>Gan Cao</i>	Tonify Spleen, detoxify, stabilize adrenals
12-15 g	Acanthopanax	<i>Wu Jia Pi</i>	Transform damp, reduces swelling, dispels pain in connective tissue and joint layers; counteracts venereal diseases
12-15 g	Fleeceflower root	<i>He Shou Wu</i>	Tonify the Liver and Kidney with anti-parasitic material; relieve fire toxicity and detoxify system by enhancing bowel movements
12-15 g	Lily bulb	<i>Bai He</i>	Nourish Lung/Heart <i>Yin</i> and clear deficiency heat; ameliorate symptoms of depression, anxiety, and insomnia
3 g	Clove	<i>Ding Xiang</i>	Warm middle burner, direct rebellious <i>Qi</i> downward; kill parasites
6 g	Aged Tangerine peel	<i>Chen Pi</i>	Regulate <i>Qi</i> , harmonize the Stomach, reduce gas and bloating; dry damp and fortify the Spleen
6 g	Lycopus herb	<i>Ze Lan</i>	Invigorate Blood to disperse stagnation; stimulate water metabolism in lower burner; counteract venereal pathogens
3 g	Turmeric root	<i>Yu Jin</i>	Move <i>Qi</i> to disperse stagnation; anti-pain; anti-parasite; removes bio-film
3 g	Saussurea root	<i>Mu Xiang</i>	Move <i>Qi</i> and disperse stagnation; anti-pain; anti-parasite; removes bio-film
6 g	Sparganium rhizome	<i>San Leng</i>	Move <i>Qi</i> and disperse stagnation; anti-pain; anti-parasite; removes bio-film
6 g	Curcuma rhizome	<i>E Zhu</i>	Move <i>Qi</i> and disperse stagnation; anti-pain; anti-parasite; removes bio-film

This modification of *Su He Tang* are especially suited for those with cold and deficient Spleen and Kidney system and had become reinfected with Gu.<sup>5</sup>

Looking more closely at the energetics of these herbs: The herbs that disperse the *Gu* toxins: *Zi Su Ye*, Perilla leaf; Field Mint, *Bo He*, *Menthae haplocalycis Herba*; Angelica root, *Angelicae dahuricae*, *Radix*, *Bai Zhi*; and *Lian Qiao*, Forsythia, *Forsythia fructus*.

*Perilla frutescens* is in the mint family and contains apigenin, scutellarin, vicenin, shisonin, anthocyanins, and cyanogenic glycoside. It classically Releases the Exterior and Disperses Cold, Regulates *Qi* and expands chest, Harmonizes the Middle *Jiao*, alleviates nausea and vomiting; Calms the fetus; and Alleviates Seafood poisoning. Clinical studies have shown it to be effective in treating coughing associated with ascariasis. Perilla Leaf Extract is capable of inhibiting SARS-CoV-2 replication by inactivating the virion and ameliorates obesity-induced metabolic disorders.

Field Mint, *Bo He*, *Menthae haplocalycis Herba* is acrid and cool entering the Lung and Liver channels. It traditionally has been found to release to the exterior and Dispel Wind-Heat; Clears the Head, Brightens the Eyes and Benefits the throat; vents rashes, soothes and relieves Liver *Qi* stagnation, disperses Turbid *Qi* from the Abdomen.<sup>8</sup>

Angelica root, *Angelicae dahuricae*, *Radix*, *Bai Zhi* is warm, acrid surface releasing herb with a spicy, warm taste which enters the Lung, Stomach and Spleen which releases to the exterior, dispels wind, eliminates dampness, opens the nose, and calms pain, reduces swelling and expels pus, dispels dampness and alleviates discharge. Recent research has shown that *Bai Zhi* can influence the electrical resistance in intestinal permeability.<sup>9</sup>

These *Gu* formulas consider and safeguard the patient's source (*Yuan*) *Qi*; Anti-*Gu* medications and tonics that are safe for long term use. (*Ren Shen* Ginseng is contraindicated!)

When modifying the above basic formula herbs to consider: the following categories

- Herbs to Disperse *Gu* Toxins: Kill the snake with diaphoretic food grade herbs: *Zi Su Ye*, Perilla leaf; *Bo He*, Field Mint; *Bai Zhi*, Angelica sinensis; *Jin Yin Hua*, Lonicera; *Lian Qiao*, Forsythia; *Chai Hu*, Bupleurum root; *Gao Ben*, *Ligusticum sinensis* root; *Sheng Ma*, Cimicifuga rhizome; *Ju Hua*, Chrysanthemum flower. According to Heiner Frauhauf, this is the most crucial category in traditional *Gu* treatment as most contemporary approaches to parasites are generally devoid of this element. Our small companion animals do not sweat. It has been pondered if diaphoretic herbs whose main influence is to induce sweating have a more minimal influence on our small animals. This grouping of herbs has a lesser sweat-inducing property but instead are imbued with a strong fragrance, a penetrating Yang energy, which is able to permeate the darkest crevasses of the body where the *Gu* pathogens hide out. In small animals, it can be found to be more effective than sweat-inducing diaphoretic herbs.
- Tonify the *Qi* and Blood: *Dang Gui*, Angelica sinensis; *Bai Shao*, White peony; *Chuan Xiong*, *Ligusticum chuanxiong*; *Sheng Di Huang*, Raw Rehmannia; Raw *Gan Cao*, Licorice; *Huang Qi*, Astragalus; *Wu Jia Pi*, *Acanthopanax* root; *San Qi*, *Notoginseng* root. These are like saging and smudging the system with aromatic, anti-parasitic herbs,
- Calm the spirit: for nerve anti-inflammatory effects: nourishing the *Qi* and *Yin* of the Lung and Heart. These herbs will put the 'brakes' on over reactive system, and are directly anti-pathogenic; *Huang Jing*, Polygonatum rhizome, Siberian Solomon's Seal; *Bai He*, Lily bulb; *Bei Sha Shen*, *Glehnia littoralis*; *Xuan Shen*, Scrophulariaceae ningpoensis; *Sheng Di Huang*, Fresh Rehmannia; *Xi Yang Shen*, American ginseng; *He Shou Wu*, Fo-ti; *Fu Shen*, Poria; *Jiang Xiang*, *Dalbergia odorifera*.

- Key elements in this category are *Huang Jing* and *Bai He*; the former being affectionately revered as the Essence of the Earth by traditional immortality seekers and Daoist practitioners of external alchemy such as *Hua Tuo*, who regarded it as both an energy tonic with a calming influence on meditation and as an anti-parasitic herb; the other featuring prominently in the defining primer for complex diseases, the second century ‘Essentials from the Golden Cabinet’, as the only effective herb for ‘lily disease; that is a type of hysteria/anxiety syndrome.
- Kill Parasite and expel Demons: *Da Suan*, Garlic; *Ku Shen*, Sophora flavescens root; *Huai Hua*, Sophora japonica flower; *She Chuang Zi*, Cnidii monnieri; *Qing Hao*, Artemisia annua; *Shi Chang Pu*, Acorus gramineus; *Ding Xiang*, Clove; *He Zi*, Terminalia chebula; *Bing Lang*, Areca catechu; *Ku Gua*, Momordica charantia.  
Raw garlic, *Da Suan*, in particular the single-clove purple garlic from Sichuan, is often recommended as the most effective single remedy for *Gu* syndrome. Peasants and travelers in modern China still tend to consume a daily dose of raw garlic to ward off intestinal distress.<sup>5</sup> External treatment of *Gu* syndrome often involved the stimulation of all or some of the body’s thirteen demon points *Gui Xie*, by burning moxa on garlic sliver. Garlic has a long history in the western world as a primary anti-evil medication.
- Rediscovered anti-*Gu* herbs; *Guiianyu*, *Euonymus alatus*; *Qing Dai*, *Indigo naturalis*; *Ao Wu*, *Aconitum kusnezoffii*; and *Mi Wu*, *Ligusticum wallichii* have more *Qi* moving, pain relieving, headache relieving effects; Anti-worm effects include *Fei Zi*, *Torreya grandis*; *Yun Shi*, *Caesalpinia sepaiaia* can cross blood brain barrier; for Swelling in abdomen, *Iris actea seed*; *Yuan Wei*, *Iris tectorum root*; *Xu Chang Qing*, *Cynanchum paniculatum*; *Chang Shan*, *Dichroa febrifuga*
- Move *Qi* and Blood-break up biofilm: *E Zhu*, *Curcuma zedoaria*; *San Leng*, *Sparganium stoloniferum*; *Yu Jin*, tuber of *Curcuma aromatica*, *Curcuma kwangsiensis*; *Chen Pi*, *Citrus reticulata*; *Mu Xiang*, *Aucklandiae lappa*; *Ze Lan*, *Lycopus lucidus*. All are very aromatic herbs

For many, a simple way to start addressing a *Gu*-like situation when bio-film issues are a concern, is to incorporate a few of the Bio-film ‘detergents’ in your formula. Looking more closely at the herbs that break up bio-films: *E Zhu*, *Curcuma zedoaria* is a bitter, acrid, warm herb in the Zingiberaceae family. The rhizome is used and contains many active phytochemicals: Zederone, zedoarone, buranodine, curzerene, furanodienone, eisofuranodienone, curzerenone, epicurzerenone, curdione, curcolone, curcumernol, procurcumenol, isocurmenol, curcumol, curcumadiol, and curcumin. *E Zhu* has the traditional use of Blood invigorating and stasis removing; activating *Qi* Circulation and relieves pain. It dissolves accumulations with indications including abdominal pain, palpable masses, epigastric distention, and hardness. It helps when hypochondriac distention and hardness is found being useful to treat fibroid masses, retained placentas. There are indications for clinical signs such as emotional depression to retention of food, whenever stagnation of *Qi* is found. Clinical studies have confirmed anti-neoplastic effects with positive clinical studies including malignant cancers in the stomach, lung, liver, and esophagus.<sup>8</sup>

*San Leng*, *Sparganium stoloniferum*, Common bur-reed rhizome is in the cat-tail family and contains essential oils, starch, sucrose ester named beta-D-(1-O-acetyl-3-O-cis-feruloyl)fructofuranosyl alpha-D-2',3',6'-O-triacetylglucopyranoside 1 and a novel phenylpropanoid glycerol named 1-O-cis-feruloyl-3-O-trans-p-coumaroylglycerol 2.<sup>8</sup> *San Leng*'s traditional actions include Breaking and dispelling Blood Stasis, activating *Qi* circulation, and relieving pain. Its pharmacologic actions are antineoplastic, stimulates smooth muscle; and can inhibit aggregation of platelets and prolongs thrombin time. It is bitter, neutral, and pungent. It is indicated when palpable masses are found with severe pain, retention of food with *Qi* stagnation, epigastric and abdominal distention with pain, hepatomegaly, and splenomegaly. Young stems can be boiled and used as food. Recent research has found that *San Leng* may serve as a potential



antioxidant, can reduce HFD-induced obesity in rats, and inhibits LPS-induced cytokines production in 3T3-L1 adipocytes by activating PPAR- $\gamma$ . It has been used on pelvic inflammatory disease (PID) for more than twenty years. Research indicates it is a promising drug candidate in neuroblastoma therapy and a therapeutic agent for inflammatory cardiovascular disease.<sup>8</sup>

*Yu Jin* is the tuber of *Curcuma aromatica*, *Curcuma kwangsiensis* and is an acrid, bitter and cold herb. It enters the Heart, Liver and Gallbladder channels. It activates *Qi* and Blood circulation and relieves pain, Clears Heat and Cools blood; and Clears the Heart; opens orifices and promotes consciousness, and treats Jaundice. It has a high concentration of essential oils. It has proven hepatoprotective, antihyperlipidemic, and choleric effects.<sup>8</sup>

*Chen Pi*, *Citrus reticulata* is aged citrus peel. It is acrid, bitter, and warm. *Chen Pi* regulates *Qi*, adjust the Middle *Jiao*, helps Spleen and Stomach *Qi*, Dries Dampness, dissolves Phlegm, and relieves cough. This herb is a prokinetic, anti-asthmatic, anti-inflammatory, and cardio-tonic. Clinical studies have shown for it to be effective against mastitis, chronic bronchitis, cholelithiasis and topical treatment for burns.<sup>8</sup>

*Mu Xiang*, *Aucklandia lappa*, *Saussurea* is an acrid, bitter and warm and enters the Gallbladder, Large Intestine, Spleen and Stomach. This herb's traditional actions are unblocking *Qi* Stagnation, regulates the Middle *Jiao* and Relieve pain, dispels Damp Heat, harmonizes the Liver and Spleen, regulates *Qi* circulation and prevents Stagnation.

*Ze Lan*, *Lycopus lucidus*, is a bitter, acrid, slightly warm herb that enters the Liver and Spleen channels. It activates Blood circulation, dispels Blood stasis, and regulates water circulation and reduces swelling with diuretic. Clinical studies have shown effectiveness in cases of Disseminated intravascular coagulation and diabetes.<sup>8</sup>

Heiner Fruehauf, Ph.D., L.Ac., the Founding Professor of the College of classical Chinese Medicine at the National University of Natural Medicine in Portland, Oregon has specialized in the treatment of chronic and difficult diseases and has developed a whole line of Anti-*Gu* herbal formulas called Classical Pearls. Lightning Pearls, *Su He Tang Jia Wei II*, are designed for more of a 'mental' *Gu*. The Thunder Pearl is focused on clients with more digestive *Gu*. It is a modification of *Zhi Gu Xin Fang*.<sup>10</sup>

'Lightning' Pearl is more formulated to treat nervous system afflictions. It contains Angelica, *Bai Zhi*; *Jin Yin Hua*, Lonicera; *Lian Qiao*, Forsythia; *Dang Gui*. Angelica; *Chuan Xiong*, Ligusticum; *Wu Jia Pi*, Acanthopanax; *Hong Bai He*, Lily; *Qing Hao*, Wormwood; *Yu Jin* Curcuma; *Ze Lan*, Lycopus. To help resolve inflammation in the brain and nervous system; *Xuan Shen*, Scrophularia; *Tu Fu Ling*, Smilax; *Yuan Zhi*, Polygala; Xu Duan, Dipsacus; and *Yin Xing Ye*; Gingko leaf are added. The therapeutic principles are to nourish the terrain and soothe nervous system in patients with 'Brain *Gu* Syndrome' using anti-microbial tonic herbs; ill viruses, spirochetes, protozoan parasites and other microbes invading the brain; reduce inflammation to the nervous system; increase micro-circulation in the brain and to reduce pain.

*Xuan Shen*, Scrophularia; *Tu Fu Ling*, Smilax; *Yuan Zhi*, Polygala; Xu Duan, Dipsacus; and *Yin Xing Ye*; Gingko leaf are added to have a specific indication to resolve inflammation in the brain and nervous system. *Xuan Shen*, Scrophularia, figwort root, is bitter, sweet, salty, cold and enters the Lung, Stomach and Kidney meridians. This herb Clears Heat and Nourishes *Yin* and eliminates Toxins and disperses nodules. There is documented antihypertensive, antidiabetic, antipyretic, sedative, and antibiotic effects. *Tu Fu Ling*, Smilax, is used as a major alterative herb in western herbal medicine, that is, an herb that improves the eliminatory functions of the body. In TCM, this herb is sweet, bland, and neutral entering the Liver and Stomach. It eliminates Toxic heat, dispels Toxic heat from the skin, and promotes normal urination.

Smilax has shown great antineoplastic effects. One of Smilax's phytochemicals, a steroidal saponin, Smilagenin has been found to be neuroprotective. Smilax binds endotoxins in the gut and increases their excretion. It also enhances lymphatic circulation. This may explain its traditional use as an alterative. Alteratives were originally used as "blood purifiers" to treat syphilis.

*Yuan Zhi*, Polygala, is an acrid, bitter, slightly warming root that enters the Lung and Heart and pacifies the Heart and calms the Shen while it expels Phlegm and clears the orifices and Lung. Chinese Polygala can reduce abscesses and can dissipate swellings. The entire plant has demonstrated sedative effects and shown to even prevent seizures and convulsions.<sup>8</sup> It has diuretic, antibiotic and expectorant effects. It is also a mild uterine stimulant so care needs to be taken when pregnant. Jeffrey Yuen considers this herb is crucial to clear your mind in order to have the courage to face your lives with hope.<sup>11</sup> One of Polygala's phytochemicals, Tetrahydrocolumbamine a isoquinoline alkaloid is dopaminergic. This is an interesting herb to use in cushingoid horses with a dopamine uptake malfunction. It has nootropic, antidepressant, neuroprotective and anxiolytic effects. It is useful for nervousness, insomnia, bad dreams, stress-induced palpitations, irritability, anxiety, poor memory, pent-up emotions, and deficient depression. In an animal study, the use of Polygala reduced consolidation, reinstatement, and renewal of fear memories. The authors of this study suggest that the use of this herb, along with therapy, may be of benefit for people suffering from PTSD.<sup>12</sup> It is also effective for treating depression caused by old age or cardiac issues (post-myocardial infarction depression).<sup>13</sup>

*Yin Xing Ye*; Ginkgo leaf is cool and bitter, with a mineral salt taste that moves the blood and is a circulatory stimulant. It has been well shown to improve short-term working memory and cognitive function. It has been shown to treat impaired cerebral circulation with memory loss, ischemic stroke recovery, tinnitus, hearing loss, vertigo, and can prevent and inhibit diabetic retinopathy. It has been shown to slow the progression of normal tension glaucoma, cataracts and macular degeneration.<sup>13</sup> Ginkgo leaf acts as a neuroprotective agent and is useful for relieving impaired peripheral circulation. Its terpene Trilactones, Bilobalide is neuroprotective and Ginkgolides A,B,C are neuroprotective.

*Xu Duan*, Dipsacus, is a bitter, sweet, acrid, slightly warm root that enters the Liver and Kidney. *Xu Duan* tonifies the Liver and Kidney, can calm the fetus and stop uterine bleeding if caused by Liver and Kidney deficiency, can invigorate blood circulation, and strengthens tendons and bones, and reduces swelling, abscess and sores. This herb is used currently with great effect in cases of Lyme arthralgias.<sup>13</sup>

Lightening Pearls formula is a more constitution long-term version of *Yin Qiao San* and has been particularly effective in clearing long term resistant parotid lymph node swellings seen in horses. It also seems to be a well-tolerated and effective treatment strategy for Lyme prevention after tick bites.

The indications for 'Lightening' Pearls are chronic and debilitating joint and muscle pain; permanent state of exhaustion; chronic flu-like symptoms; chronic headaches; restlessness; grimy and stubborn tongue coating; weak or tight pulse. Some applications are Lyme, babesiosis, bartonellosis; dengue fever; Coxsackie virus, meningitis, encephalitis, rabies, listeriosis; chronic skin problems, esp. if from herpes; chronic viral malaise including myocarditis.<sup>10</sup> This formula influences the *Tai Yang*, *Yang Ming*, and *Tai Yin* Layers, the Lung, Spleen and Stomach; and is a simultaneously warming deficiencies in the animals' *Qi*, *Yin*, and Blood, deficient *Yang Qi* while Clearing Toxic Heat.

'Thunder Pearls' are designed when the chronic parasitic infection primarily involves the digestive system. It reflects the difficult and recalcitrant problems of chronic parasitic infection in the digestive tract. It is based on the *Qing* dynasty remedy *Jia Jian Su He Tang* (Perilla and Mint Decoction Modified). This formula aims to treat terrain issues that are associated with a deficient individual. Therapeutically

it nourishes terrain and soothe digestive system in patients with ‘digestive *Gu* syndrome’ using anti-microbial tonic herbs, while killing parasites, bacteria, and fungi, simultaneously harmonizing stagnation and inflammation in the digestive tract. Thunder reduces abdominal pain and discomfort and regulates bowel movements. ‘Thunder Pearls’ in general supports chronic *Gu* Syndrome, digestive, immune, and neurological symptoms. The formula is simultaneously warming Deficient *Yang Qi* which simultaneously Clearing Toxic Heat. It influences primarily the Yang Ming and Tai Yang and influence the Stomach, Large Intestine, Small Intestine and Spleen.

‘Thunder’ contains *Zi Su Ye*, Perilla leaf; *Bai Zhi*, Dang Gui, *Angelica sinensis*; *Chuan Xiong*, Ligusticum; *Huang Qi*, Astragalus; *Gan Cao*, raw Licorice; *Bai He*, lily bulb; *Huang Jing*; Polygonatum; *San Leng*, Sparganium; *E Zhu*, Zedoria; *Ding Xiang*, Cloves; *Ku Shen*, Sophora root; *She Chuang Zi*, Cnidium fruit; *Guan Zhong*, Dryopteris; *Bai Bian Dou*, Dolichos. It is a dry slightly warming formula. It treats viral conditions including chronic COVID; chronic fungal, spirochete, viral chronic afflictions, SIBO, Candida, athletic foot. This formula reduces inflammation in digestive system. It is anti-viral, anti-worm, anti-viral, anti-cancer, and anti-fungal. Some of the symptoms seen would be chronic gas/bloating, exhausted, food allergies brain fog, restlessness, anxiety/depression/ insomnia, grimy tongue, and weak. Pulse might be wiry on right. Some common indications are protozoan, amoeba, giardia, blasocystis, toxoplasma, fungal, or bacterial infections, IBS, and/or chronic colitis.

*Ku Shen*, Sophora root; *She Chuang Zi*, Cnidium fruit; *Guan Zhong*, Dryopteris; and *Bai Bian Dou*, Dolichos are the extra modification to strengthens the formulas anti-inflammation effect for the digestive system.

*Ku Shen*, Sophora root, is bitter and cold enters the Heart, Liver, Stomach, Large Intestine, and Urinary Bladder. Sophora clears Heat and Dries Dampness, Disperses Wind, Kills Parasites and relieves Itching and promotes Urination. *Ku Shen* has proven antiparasitic, antineoplastic, antibiotic effects. The herb has been shown to treat accumulations of damp-heat in the lower *Jiao* that is characteristic of foul-smelling diarrhea, dysentery with various types of bleeding.

*She Chuang Zi*, Cnidium fruit, is acrid, bitter, and warm, entering the Kidney channel. This seed dries Dampness, kills parasites, stops itching, disperses cold and dispels wind, while warming the Kidney and strengthens *Yang*. This fruit has an antibiotic effect with an endocrinological stabilizing effect.

*Bai Bian Dou*, Dolichos nut, is sweet, slightly warming entering the Spleen and Stomach. This herb strengthens Spleen, Clears Summer-Heat and dampness and eliminates toxins.

*Guan Zhong*, Dryopteris, is bitter and cool entering the Liver and Spleen. This root kills parasites, clears heat and removes toxins and stops bleeding. This herb has proven effectiveness against hookworms, roundworm, and whipworm. It has been found effective in prevention of common colds and influenza. Effective clinical studies are found also incases of cerebrosplinal meningitis. Pharmacologically it is antiparasitic, antibiotic with some uterine stimulations.

In the author’s clinical experience, the above herbal formulas can be used long term, as an intercurrent herbal formula or concurrently with other pattern indicated herbal formulas.

Although most of the treatment of *Gu* is an herbal strategy, acupuncture can be used to stimulate and focus the body’s *Qi*.

*Gui Xie*, Demon points (Sun Si-Miao's ghost points) can also be used to 'drive out the demons', from Heiner Fruehauf's article.<sup>3</sup> His source was *Qugu Ranxi Lu* (Master Ranxi's Treatise on Expelling *Gu* Toxins), 1893. First step in therapy is to apply vigorous garlic moxibustion to *Gao Huang Shu* (Vital region Shu) BL-43. BL-43 is indicated for all kinds of deficiency; tonifies and nourishes the Lung, Heart, Kidneys, Spleen and Stomach. It nourishes *Yin* and clears heat, calms the spirit, fosters the original *Qi*, and resolves phlegm. BL-43 is indicated with poor memory, pounding of the Heart, insomnia, phlegm-fire mania. With a feebleness of deficiency of the Spleen and Stomach, with the mental deficiency signs of visual dizziness, dizziness, phlegm disease. Sun Si-Miao states that 'there is no disorder that it cannot treat and once moxibustion is completed, it causes a person's Yang Qi to be healthy and full'.<sup>14</sup> Then apply moxibustion to

- *Fei Shu*, Lung Shu, BL-13 tonifies Lung *Qi* and nourishes Lung *Qi*; Clears heat from the Lung, releases the exterior. It is indicated with cough, dyspnea, fullness of the chest, Lung atrophy, with mania symptoms of mad walking with desire to commit suicide, epilepsy. Interesting that BL-43 works synergistically with BL-13 treating Bone-steaming disorders. According to the Essential questions, "All *Qi* is subordinate the the Lungs". BL-13 is an important point for the treatment of pathogenic factors lodging at the defensive level or *Tai Yang* layer, and to help harmonize nutritive *Qi* and defensive *Qi* in cases of night sweating. According to the Wen Bing theory, The Lung and Heart are mutually connected, thus when there is Lung heat it most easily enters the Heart." If Lung Heat extends the Heat, disorders of the spirit such as mania will occur.<sup>14</sup>
- *Zu San Li*, Leg Three Miles, ST-36 is the *He-Sea* and Earth point of the Stomach channel. This point harmonizes the Stomach, fortifies the Spleen and resolves dampness; supports the correct *Qi* and fosters the original *Qi*; tonifies *Qi* and nourishes Blood and *Yin*; clears fire and calms the Spirit; activates the channel and alleviates pain; revives the *Yang* and restores consciousness. This point was included by Ma Dan-Yang, a great physician of the *Jin* dynasty, among the 'eleven Heavenly star points', a grouping of the most vital acupuncture points. He felt this point was indicated for any cold in the Stomach due to injury by cold and all parasitic diseases. Qin Chen-Zu of the Song dynasty declared that ST-36 'all diseases can be treated'.<sup>14</sup> ST-36 is the single most important point in the body to stimulate the action of the Stomach and Spleen in generating *Qi* and Blood. Due to its tonifying *Qi*, ST-36 is able to nourish the Blood and is indicated for palpitation, dimness of vision, dizziness and post-partum blood dizziness.

It is also highly recommended to use frequent acupressure with menthol preparations, on the 'Thirteen Demon (or Ghost) Points' (*Shisan Gui Xie*) or to selectively needle the Thirteen Demon Points (Sun Si-Miao's ghost points).

Heiner Fruehauf also has dietary recommendations from the *Zhigu Xinfang* (New Approaches to *Gu* Therapy), 1823.

- Avoid (during or after the *Gu* treatment): chicken, duck, fish, shrimp, snails, gecko, snakes, insects of all kinds.
- Also food items that "easily breed worms" should be avoided, especially all forms of sugar, honey, jujube dates and other sweet substances.
- Consume in increased amounts: tofu, celery, cabbage, spinach, lotus root, shiso (perilla) leaves, peppermint, garlic, horseradish, ginger, bitter melon, black mu'er fungus, lychee, longan, oranges, tangerines, grapefruit, plums, pomegranates, watermelon, vinegar, green tea, lamb, and pork. However, if any of these items should aggravate the condition, it should also be avoided.<sup>3</sup> In the world of animals, parasitic issues are a constant. From neonatal issues with roundworms,

whipworms, hookworms, chronic strongyle issues in the equine, lungworms, flukes in sheep and goats to the more current issues of EMP and Lyme, the *Gu* Syndrome is of vital importance. In the author's experience, *Gu* formulas can be used solely or as an intercurrent treatment or used concurrently with other indicated botanical medicine, or these formulas work synergistically if any pharmaceuticals are being used. Since the *Gu* syndrome can be an obstacle to cure, it is well indicated to any case that is not responding as expected. Further discussion of the below cases will give examples on *Gu* formula's usefulness.

Case 1: Cody: 26-year-old QH gelding. Cody had been given away as a companion horse, with a condition that he be euthanized if ever given up, even though he had been a very successful show horse. After a bit of detective work, it was discovered that he was an undiagnosed head shaker and would have a tendency to explode when under saddle on a hot sunny day. Lightning Pearls was started. He is now much more comfortable. He is calmer under saddle, and he is able to be outside in sunlight with flies.

Case 2: Will, a male (c) Aussie, when young had a severe hookworm infestation. He had been wormed with Panacur. His fecal exams since have been consistently negative but he suffered from an extremely sensitive GI system. Any minor dietary indiscretion would trigger weeks of diarrhea. Will was started on Thunder pearls 1/22. 3/21/22, Will found a dead deer carcass and indulged. He had no vomiting or diarrhea. This is the first time in Will's history that a dietary indiscretion did not result in weeks of GI dysfunction.

Case 3: Ace, is a male intact German Shepard. After a vaccination booster, he developed unresponsive conjunctivitis which was progressing severe auto-immune disease. He had been treated with innumerable conventional and alternative treatments which have held the auto-immune diseases, but he started showing signs of significant *Qi* deficiency. After being on Lightning Pearls for two months, his hind leg weakness has resolved, his pulses are stronger while his signs of Blood Heat are diminishing.

Case 4: Rescue cattery: This cattery is filled with feral cats with chronic respiratory diseases, viral infections, parasitic infections, in other words, they are snotty, sneezing messes with chronic diarrhea. Many of these cats are difficult to handle. We have started to rotate Lightning pearls and Thunder Pearls with pinches mixed in with their food. Overall, the cats are sneezing less, their stools are more normal, but even more amazing has been their emotional and mental improvements, the cats are becoming friendly with many now being able to be adopted.

*Gu* syndrome explains why many of our patients do not seem to respond in an expected manner. We are living in environments rich in many 'parasitic' organisms which stimulate the production of biofilms. These *Gu* formulas can help 'drive those demons' out and return our companion animals into a state of wellbeing.

Matthew Wood's Book, "Holistic Medicine and the Extracellular Matrix", gives great insight in how to promote a healthy Extracellular Matrix.<sup>15</sup>

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## ***Neonatal Septicemia: the Story of Patches and Bob, and Albert***

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Sepsis is the number one cause of neonatal foal and calf mortality and is broadly defined as an overwhelming systemic inflammatory response syndrome (SIRS) triggered by infectious organisms and characterized by alterations of temperature regulation. In Chinese Medicine, sepsis occurs when *Wei Qi* unable to defend against Pathogenic *Qi*, and the Pathogen invades. Due to deficient state of newborn, potential of reaching deepest levels and layers of the body, separating *Yin* and *Yang* causing Death. Calves that fail to absorb an adequate amount of gamma immunoglobulins (IgG) from consumption of colostrum are the most susceptible to septicemia. The calf's initial *Wei Qi* is colostrum.

Classical Chinese Medicine described the Six body layers in The Treatise on Cold Invasion where a transformation into heat can occur at the *Yang Ming* (Stomach/LI) layer. The *Wen Bing* philosophy describes the invasion of a Heat Pathogen as it penetrates the *Wei* level and then deepens into the *Qi* level. The information from these philosophies allow the practitioner to prevent fuller disease development and with the herbal formulas designed for these different layers of disease penetration, can offer therapeutic options to expel the pathogenic factors.

**Case Presentation:** April 10, 2022, Bob, a Hereford bull calf was born in a manure filled gutter. This farm is an organic beef farm. It was several hours before the owner was able to help the calf get up, dried off, and nurse. His mother was in a stanchion and unable to assist her calf. By April 11, he was septic, barely conscious, down, unable to rise, his lungs were very heavy sounding. He had 104-degree F temperature, injected sclera, hot ears, tongue was very wet but cold to the touch; pulse was rapid and bounding, and slippery. He had a swollen still wet umbilical cord; a presumptive diagnosis of *E. coli* septicemia was made. TCVM diagnosis of invasion of an External Pathogenic Factor (EPF) of Cold/Damp, stagnating *Qi* creating Heat with a possible primary Heat toxin. Bob had been moved to a box stall with his mother, and although the owner was attempting to keep him dry and clean, his umbilical cord was still wet and swollen. His mother was very protective, and our acupuncture was fast using LI-4, LI-11; tip of ear and tail, and BI-40 which had aqua-puncture of a commercial Selenium product. His was given *Gan Mao Ling* and Early Comfort, a Kan tincture of *Huo Xiang Zheng Qi San*, 60 drops of both. His navel was dipped with a commercial iodine-based product. After giving the herbs in a tincture form, he jumped up and started nursing. He has continued to do well, received 60 drops of both tinctures four times a day for the next 5 days, decreasing the dose then to twice a day; on April 18, all seems well, and the herbs have been discontinued.

On April 13, Patches was born, another bull Hereford calf. Although he was born in a bedded box stall with an attentive mother, the owner was unable to dip his navel. On April 15, he was breathing heaving, lungs very heavy, nursing slowly, 103.5 F temperature, tongue phlegmy, pulse rapid bounding and slippery. He was similarly treated. Within 24 hours, he seemed normal, but his mother was extremely protective allowing no human contact, so the herbs were given to the mother with hopefully enough effect through the milk. Herbs were continued for 5 days. Patches, having a normal activity level and normal attitude, herbs were discontinued on April 20th.

**Discussion:** Both calves were invaded by an EPF of with resulting *Qi* stagnation creating Heat and interior Dampness. They needed the exterior pathogen to be expelled and the interior dampness and turbidity to be eliminated. It was felt that the calves' EPF had progressed deeper than the *Wei* level and was already affecting the *Qi* Level with signs of Heat. The initial pathogenic factor could have been Heat, *E.coli* or cold/damp, the microbial bouquet in the environment of the gutter. The treatment goal was to clear Heat at the *Wei* level and clear dampness that was accumulating in the *Qi* level (heavy sounding lungs).

*Gan Mao Ling* is a formula that addresses External Wind-Heat patters and is designed to clear Exterior Wind Heat at the *Wei* and *Qi* level. It dispels EPF from the surface layer of the body while trying to prevent their invasion into the deeper internal layers. The leading herb is Pubescent holly root, *Mao Dong Qing*, invigorates Blood and clears Heat. Research illustrates the immune regulatory effect of *Mao Dong Qing* and how this herb can control the sepsis; in vivo research has shown an anti-inflammatory and analgesic effects of PSF, with the suggestion that the molecular mechanisms might be associated with inhibition of the elevated expression of COX-2 protein and the overproduction of the proinflammatory cytokines, as well as augmentation of the anti-inflammatory cytokines IL-4 and IL-10. It is interesting that orally administrated in TCM extract forms displayed unique intestinal absorption characteristics different from those of monomers, and the enhancing intestinal absorption of MDQ-TS reflected a holistic and specific view of traditional Chinese medicines. Evodia lepta leaf and root, *San Cha Ku*, clears Heat and fire invasion. Evodia's effects are partly due to its suppression of Syk/Src and NF- $\kappa$ B. Isatis's root, *Ban Lan Gen*, drains Heat, clears Fire, cools the Blood and benefits the throat. Isatis's constituents have shown antiviral activity against SARS, CMV, Dengue, influenza viruses and antibacterial activity against hemolytic *Strep*, *Shigella dysenteriae*, *Helicobacter pylor* *Clostridium difficile*, and *Salmonella enteritis*

. Chrysanthemum flower, *Ju Hua*, dispels Wind, clears Heat, and calms the Liver. *Ju Hua* has been shown to have in vitro antibacterial activity against *Staphylococcus*, *Bacillus dysenteriae*, *E. coli*, *Streptococcus* and MRSA. Simple-leaf chaste tree fruit, *Man Jing Zi*, clears externally contracted Wind Heat. The Honeysuckle flower, *Jin Yin Hua*, clears Heat and fire invasions, vents, and disperses externally contracted Wind Heat.<sup>1</sup> With the advent of COVID, massive research has been conducted with Honeysuckle. It has been shown that *Jin Yin Hua* works by activating the host defense system as well as directly inhibiting virus proliferation by targeting viral proteins. In an animal study Lonicera was found to contain a constituent (MIR2911, a microRNA) that targets influenza A virus replication. Its active compounds were highly stable in decoctions and specifically inhibited H1N1, H5N1 and H7N9 influenza virus strains

*Huo Xiang Zheng Qi San* is indicated for acute viral or bacterial gastroenteritis.<sup>2</sup> It is best suited for treating exterior syndromes accompanied by internal dampness. The king herb, *Huo Xiang*, Chinese giant Hyssop, releases exterior wind-cold and dispels dampness enabling the clear *Qi* to ascend and turbid *Qi* to descend. *Zi Su Ye*, Perilla leaf and *Bai Zhi*, Angelica dahurica releases the exterior wind-cold and dispels interior dampness and turbidity. *Bai Zhi* is another herb who has been able to illustrate the modulating effect on the immune response in these cases of sepsis, strongly inhibited airway inflammation, mucus production and inflammatory markers (cytokines, IgE). *Ban Xia Qu*, processed Pinella and *Chen Pi*, Tangerine rind, transforms dampness, harmonizes the Stomach, redirects the reversed flow of *Qi*. In an animal study the combination of Ban Xia and orange peel inhibited eosinophil infiltration and airway hyper-responsiveness by reducing histamine and Th-2 cytokine production in an asthma model. *Bai Zhu*, Atractylodes and *Fu Ling*, Poria, strengthens the Spleen, dispels dampness, and harmonizes the middle *Jiao*. In laboratory studies, *Bai Zhu* extract increased healing of intestinal epithelial tissue and a polysaccharide extract enhanced the growth of healthy gut flora. *Bai Zhu* is used in Fu Zheng therapies to control HIV-induced diarrhea and to inhibit cachexia caused by cancer. *Hou Po*, Magnolia bark, and *Da Fu Pi*, Betel husk; activates *Qi* and dispels dampness.



Betel husk has been shown to influence the gastrointestinal system; it strengthens the contractions and tension of the intestines. *Jie Geng*, Platycodon ventilates the lung and resolves Dampness. *Jie Geng* has a Lung/LI connection, being able to treat lung infections with excessive mucus (heat or cold conditions) and antispasmodic to the bowel. She is very useful for lung infections with excessive mucus; bronchitis, pneumonia, and chest colds; Effective for pulmonary abscess, spasmodic coughs, asthma (especially damp asthma) and sore throats due to heat or wind/heat and used in formulas for diarrhea, IBS, rectal spasms and intestinal abscesses. *Sheng Jiang*, Ginger; *Da Zao*, Jujube; and *Zhi Gan Cao*, honey roasted licorice, regulates the Spleen and Stomach, and harmonies the herbs.

The combination of these two herbal formulas Cleared accumulated Heat and Fire Toxins, as indicated by all the Heat symptoms, of elevated temperature, scleral injection, rapid pulse. Internal Damp is evident by the heavy lungs and Phlegm had obstructed Bob's portals of his mind when he was almost comatose when first seen on April 10. The calves responded very quickly and since no antibiotics were used, these calves did not lose their organic status. Neither of the calves developed any long-term complications from their shaky start: No navel-ill, joint-ill, pulmonary, or liver abscesses.

Western herbs can also be used in these cases of septicemia, Albert is a great example: Albert Murphy, a Jersey calf at one week on October 30, 2014 was found weak and cold-ear tips, extremities pale tongue, pale and phlegmy, chest was rattling, weak non-productive cough. He had watery diarrhea, that was just oozing out of his rectum, temperature 94 degrees F. He was diagnosed with neonatal septicemia and hypothermic shock. The therapeutic goals were to revive him, to increase his core temperature, and treat for hypothermic shock; he needed an internal warming tonic; digestive tonic; to strengthen his immune system, to relieve congestion in his lungs; needed immunostimulant herb, alteratives; To give relief from diarrhea; needed an intestinal astringent, anti-inflammatory, anti-microbial, and a digestive tonic, carminative; To relieve congestion in his lungs, we needed an expectorant, pulmonary astringent, anti-inflammatory, anti-microbial, anti-bacterial, anti-viral; Equal parts of the below herbs were given in a 1:3 tincture orally; one tsp three to four times a day.

- Cinnamon, *Cinnamomum cassia*
- Agrimony, *Agrimonia eupatoria*
- Echinacea root, *Echinacea purpurea*,
- White Horehound aerial parts; *Marrubium vulgare*.
- Usnea whole lichen, *Usnea spp*

Cinnamon, *Cinnamomum cassia*, bark as a circulatory warming stimulant. This herb is a diaphoretic, tonic, digestive tonic, antidiarrheal. This bark will serve as an internal restorative; to overcome the hypothermic shock. The bark as a circulatory warming stimulant. Current research showed the herb can kill multidrug resistant *Pseudomonas aeruginosa*, it has strong antibacterial activity against methicillin-resistant *Staphylococcus aureus*; has been shown to inhibit *Staphylococcus aureus* and *Campylobacter jejuni*, and it has strong affect against Lactic acid bacteria, and has been shown to be very effective against highly pathogenic avian influenza virus subtype H7N3.

Agrimony: *Agrimonia eupatoria* is classified as a bitter tonic, with astringent, anti-inflammatory, anti-catarrhal effects and acts as a hepatic tonic. It can treat diarrhea, malabsorption, and malnutrition due to intestinal hyperpermeability.

Echinacea root, *Echinacea purpurea*, is an alternative, immunostimulant, antimicrobial, anti-inflammatory, carminative, tonic with anti-catarrhal, antipyretic effects. Energetically it clears retained pathogens, clears Heat Toxins, tonifies and regulates defensive *Wei Qi*. Traditionally this herb was used for severe septicemia

Usnea whole lichen, *Usnea spp* has antibacterial, antibiotic, and antiseptic qualities. This lichen opens the chest, transforms phlegm, removes damp heat, invigorates blood, clears heat and toxins, and clears deficiency heat; indicated for tuberculosis, immunity boost for common cold, pleurisy, pneumonia, and absorb heavy metals and pollutants. Research has shown it to have significant antimicrobial activities.

White Horehound aerial parts; *Marrubium vulgare*. is a neutral (hot, warm according to some), bitter herb. It affects the Lung and Spleen. It clears Lung Phlegm with an expectorant, spasmolytic action. It tonifies and moves Spleen and Stomach *Qi*, bitter digestive tonic, it benefits the throat. Hildegard states its use for sore throat, and weak digestion. Culpeper states its use for those that are short of breath, asthmatic or have a cough, 'to clear cold rheums from the lungs of old people', to expectorate tough phlegm from the chest.

Henriette Kress' recipe for horehound syrup:

- 40 g herb, fresh, chopped up or 20 g dried; 9dL water 450g sugar;
- bring to a boil herb to a boil,
- leave for ½ hour, strain; allow set on low heat until you have 2dL, add sugar

Indications of horehound include a dry cough, chronic or acute bronchitis especially with a non-productive cough; chronic catarrh; colds, loss of appetite with weak digestion, atonic or nonulcerative dyspepsia, flatulence, and diabetes. Cautions: Large doses are purgative. Since the herb has a hypoglycemic effect. Use with caution with hypoglycemics and antihypertensives.

This herb is also a uterine stimulate. But it is a COMMON herb used in cough drops, with no issues! Dosages for Small Animal: Dried Herb: 25-300 mg/ kg divided TID; Infusion: 5-10 g per cup, ¼-1/2 cup per 10 kg divided; or as a Tincture: 1:2-1:3: 0.5-1 ml per 20 kg divided

Horse and cattle: Two handful of the herb made into a strong brew with 1 ½ pints of water; give a cupful twice a day. For those who like scientific validation of our traditional uses, PubMed is filled with research articles; its antispasmodic and bronchial secretagogue effects are proven; Expectorant and vasodilative properties have been documented; the main active expectorant principle is reported to be marrubiin, which is stated to stimulate secretions of the bronchial mucosa; also been stated to be cardioactive, possessing anti-arrhythmic properties, although higher doses are reported to cause arrhythmias; possess bitter properties comparable to gentian; antischistosomal activity; protects myocardium against acute myocardial infarction; has mosquitocidal activity; a significant lowering of total lipids, triglycerides, and total cholesterol levels in treated animals, potent antimicrobial activity against some Gram (+) pathogenic bacteria and *Botrytis cinerea* fungi; anticancer agent; gastroprotection is related to the activity of nitric oxide and endogenous sulfhydryls; important role these plants have in the treatment of gastrointestinal disorders caused by *H. pylori*; and antileukemic activity.

Albert has grown up to be an amazing animal, over a ton in weight living the life of leisure at his farm sanctuary.

These cases illustrate how either using Chinese or Western herbs, serious cases of septicemia can be resolved with the animals living healthy lives.

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## ***Herbal Synergy: A Key to Effective Herbal Medicine***

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The word synergy is derived from the Greek root words syn meaning “together” and ergon, which means “work”. Thus the word’s entymological meaning is “to work together”. In the world’s great herbal traditions (TCM, Ayurveda, Unani-Tibb, Tibetan medicine, Siddha, Jamu etc.) the concept of herbal synergy is woven into the fabric of these ancient healing practices. Throughout the history of herbal medicine, the use of simples (one herb at a time) is the exception rather than the rule. The use of complex herbal formulas is almost universal, as practitioners have always understood they are most often treating complex people with complex problems. If you had asked me 20 years ago if I could prove that herbal synergy was a “real phenomenon”, I would have said I had seen it occur in my practice and believed it was true. I would have also stated that this belief was not just my opinion, but as previously mentioned almost universal in traditional medicine. This philosophy has run counter to western medicine practice over the last 60 years. Pharmaceutical approaches to treating illness focused on monotherapies of often single molecular compounds. A very interesting and rather ironic change has occurred in the last 2 decades in orthodox medicine. Mirroring traditional medicine, the use of multiple medications for treating diseases has gained scientific support and acceptance in clinical practice. This includes the use of protease inhibitor “cocktails” for HIV, triple therapy for H. pylori eradication and combination pharmaceuticals for lowering blood pressure and treating cancer. In each case the combination of pharmaceuticals has been shown to have greater efficacy than the individual medications, due to pharmacodynamic synergy.

In herbal research there has been a significant increase in human, animal and laboratory studies over the past 20 years showing that synergy is a real phenomenon. It is now clear that when herbs are skillfully combined in formulas they can have greater activity than the individual ingredients. Thus, 1 + 1 no longer equals 2, rather it can equal 3, 4 or 5. It is also important to note that combining a number of herbs in a formula is no guarantee of creating synergy. Antagonism (anti-synergy) is a real phenomenon as well, where  $1 + 1 = 1$ . Most antagonisms can be avoided by common sense and a basic understanding of phytochemistry. It makes no sense to combine strong stimulants and sedatives in the same formula. The combination of strong astringents and mucilaginous herbs creates a chemical reaction, where the tannins bind the mucopolysaccharides making the combination into an insoluble and useless mass (see appendix 2). Other incompatibilities include the traditional TCM list of 18 incompatibles-Xiang Fan and 19 counteractions (see appendix 1), pharmaceutical antagonisms (see appendix 2) and an interesting herb/herb interaction between Cranberry juice and Uva Ursi (*Arctostaphylos uva-ursi*). It is only in alkaline urine that the arbutin in Uva-Ursi is converted into antibacterial hydroquinones. Because Cranberry juice acidifies the urine it inhibits the urinary antiseptic effects of the herb.

### ***How can we determine if two or more herbs will create synergy?***

One of the easiest ways to determine if a combination of herbs creates synergy is to look at traditional herbal use. The Physiomedicalists, TCM practitioners, Ayurvedic and Unani-Tibb physicians realized that certain combinations of herbs were more effective than their individual parts. A good example would be the well-known duo of Frankincense and Myrrh. Both herbs have analgesic and antiinflammatory activity, but in an animal study the combination was superior to either herb as a single remedy (Su, et al, 2012).

Finding traditional herbal pairs or triplets and using them as a basis of a larger formula can be a very effective way to create synergy. Combining individual tinctures or powdered extracts can certainly create synergy. Some studies have also found that decocting herbs together, as is done in most herbal traditions, can also enhance synergy, often in ways quite different than simply combining single herb products (Zhou, et al, 2014). When various herbs are cooked together any number of chemical changes can occur, including the creation of novel chemical compounds.

**CHART 1: A LIST OF SOME TRADITIONAL PAIRS AND TRIPLETS**

HERBS	FUNCTION	TRADITIONS
Frankincense/Myrrh	Moves blood, relieves pain and inflammation	Unani-Tibb, TCM
Triphala	Bowel tonic, antiinflammatory	Ayurveda
Corydalis/Angelica dahurica	Moves blood, relieves pain	TCM
Cordyalis/Zedoary	Moves blood, antitumor	TCM
Dan Shen/Safflower	Moves blood, cardiovascular tonic	TCM
Trikatu	Enhances digestion	Ayurveda
Dang Gui/Ligusticum	Moves blood, relieves gynecological pain	TCM
Turmeric/Ginger	Moves blood, antiinflammatory, relieves pain	Ayurveda
Astragalus/Dang Gui	Anti-allergy	TCM
Honeysuckle/Forsythia	Clears blood heat, treats colds, influenza	TCM
Artemisia yinchenhao Gardenia/Rhubarb	Treats jaundice, hepatitis, clears damp heat	TCM
Dan Shen/Tienqi/Borneol	Cardiotonic, moves blood	TCM

### *How does herbal synergy work?*

While research has probably not discovered all the ways that herbal synergy works, several mechanisms are clear. In some cases such as Corydalis/Yan Hu Suo and Angelica dahurica/Bai Zhi, a small amount of Bai Zhi significantly increased absorption of dl-THP, the most active alkaloid found in Corydalis. Research has also shown that Bai Zhi enhances the absorption of the Kudzu constituent puerarin (Liao, et al, 2014) and baicalin from Baikal Scullcap (Liang, et al, 2012). The classic TCM pair of Honeysuckle flower and Forsythia was studied and the combination significantly increased intestinal absorption of numerous active constituents (Zhou, et al, 2014). When Honeysuckle flower and Forsythia were combined with Platycodon root, it had antiinflammatory effects that promoted the ability of the other two herbs to clear heat and relieve COPD symptoms (Li, et al, 2013). Herbs such as Bai Zhi, Black Pepper/Piperine, Pippali Long Pepper, Ginger, Caraway and Licorice act as bioenhancers, increasing absorption of other herbs or medications and the bioavailability of active constituents (Mhaske, et al, 2018; Yurdakok-Dikmen, et al, 2018; Singh, et al, 2016.;Tatiraju, et al, 2013; Dudhatra, et al, 2012).

In other cases, herbs may enhance activity by working on multiple receptor sites, metabolic pathways or organs, thus reinforcing each other's actions by different, but complimentary effects. Examples of this include Kudzu and Mulberry bark, both of which reduce blood sugar levels but when combined have a significantly greater activity (Xiao, et al, 2014). Mulberry bark works by inhibiting  $\alpha$ -glucosidase activity in the small intestine. The flavonoids found in Kudzu delayed the absorption of the compound l-deoxynojirimycin, which increased the small intestine concentration of this substance and created a stronger hypoglycemic effect. The classic TCM pair of Gastrodia/Tian Ma (4 parts) and Ligusticum root (1 part) has a long history for treating headaches. In studies looking at the mechanism of action it has been found that the Gastrodia primarily affects nerves, relieving inflammation and pain, while the Ligusticum affects blood flow (Wang, et al, 2013). The combination in the proportion of 4:1 is significantly more active than either individual herb.

A third type of synergy occurs because some herbs can inhibit or disable MDR pumps in bacteria or cancer cells. Thus, the addition of an herb (or herbs) to a pharmaceutical cancer protocol or antibiotic regimen can increase efficacy of the drugs or allow them to regain activity. In studies of essential oils (Piperacillin/Cinnamon EO, Piperacillin/Lavender EO, Piperacillin/Peppermint EO, Meropenem/Peppermint EO), various polyphenols, Terminalia bellerica, Terminalia chebula, Hops and Sage, all of these substances were shown to increase antibiotic activity against resistant strains of bacteria.

The last form of synergy involves decreasing adverse effects or toxicity. In TCM, small amounts of Licorice are added to many complex formulas to "harmonize" the remedy. Licorice prevents acrid herbs from irritating the throat or gastric mucosa. It has gastroprotective and hepatoprotective effects, preventing stomach or liver damage and it reduces toxicity of potentially poisonous herbs. Research has found with the traditional herb pair of processed Aconite and Ginger, that Ginger increased excretion of the toxic Aconite alkaloids (Peng, et al, 2013).

### **Dui Yao, the Chinese Art of Synergy**

In TCM, the concept of Dui Yao (two herbs) is the foundation for creating effective formulas. These pairs of synergistic herbs are the building blocks for larger formulas designed to treat underlying constitutional/energetic issues as well as symptoms. From a TCM perspective, there are four types of synergistic reactions and two types of antagonisms. In the first, Xiang Xu (mutual accentuation) two herbs with similar activity are used together to enhance activity. An example of this is the combination of Rhubarb/Da Huang and Mirabilitum/Mang Xiao. Both are laxatives, but Rhubarb stimulates bowel motility, while Mang Xiao softens the stool by increasing water in the bowel. The second is Xiang Shi (mutual enhancement), wherein two herbs with different activities are used. The first herb focuses on the disease or imbalance and the second improves absorption, or indirectly supports the first herb's action. An example of this would be using Chinese Coptis/Huang Lian with Vladimira root/Chuan Mu Xiang for treating dysentery. The bitter yellow Coptis contains the antimicrobial alkaloid berberine, which has been shown to inhibit multiple species of bacteria that cause diarrhea or dysentery. While Chuan Mu Xiang increases serum berberine levels, as well as relieving nausea, cramping and flatulence. A third type of synergy is mutual counteraction (Xiang Wei). Here an herb is used to counteract toxicity or adverse effects of the primary herb. Examples of this include the use of Licorice with processed Aconite/Fu Zi or Aconite with Ginger (see page 2). Similar to Xiang Wei is Xiang Sa, or mutual suppression. Here the primary herb, in addition to treating the disease or underlying disharmony, also "kills" the toxicity of the secondary herb used to support it. A good example is Ginger, which is an antiemetic and detoxifies Pinellia/Ban Xia, which also relieves nausea and vomiting.

**CHART 2: COMMON TCM PAIRS***(in addition to ones shown in chart 1)*

<b>HERBS</b>	<b>FUNCTION</b>
Poria/Water Plantain	Relieves edema
Ginseng/Kudzu	Spleen qi tonic
Ligusticum/Red Peony	Enhances cerebral circulation, neuroprotective
Dang Gui/Ligusticum	Cardiotonic, relieves dysmenorrhea
Dang Gui/White Peony	Relieves blood stagnation
Ephedra/Gypsum	Antipyretic, antiasthmatic
Ephedra/Peach seed	Treats asthma and bronchitis
Coptis/Evodia	Enhances digestion
Bai Zhu/Huang Qin	Stops uterine bleeding, threatened miscarriage
Rhubarb/Gardenia	Clear damp heat, hepatoprotective
Clematis root/Notopterygium	Anti-arthritic, expels wind/damp
Tienqi/Safflower	Cardiotonic, relieves blood stagnation
Notopterygium/Du Huo	Antiinflammatory, expels wind/damp
Notopterygium/Siler	Antiinflammatory, migraines
Honeysuckle/Forsythia	Clears wind heat
Pinellia/Ginger	Relieves nausea and vomiting
Biota seed/Zizyphus seed	Relieves insomnia and disturbed shen
Gou Teng/Gastrodia	Relieves liver wind-antiseizure activity
Suo Yang/Rou Cong Rong	Nourishes the kidney yang, blood and jing
Mu Xiang/Ku Shen	Effectively treats acute diarrhea

In both Chinese and Korean herbal medicine, formulas are constructed using herbal pairs to create increased efficacy and to reduce toxicity. There are 4 activities that need to be accomplished with a formula. The primary herb targets the major health issue or symptoms. The supportive herb acts as a synergist to the primary herb and/or treats secondary symptoms. One of these herbs or another from a second herb pair is used to reduce adverse effects or toxicity and, lastly, one herb is used as a “guide” to ensure the herbs get to the targeted organ or tissue. In TCM there are approximately 120 commonly used herb pairs and many other less frequently used combinations.

## Convoy Drugs in Traditional Persian Medicine (TPM) and Unani-Tibb

In traditional Persian medicine (TPM) one way of achieving synergy is the use of Mobadregh, or convoy, drugs (Saduti, et al, 2016). These medicines are known to enhance absorption of the primary medicinal herbs and to slow their metabolism and excretion. Examples of convoy drug pairs include:

CHART 3: CONVOY DRUG PAIRS	
HERBS	FUNCTION
Saffron/Camphor	Cardiotonic, nootropic
Cinnamon/Muskmelon seed	Diuretic
Chicory root/Celery seed	Hepatoprotective
Hawthorn/Camphor	Cardiotonic
Saffron/Rose	Cardiotonic
Turpeth/Ginger	Purgative

Other herbs/food used to enhance absorption include Black Pepper, Fennel seed, Anise seed, Sassafras, Long Pepper, Chicory seed, vinegar, Dill seed and red wine. Unani medicine, or Graeco-Arabic medicine, has its origins in ancient Persia. There is little, if any, difference between TPM and Unani-Tibb. According to Avicenna (Ibn sina) when two or more tastes or medicines come together, it can create an additive effect (Avicenna & Bakhtiar, 2012:xlvii). He states that mixing drugs can allow them to penetrate to the target tissue or serve as a vehicle.

Examples include combining Saffron with Rose or Camphor to make it more effective in penetrating to the heart.

## Synergy in Ayurveda

In the Indian medical system of Ayurveda, synergy is achieved via several practices. According to Ayurvedic scholar and clinical herbalist Alan Tillotson, RH, LAc, PhD, “adding herbs to the appropriate *anupana* (vehicle) enhances digestion, absorption, improves flavor and directs it to a specific dhata (tissue) and the alleviation of a particular dosha or condition”. Common anupanas include honey, ghee, milk, sugar cane juice, rain water and warm water. A second concept is the *yogavha*, which means “a vehicle for bringing things together”. Specific herbs (Gum Guggul, Shilajit) and minerals (bhasmas) are used with a formula to enhance its activity and efficacy. Some formulas such as Triphala (3 fruits), Trikatu (3 peppers), Chaturvija (4 seeds) or Panchakok (5 spices) are added to other formulas to act as *yogavha* synergists.

## **Siddha and Synergy**

Siddha is the traditional medicine of the Tamil people of Sri Lanka and the southernmost part of India. Much of the practice and theory of Siddha is taken from the ancient Ayurvedic texts, but there are differences in the materia medica (a smaller number of herbs are used and some are unique to Sri Lanka), and theories of practice. The concept of anupana in Ayurveda exists in Siddha, where it is called anupanum. These liquid, powdered or semi-solid vehicles are taken along with or after the primary medicinal substance as adjuvants to enhance absorption and improve therapeutic activity. In Siddha common anupanum include: Ginger, sugar, water, cow urine, cow milk, mother's milk, ghee, honey and Piper betal juice. Some of the powders are mixed with the accompanying herbs, while others are decocted and taken as a tea. Common powdered anupanum include: Akkarakara (Pellitory root), Arathai (Lesser Galangal), Jathikkai (Nutmeg), Parangi (Smilax china), Thippili (Long Pepper), Thirikadu (Trikatu) and Thiripala (Triphala). Different vehicles are used to direct the primary herb(s) to its intended target tissue. In addition, the anupanum may change, depending on external factors such as the season. According to Dr. J. Joseph Thas (Siddha Medicine, 1983:87-107), Chebulic myrobalans (*Terminalia chebula*) is taken as a rejuvenative medicine. It should be taken throughout the year, but the accompanying anupanum should change depending on the season. "It is taken with rock salt during the rainy season, with sugar in the autumn, with dry Ginger and Long Pepper in winter, with honey in the spring and sugar syrup in the summer".

## **Tibetan Medicine-Synergy Through Preparation**

The development of Tibetan medicine is a fascinating story. The "father" of Tibetan medicine was Yuthog Yonten Gonpo (708-833 AD). He made three trips to India, where he studied Ayurvedic and Buddhist medicine. He wrote 30 texts incorporating indigenous Tibetan knowledge (the Bon tradition) with Chinese and Indian medical practices and is considered to be a reincarnation of the medicine Buddha.

During his life, an extraordinary medical conference was held at the Samye monastery (where he was a monk). Scholars from India (Ayurveda), China (TCM), Persia (TPM) and Greece (Greek humoral medicine) discussed, debated and taught about their medical theories and practice. Tibetan medicine includes aspects of all of these traditions and is a unique synthesis of the world's best-known healing traditions.

Unfortunately, the great wealth of Tibetan medical knowledge is poorly represented in English language publications. While I suspect there is more information about herbal synergy as regards to this system, I could only find two examples in reading the available literature. The climate in Tibet is cold and windy. Warming, spicy and aromatic herbs that counteract these pathogenic influences also enhance digestion, which is believed to be the key to good health. These herbs are frequently utilized in Tibet and many are imported from India and/or China. They include Ginger, Cardamom, Musk, Long Pepper and Cloves (Dharmananda, 2001). In addition, according to Dr. Khangkar (1986:187), the method of preparation has a profound and important role for creating herbal synergy:

"If we are using Cardamom, we have to use only the inside, because the outside has no value and then we have to peel each one. There is no machine that can do this, it has to be done by hand. After treating each of the ingredients like this, we will mix maybe three, thirteen or twenty-five ingredients to make one pill. The first step is to mix all of these ingredients together. If this is not done properly, then each of the ingredients will maintain their own potency without combining with the rest. So, first they have to be completely mixed and this takes a long time of grinding and mixing. After that, it has to be left at rest for a whole day. After the rest, the person who is preparing the medicines has to clean his hands and then begin



again with the mixing and grinding that medicine. After this we make the pills. The pills can be made with machines. Then the pills are put into a very long bag made of cotton cloth. Two men hold the cloth from each side and move it back and forth so that the pills roll from one side to the other. This is done for a whole day. This last procedure is responsible for making Tibetan medicine pills so hard. This procedure takes out all the air that is still in the pills. If air remains in the pill, then it is prone to bacteria getting in, and for the pills to go bad.”

### **Synergy in Physiomedicalism**

The Physiomedicalists were “descendants” of the earlier Thomsonian practice. There were trained physicians who only used sanative medicines (non-toxic remedies). The early Physiomedicalists expanded beyond Samuel Thomson’s simple idea of energetics “heat is life, cold is death”. They created a system of energetics looking at excessive excitation, relaxation, contraction and sedation in the body and remedies to treat these imbalances. It was J.M. Thurston, MD who fully developed this into a comprehensive system and used pairs or triplets of herbs to resolve underlying circulatory and nervous system imbalances.

<b>CHART 4: PHYSIOMEDICAL HERBAL PAIRS</b>	
<b>HERBS</b>	<b>FUNCTION</b>
Capsicum/Ginger	Diffusive stimulants
Ginger/Bayberry	
Passion Flower/Skullcap	Nervine relaxants
Balmony/Gentian	Digestive stimulants
Cola nut/Fresh Oat	Nervine stimulants
Fresh Oat/Damiana	Reproductive trophorestoratives
Hawthorn/Night Blooming Cereus	Cardiac trophorestoratives
Valerian/Hops	Nervine stimulants and relaxants

### **Eclectic Medicine and Herbal Co-operatives**

The Eclectic movement was founded in the 1820s by Wooster Beach, MD. They, too, primarily used herbal remedies, but this included not only mild acting herbs but also many “low-dose” botanicals eschewed by the Physiomedicalists such as Aconite, Belladonna, Gelsemium, Nux vomica or Bryonia. Initially, the Eclectics were as their name implies “eclectic”. They had few guiding principles beyond using what worked no matter if it came from their ranks or their competitors, the Allopaths, Homeopaths, Physiomedicalists, etc. In the early 1870s after the Eclectic movement almost became extinct, their fortunes rose under the leadership of John M. Scudder, M.D.

It is Scudder who created the system of specific medication, which like homeopathy looked to use single remedies rather than formulas. In spite of this new philosophy, most Eclectic physicians continued to use time-tested formulas and in clinical practice used simple herb formulas (2 or 3 herbs) or herb pairs (co-operatives) alternating the herbs every other hour. In Finley Ellingwood’s classic Eclectic text, American

Materia Medica, Therapeutics and Pharmacognosy (1919), he mentions the use of herbal co-operatives and notes these combinations are more effective than either remedy by itself.

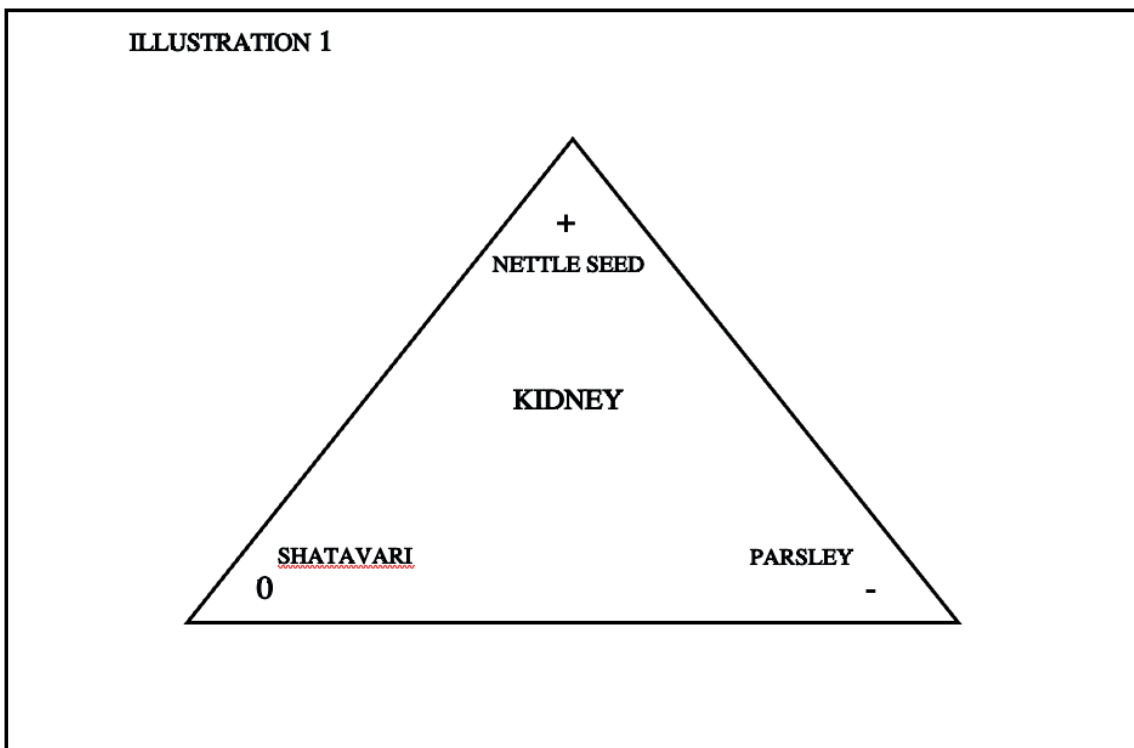
<b>CHART 5: ECLECTIC HERB CO-OPERATIVES</b>	
<b>HERBS</b>	<b>FUNCTION</b>
Passion Flower/Skullcap	Nervine relaxants
Balmony/Gentian	Digestive stimulants
Cola nut/Fresh Oat	Nervine stimulants
Fresh Oat/Damiana	Reproductive trophorestoratives
Hawthorn/Night Blooming Cereus	Cardiac trophorestoratives
Valerian/Hops	Nervine stimulants and relaxants
Grindelia/Lobelia	Asthma
Colocynth/Collinsonia	Severe, gripping, spasmodic menstrual pain
Pulsatilla/Gelsemium	Menstrual headaches

### **William LeSassier's Triune System**

The late William LeSassier was one of the architects of the American herbal renaissance. He was a brilliant herbalist and clinician who was one of the first western herbalists to teach about herbal energetics, Chinese herbs and many little-known western herbs. He created and taught a synthesis of western and eastern healing practices. Perhaps his greatest achievement was his triune (triangle) system of creating herbal formulas. Each organ system triangle (see Illustration #1) consisted of three herbs, a builder (+), a neutral (0) and an eliminator (-). The building herb nourished and strengthened the organ, while the neutral tonified or helped normalize organ/system function and the eliminator enhanced detoxification of metabolic wastes (diuretic, laxative, diaphoretic, expectorant), reduced pain, muscle tension, anxiety, blood sugar levels, LDL cholesterol or inflammation. While you can create simple triunes, the best use of this technique is the creation of constitutional triune formulas (see Illustration #2).

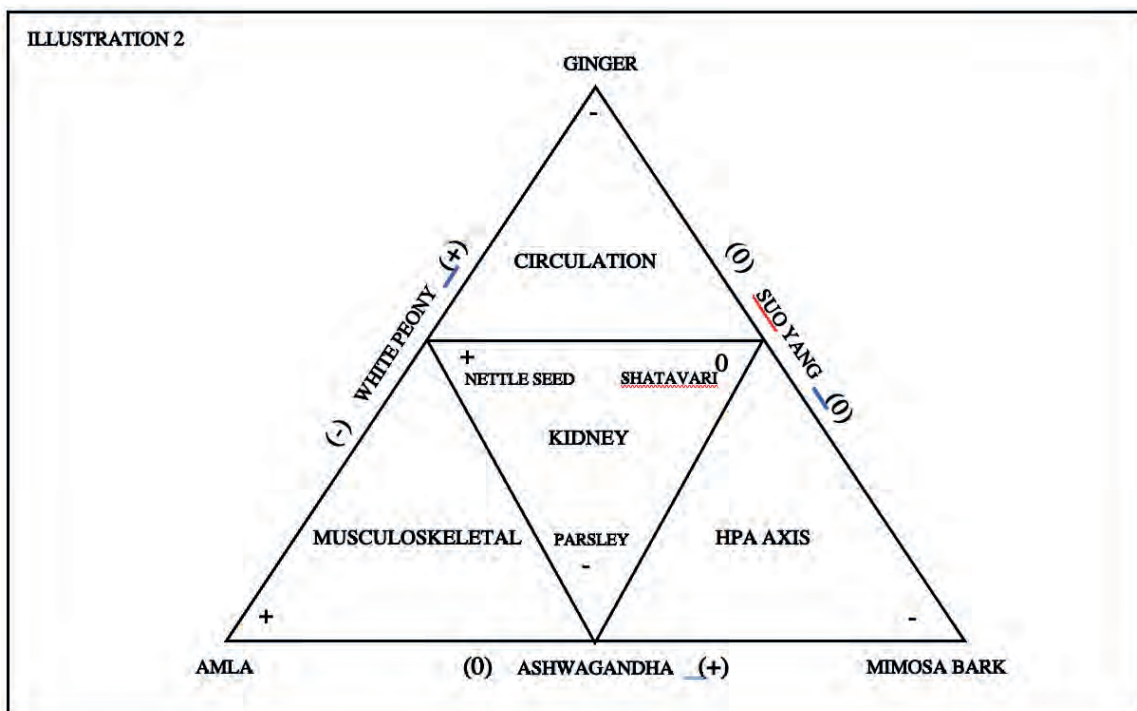
This system allows a practitioner to create custom formulas that “fit the patient” like a tailored suit of clothing. Not only can you create precise and effective formulas, the triune or triplets of herbs create synergy by promoting a balanced healing effect on each organ, tissue or system that you are focusing on. In classes many years ago William described the benefits by saying building, nourishing or strengthening herbs are very useful, but using them alone does nothing to enhance elimination and can cause stagnation. Tonic herbs (neutrals) promote normal function, but are not strong enough to nourish a depleted organ or system and, again, do not improve elimination of wastes or tension. Eliminators used to the exclusion of other herbs weaken the organ. An example would be stimulant laxatives such as Senna, where chronic use leads to bowel dependency and atonic constipation. Another example might be the use of strong diuretics, which can irritate the kidneys and increase potassium loss. In a triune formula, a diuretic can be combined with a nourishing herb which often contains potassium and has nephroprotective effects and a tonic herb that reduces fluid loss, enhancing overall activity and helping to prevent adverse effects.

ILLUSTRATION 1



While you can create simple triunes, the best use of this technique is the creation of constitutional triune formulas (see Illustration #2).

ILLUSTRATION 2



## Synergy in Clinical Herbal Practice

Many western herbalists in the US, UK, NZ, Australia, South Africa, Israel, Canada and European countries have a rather “eclectic” practice. Not to be confused with the Eclectic physicians, many herbalists do not adhere to one system of traditional medicine. Rather, they mix and match traditional concepts, materia medica, science, as well as other healing modalities. This has created a wonderfully diverse, creative and vibrant herbal practice. There are potential downsides as well, such as the lack of a clear framework for practice. In some cases, practitioners also have no concept of differential diagnosis and energetics and there is a lack of consensus as to dosage and clinical use of some botanicals. Even without a traditional system of practice, a good clinician soon realizes certain combinations of herbs get better results and eventually most herbalists develop “favorite” formulas, based on continued clinical success. From my own practice I can easily think of many duos or triplets of herbs that clearly exhibit synergy. In addition, there is a concept in traditional herbal medicine of herbs that act as catalysts, increasing the activity of other herbs in a formula. Samuel Thomson used Cayenne, Bayberry or Lobelia to do this. In my practice I have used Black Pepper, Ginger, Licorice, Prickly Ash, Orange Peel and Angelica as catalysts. Many of the herbs historically used this way have a spicy or acrid taste. Today, these herbs are known as bioenhancers (see page 2) and research has confirmed that adding a small amount of these herbs into a larger formula can significantly enhance the overall activity and absorption of the preparation.

**CHART 6: HERB PAIRS/TRIPLETS FROM MY CLINICAL PRACTICE**

HERBS	FUNCTION
Parsley/Celery seed	Relieves gout and reduces uric acid levels
St. John’s wort/Lemon Balm	Treating seasonal affective disorder (SAD)
Mimosa bark/Rose Petals/Hawthorn	Treating chronic grief, stagnant depression, broken hearts
Scullcap/Blue Vervain	Stress-induced spasms, tremors, palsies and muscle spasms
Sarsaparilla/Gotu Kola	For tissue that is red, hot and inflamed
Fennel/Lavender	For foul-smelling gas and GI stagnation
Bugleweed/Motherwort/Lemon Balm	To inhibit hyperthyroidism
Burdock seed/Milk Thistle seed	For dry, itchy, scaly or crusty skin
Nettle seed/Cordyceps	For degenerative kidney disease

## Modern Synergy Studies

Interest in synergy and research on this topic has become increasingly popular over the last 15 years, especially in China. New techniques such as systems pharmacology and complete pattern analysis (DMIM-Distance-based mutual information model, NIMS-network target-based identification of multicomponent synergy) have allowed researchers to more fully understand the intricate and complicated effects of herbal synergy and herbal formulas.

<b>CHART 7: EXAMPLES OF MODERN RESEARCH SHOWING SYNERGY BETWEEN TWO OR THREE HERBS (not based on traditional use)</b>	
<b>HERBS</b>	<b>FUNCTION</b>
Milk Thistle/Barberry	Reduces HbA1c and serum glucose levels
Magnolia bark/Ginger	Antidepressant
Kudzu/Mulberry bark	Hypoglycemic activity
Magnolia bark/Phellodendron	Lowers cortisol levels, improves mood
Anemarrhena/Chinese Coptis	Antiinflammatory for IBS/IBD
Magnolia bark/Citrus peel	Antiinflammatory for osteoarthritis
Epimedium/Psoralea/Ligustrum	Inhibits osteoporosis
Essential oils/antibiotics	Enhances antibiotic activity, inhibits bacterial MDR pumps
Artemisinin/Cryptolepine	Antimalarial
Polyphenols/antibiotics	Enhances antibiotic activity, inhibits bacterial MDR pumps
Green tea/Cinnamon/Ginger	Reduced serum glucose levels
Zizyphus seed/Gardenia fruit	Enhances memory and learning
ASHMI (Reishi/Ku Shen/Licorice)	Antiasthmatic
Chamomile/Star Anise	Anti-diarrheal activity
Chamomile/Oregano	Hypoglycemic activity
Zedoary/St. John's wort	Hypericum enhances absorption of active constituents of Zedoary

This new research has not only confirmed the validity of the concept of synergy, but also gives credence to the traditional belief that formulas can be more effective than single herb monotherapy.

## Single Herb Synergy

Over the past 25 years there has been a strong push towards identifying the active constituent or constituents in herbs. Then researchers and manufacturers either extract these compounds or standardize products to ensure a certain level of a constituent. This idea follows the western monotherapy or single molecular compound model of pharmaceuticals. While this concept can produce effective phytopharmaceuticals such as the silymarin complex from Milk Thistle or standardized Ginkgo or Coleus forskolii, it has its downside as well. A very good example of this is Curcumin, extracted from the herb Turmeric. For 15 years we have been told the curcuminoids were the “active constituents” of Turmeric and most of the products in the marketplace contain 85-95% curcuminoids.

There are several problems with this approach. First curcumin is poorly absorbed and quickly excreted. In order to improve absorption and inhibit its excretion, various processes have to be utilized (combining curcumin with piperine, mixing it with phosphatidylcholine or micelles/nanoparticles). In addition, since the curcuminoids have been identified as the active constituents, other phytochemicals found in Turmeric rhizome (but not in curcumin products) have been shown to have significant activity including turmerin, tumerone,  $\beta$ -elemene, furanodieine, curdione, bisacurone, cyclocurcumin, curlone, furanodienone, calebin A and germacrone. In several animal studies, curcumin-free Turmeric extracts have been shown to have significant anti-inflammatory and antitumor activity (Aggarwal, et al, 2013; Deshpande, et al, 1998 & 1997). Turmeric oil (which is devoid of curcumin) has also been shown to have antiinflammatory, hypocholesterolemic, antitumor, neuroprotective, hypoglycemic and antiplatelet activity (Singh, et al, 2015a; Singh, et al, 2015b; Manhas, et al, 2014; Singh, et al, 2013; Prakash, et al, 2011) and ironically, it enhances absorption of curcuminoids. In my practice I can also say that I achieve greater clinical results using Turmeric tinctures or even the powdered rhizome than with a standardized curcumin products.

Another example of the fallacy that every herb has a single active ingredient or group of ingredients is Hawthorn. The berry is used as a cardiac trophorestorative and researchers decided the active constituent was a flavonoid known as vitexin-2-0-rhamnoside. They extracted this flavonoid from the berry and gave it to rats. It was inactive. Then they gave the remaining herb (minus the vitexin-2-0-rhamnoside) to the rats, it, too, was inactive. The active constituent Hawthorn is Hawthorn, not a single constituent or even one group of compounds. One last example of single herb synergy is found in the plants containing the isoquinoline alkaloid, berberine. Berberine has been shown to have significant antibacterial, antiviral, antifungal, hypoglycemic, antitumor, hypocholesterolemic, antiobesiogenic and antiinflammatory activity. As with curcumin, isolated berberine is poorly absorbed. The other “less active or inactive” isoquinoline alkaloids found in berberine-containing plants such as Goldenseal, Barberry, Oregon Grape Root, Chinese Coptis, Phellodendron, Yellow Root and Goldthread, enhance absorption of berberine. In addition, bacteria and cancer cells can easily become resistant to berberine. Studies have shown that by adding Goldenseal or Barberry leaf to the root, compounds in the leaf (sideroxylin, 5'-methoxyhydnocarpin) can strongly inhibit multidrug resistant pumps, which prevents drug resistance (Cech, et al, 2012; Junio, et al, 2011; Ettefagh, et al, 2011; Stermitz, et al, 2000).

## Appendix 1

The Eighteen Incompatibles (Shi Ba Fan), originally contained only 18 herbs, but over the years the list has been expanded

1. Licorice (Gan Cao) is incompatible with Euphorbia kansui root (Gan Sui), Spurge root (Da Ji), Daphne genkwa flowers (Yuan Hua), and Sargassum seaweed (Hai Zao).
2. Aconite rhizome (Wu Tou), Processed Aconite (lateral root) (Fu Zi), and Processed Aconite (main root) (Chuan Wu) are incompatible with Fritillaria cirrhosa bulb (Chuan Bei Mu), Fritillaria thunbergii (Zhe Bei Mu), Trichosanthis fruit (Gua Lou Shi), Trichosanthis seed (Gua Bu Ren), Trichosanthis peel (Gua Lou Pi), Tricosanthis root (Tian Hua Fen), Pinellia (Ban Xia), Ampelopsis root (Bai Lian), and Bletilla (Bai Ji).
3. Veratrum root/rhizome (Li Lu) is incompatible with Ginseng root (Ren Shen), Glehnia root (Sha Shen), Adenophora root (Nan Sha Shen), Sophora flavescens root (Ku Shen Gen), Salvia miltiorrhiza root (Dan Shen), Scrophularia (Xuan Shen), Paeonia alba (Bai Shao), Paeonia rubra (Chi Shao), Wild Ginger (Xi Xin), and Codonopsis (Dang Shen).

4. The Nineteen Counteractions (Shi Jui Wei) include:
  1. Sulfur (Liu Huang) and Mirabilitum (Mang Xiao)
  2. Mercury (Shui Yin) and White arsenic (Pi Shuang)
  3. Euphorbia fischeriana rhizome (Lang Du) and Lithargyrum (Mi Tuo Seng)
  4. Croton seed (Ba Dou) and Morning Glory seed (Qian Niu Zi)
  5. Cloves (Ding Xiang) and Turmeric/Zedoary (Yu Jin)
  6. Nitrum (Ya Xiao) and Sparganum rhizome (Shan Ling)
  7. Cornu Rhinoceri (Xi Jiao) and Radix Aconiti kusnezoffii (Cao Wu)
  8. Cornu Rhinoceri (Xi Jiao) and Radix Aconiti preparata (Chuan Wu)
  9. Ginseng root (Ren Shen) and Flying Squirrel excrement (Wu Ling Zhi)
  10. Cinnamon bark (Rou Gui) and Halloysitum rubrum (Chi Shi Zhi)

Adapted From Chen and Chen, Chinese Medical Herbology and Pharmacology, City of Industry, CA, 2004, Art of Medicine Press

## Appendix 2

Incompatibilities in prescribing, taken from the Handbook of Pharmacy, Coblenz, 1901:394-398, and Principles of Pharmacy by H.V. Army, 1911:1077-1081.

Incompatibilities fall into 3 categories, chemical incompatibility, pharmaceutic incompatibility, and therapeutic incompatibility.

Chemical incompatibility occurs “when a chemical change takes place with the formation of one or more new compounds which were not expected or intended to be produced by the prescriber”. Examples relevant to this paper include:

- Alkaloids which are precipitated by tannins or Lugols Solution.
- Acacia gum which forms a jelly when combined with alcoholic solutions (tinctures).
- Iron is incompatible with liquid plant extracts that contain organic acids.
- Salicylic acid is incompatible with iron compounds and alkaloids.

Pharmaceutic incompatibility is caused by combining several substances (usually liquids) that interfere with the solubility of the constituents of the original preparations. “Thus, a solution of resinous substance, say tincture of ginger, will become turbid on addition of water, not because of any chemical change, but because the resin, while soluble in alcohol, is not soluble in alcohol diluted with water”. Another example of this is the combination of Marshmallow tincture, with other tinctures containing tannins. The mucilage is precipitated out of solution and forms an insoluble mass that no amount of shaking or mixing will undo.

Therapeutic incompatibilities are combinations where two or more medicines are therapeutically antagonistic. An example would be combining a mydriatic like Belladonna, with a miotic like Physostigma.

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***Brain Pain, The Challenge of Migraines ~  
The Herbal/Nutritional Treatment of a Chronic Neurovascular Disorder***

**David Winston RH(AHG)**

Approximately 10-14% of the world's population suffers from migraines. Women are more likely to experience them (18%) than men (6%). The term migraine is derived from the Greek word *hemicrania*, which refers to the typical one-sided pain caused by migraines. Migrainous headaches are defined as "an episodic neurovascular phenomenon, characterized by recurrent attacks of unilateral headaches" (Silberstein, 2004). They are usually divided into two basic types: migraine without aura (common migraine) and migraine with aura (classic migraine).

Migraine without aura symptoms include moderate to severe unilateral headache with pulsating pain, usually worse with movement, as well as nausea, cutaneous allodynia and light sensitivity. This is the most common form of migraine and sufferers tend to have more frequent and severe episodes than people who have migraine with aura.

Migraines with aura have a gradual onset (5-20 minutes) and most often last 60 minutes or less. This type of headache is accompanied by visual, auditory and sensory symptoms (Ansarri & Rafice, et al, 2012).

These two types of migraine are further categorized by frequency: episodic migraine (EM), low frequency episodic migraine (LFEM), high frequency episodic migraine (HFEM) and chronic migraine (CM). People with episodic migraine have fewer than 15 headache days per month. Low frequency episodic migraines have 10 or less headache days per month, while those with HFEM have 10-14. People suffering from chronic migraine experience more than 15 headache days per month (Lipton, et al, 2014). Episodic migraines are often progressive and about 2.5-3% of migraine sufferers (per year) become chronic migraine sufferers (Carod-Artal, 2014). Episodic migraines tend to peak in the early thirties, while chronic migraine peaks in people in their forties.

Other types of migraines include menstrual migraines, basilar migraine (a migraine that originates in the basilar artery, at the base of the skull, common symptoms of this type of migraine include intense headache as well as tinnitus and vertigo), abdominal migraine (usually in children), ophthalmoplegic migraine (a migraine occurring in one eye), vestibular migraine (usually causes vertigo and tinnitus) and retinal migraine.

It is unclear as to the pathogenesis of migraines. It was previously believed that migraines were caused by insufficient cerebral blood flow and rebound vasodilation. The effective use of pharmaceutical vasoconstrictors such as triptans or ergotamine lent credence to this theory. More recent research finds this does not adequately explain this phenomenon and vasodilation is more likely a secondary phenomena caused by neuro-inflammation. Studies of the brain have clearly shown that vasodilation is not required for a migraine to occur (Taylor, 2011).

Several mechanisms have been proposed to explain migraines, including altered cerebral perfusion, CSD/cortical spreading depression<sup>1\*</sup> (this causes a wave of depolarization, with altered blood flow, inhibition of bioelectrical brain activity and increased inflammation of the cranial nerve root-the trigeminal nerve), increased cerebral calcium influx, which has been shown in mice to trigger CSD (Yin, et al, 2017; Torrente, et al, 2014), low serotonin or magnesium levels, an inherited lower activation threshold of the trigeminocervical pain system, elevated levels of CGRP (calcitonin gene-related peptide-which causes increased vasodilation, mast-cell degranulation and inflammation), pituitary adenylate cyclase-activating polypeptide (PACAP), substance P or interleukin-1 beta (all of which can increase blood brain barrier/BBB permeability), glutamate dysregulation (Laursen, et al, 2014), mitochondrial dysfunction (Markley, et al, 2012), elevated levels of nitrate (this is caused by anaerobic bacteria in the mouth which over-produce migraine triggering levels of nitric oxide via the salivary nitrate-nitrite-nitric oxide pathway (Gonzalez, et al, 2016) and especially in women, impaired mitochondrial methylation (Roos-Araujo, et al, 2014). Repeated episodes of trigeminal activation increase cerebral inflammation, altering brain morphology with increased hyperexcitability of the CNS (Carod-Artal, 2014). It is clear there is a strong genetic component to migraines and this is more pronounced in people who suffer from migraine with aura. In addition, there are a significant number of factors which can trigger a migrainous attack.

External migraine triggers include common foods such as coffee and other caffeinated drinks, chocolate, red wine, aged cheese, ice cream, canned fish or meats, fermented foods, beer, soy and food allergens (dairy, gluten). Certain chemicals such as aspartame, sulfates, nitrates/nitrites (and foods containing them such as hot dogs, ham, wine, bacon and salami), MSG and tyramine can also provoke migraines in sensitive people. Stress, intense emotion, lack of sleep, fatigue, fasting and strenuous exercise can also precipitate migraine episodes, as can weather changes, tobacco smoke, strong odors and bright or pulsating lights. Eliminating external triggers can significantly reduce migraine frequency and severity in some cases. I have had some people eliminate various substances such as gluten, aspartame or red wine and reduce their migraine frequency dramatically.

Internal triggers for migraines are most commonly associated with changes in sex hormones. Menses, pregnancy and menopause can all affect the severity and frequency of migraines. The hormones estradiol and progesterone may have a primary role in initiating some migraines, especially menstrual migraines. Neurotransmitters such as serotonin also play a role in initiating migraines. Low serotonin levels are associated with their increased incidence.

Several other conditions are common co-morbidities with migraine, suggesting possible underlying triggers or causation. People with migraines have a very high incidence of stress or tension headaches (94%). Other conditions that occur frequently in this population include hypertension, diabetes, obesity, myofascial pain syndrome (Giamberardino, et al, 2007), arthritis, asthma, sinusitis, fibromyalgia, anxiety, depression, epilepsy (Ausari, et al, 2012), gastro-intestinal disorders such as IBS, celiac or IBD (Van Hemert, et al, 2014), temporomandibular dysfunction/TMD (Specciali & Dach, 2015), inflammatory connective tissue diseases (Tanasescu, et al, 2007) and a specific MTHFR gene mutation, C677T (Rainero, et al, 2019; Lea, et al 2009). Having migraines with aura also increases the risk of an ischemic stroke (Ola, et al, 2020).

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1 \* In an animal study, Garlic oil significantly inhibited the amplitude and repetition rate of CSD, suggesting it may offer some benefit for human migraine sufferers (Marschollek, et al, 2017).

Orthodox treatment of migraines utilizes preventive medications as well as acute acting drugs. Medications used for migraine prophylaxis include calcium channel blockers (verapamil, nifedipine), ACE inhibitors (lisinopril, candesartan), anticonvulsants (topiramate, sodium valproate), beta blockers (metoprolol, propranolol, atenolol), antidepressants (venlafaxine, amitriptyline) and onabotulinum toxin A (Botox®) injections. These are usually prescribed for people who experience two or more acute attacks per week and the acute medications do not offer adequate relief. Drugs used for acute symptom relief include ergotamine and dihydroergotamine, serotonin 5-HT<sub>1β</sub> receptor agonists (sumatriptan, rizatriptan, zolmitriptan, almotriptan, naratriptan, frovatriptan), kainate, opiates, NSAIDs (diclofenac, naproxen, ibuprofen sodium) and corticosteroids. All of these medications can be effective for some migraine sufferers, but unfortunately, for many they either do not work, only work partially or cause significant adverse effects. Overuse of acute acting migraine medications (more than 9 days per month) can lead to medication-overuse headaches and increased risk of chronic daily migraines (Taylor, 2009). According to Todd Schwedt, MD a neurologist at the Mayo Clinic, “an individual patient only has about a 45% chance of responding to any one therapy and we’re really bad at determining which individual is likely to respond to which specific therapy” (Watson, 2017). Newer medical treatments include electrical/magnetic nerve stimulation, including single-pulse transcranial magnetic stimulation (sTMS) and transcutaneous supraorbital neurostimulation (t-SNS), surgical decompression of trigeminal and cervical spinal nerve trigger points (Janis, et al, 2014), a lidocaine spray applied intra-nasally to the intranasal sphenopalatine ganglion/SPG (Mandalo, 2015), beta-blocker eye drops (Mighazo & Hagen, 2014), IV monoclonal antibodies (erenumab, galcanezumab, eptinezumab, fremanezumab) and calcitonin-gene-related peptide receptor antagonists (atogepant, ubrogepant). These last two classes of medications block migraines by preventing an increase in CGRP.

In the past, the herbal/energetic treatment of migraines focused on pain relief and the vascular component of migraines. Were they vaso-constrictive, vaso-dilative or both? While this approach offered benefits to some migraine sufferers, it is clear from advances in understanding the pathogenesis of this condition neuro-inflammation that is unrelated to circulation needs to be addressed. Based on current knowledge of inflammation, brain chemistry, nutrient deficiencies and pain control, I would propose an updated approach to migraine treatment. Instead of thinking about a headache being vaso-dilative, vaso-constrictive or both (more challenging to treat than the other two patterns), it can be described using the TCM concepts of excess/heat (this includes liver fire rising headaches and wind/heat headaches) or deficiency/cold, coupled with cerebral inflammation, oversensitivity of the trigeminocervical pain system, and spasm (TCM wind).

### **Herbs for Excess/Heat Migraines (this includes liver fire rising and wind/heat headaches)**

Symptoms of this pattern include red eyes, face or ears, sharp, intense pain, the head feels hot, the headache is expansive and the head feels like it will explode. In addition, the person is often irritable, may have elevated blood pressure, cutaneous allodynia, a fast pulse and a red tongue. In wind patterns there is often sharp, spasmodic pain, tingling or twitching eyes or scalp muscles. Cold applications usually help relieve the pain.

**Baikal Skullcap/Huang Qin root (*Scutellaria baicalensis*)** – is used to clear heat or damp heat. It has anti-inflammatory, antihistamine and immunoregulatory activity. It can be used to treat liver fire headaches with red eyes, irritability or hypertension. It can also be used to treat sinus headaches and, combined with Bupleurum, it is used to treat temporal headaches. In an animal study, pretreatment with oral Huang Qin significantly prevented nitroglycerine-induced migraine pain and debility (Liao, et al, 2021).

Dose: Tea (Decoction): 1-2 tsp. dried root, 10 oz. water, decoct 10-15 minutes, steep 1 hour, take 2-3 cups/day  
Tincture (1:5), 50% ETOH Dose: 2-3 mL (40-60 gtt.) TID/QID  
Extract granules (5:1): 1 g, 1-2 times per day mixed in water

**Betony herb (*Stachys officinalis*)** – is considered to be “specific” for head pain, including post-concussion pain, nervous headaches and migraines. It should be combined with other stronger-acting herbs such as St. John’s wort, Gambir/Gou Teng, Baikal Skullcap, White Peony or Jamaica Dogwood.

Dose: Tea: 1-2 tsp. dried herb, 8 oz. hot water, steep, covered, 15-20 minutes. Take 2-3 cups per day  
Tincture: 3-5 mL TID

**Blessed Thistle herb (*Cnicus benedictus*)** – is used in Europe to treat migraines. It works best for what I would call excess/heat or liver fire type migraines. It can be combined with Feverfew, White Peony, St. John’s wort, Corydalis or Gambir spines.

Dose: Tea: 1 tsp. dried herb, 8 oz. hot water, steep for 30-40 minutes, take 4 oz. 3x/day  
Tincture (1:5 or 1:2.5), 30-35% ETOH Dose: 1-2.5 mL (20-50 gtt.) TID/QID

**Blue Vervain herb (*Verbena hastata*)** – is indicated for wind/heat headaches with spasms. The herb is a nervine and has antispasmodic and anxiolytic activity. The related European species, *V. officinalis*, has been shown to also have anti-inflammatory and analgesic effects.

Dose: Tea: 1 tsp. dried herb, 8 oz. hot water, steep covered 40 minutes, take 4 oz. 3x/day  
Tincture: 1-2 mL TID

**Butterbur root (*Petasites hybridus*)** – has antispasmodic, antinociceptive and analgesic effects. A PA-free extract has been shown in clinical trials to reduce migraine frequency in both adults and children (Pothman, et al, 2005; Lipton et al, 2004; Grossman, et al, 2001). In a laboratory study Petasin (an active constituent found in Butterbur) decreased calcitonin gene-related peptide (CGRP) levels by 24% (Slavia, et al, 2016). This substance is believed to be a possible factor in migraine pathogenesis. Butterbur works best for headaches with muscle tightness, sinus congestion or spasmodic pain.

Dose: Capsules: 75 mg BID of a standardized PA-free extract

**Cassia seed/Jue Ming Zi (*Senna tora*)** – clears liver heat and is most effective for headaches with constipation, hypertension or red, painful eyes. It can be combined with Huang Qin, Chinese Gentian, Achyranthes or Gambir spines.

Dose: Tea : 1/4-1/2 tsp. dried powdered bark, 8 oz. water, steep covered 15-20 minutes, take 4 oz. 3-4x/day  
Tincture: 1-1.5 mL TID  
Extract granules (5:1): 1 g, 2-3 times per day mxed in water

**Celandine herb (*Chelidonium majus*)** – this herb has a long history of use in Europe and by the Eclectic physicians as a liver/gallbladder herb. The Eclectics stated it was very effective for treating migraines, bilious (liver) headaches and supraorbital neuralgia. Small doses can be used to treat liver fire rising and wind/heat headaches with Cassia Tora seed or Baikal Skullcap.

Dose: Tea: 1 tsp. recent dried herb, 8 oz. hot water, steep for 40 minutes, take 2-4 oz. 2x/day  
Tincture: .25-.75 mL TID

**Feverfew flowering herb (*Tanacetum parthenium*)** – was popularized by a British physician who had his patients eat fresh Feverfew leaves for migraine prophylaxis. The original studies were flawed as it included people who had already tried this remedy and it had benefited them. This self-selection skewed the results of early studies. Some more rigorous studies have found Feverfew can reduce the number and severity of migraine episodes (Diener, et al, 2005; Murphy, et al, 1988). In other studies it has not been found to be as effective as a stand-alone remedy (Pfaffenrath, et al, 2002; DeWeerd, et al, 1997).

In multiple studies Feverfew has been combined with Ginger (Cady, et al, 2011), Willow bark (Shrivastava, et al, 2006), magnesium and B2 (Maizels, et al, 2004), acupuncture (Ferro, et al, 2012), or Co-Q-10 and magnesium (Guilbot, et al, 2017) or magnesium, CO-Q-10, B-2 and Andrographis (Moscano, et al, 2019). In each case the combined therapies were superior to Feverfew as a single medication. A Feverfew extract made from the flowers rather than the leaf exhibited significantly stronger antinociceptive, anti-inflammatory and analgesic activity (Di Cesare Mannelli, et al, 2015).

Dose: Tea: 1 tsp. dried herb, 8 oz. hot water, steep covered for 1/2 hour, take 4 oz. 3x/day

Tincture: 1.5-2 mL TID

Fresh leaf: eat 3-4 fresh leaves per day. This can be more effective than capsules, but causes mouth sores in some people.

Capsules: CO<sub>2</sub> extract 6-25 mg TID

**Gambir spines/Gou Teng (*Uncaria rynchophylla, U. sinensis*)** – is commonly used in TCM to extinguish wind (spasm). It has antispasmodic, analgesic, antiseizure, neuroprotective, anxiolytic and vasodilatory activity. It is used to relieve liver wind conditions caused by liver heat. This includes some migraines. It also acts as an antinociceptive to the trigeminocervical pain center (it is used to treat trigeminal neuralgia, TMJ pain and bruxism). Gou Teng is frequently combined with Tian Ma (Tian Ma Gou Teng decoction) for treating liver fire migraines (Huang, et al, 2020).

Dose: Tea (Decoction): 1-2 tsp. dried stems, 8 oz. water, decoct 5 minutes<sup>+</sup>, steep 1 hour, take 4 oz. 4x/day

Tincture: 1-2 mL TID

Extract granules (10:1): 0.5 g, 1-3 times per day mixed in water

**Kudzu root (*Pueraria montana var. lobata*)** – is used in TCM for wind/heat conditions causing a stiff neck, migraines, cluster headaches, and back or neck pain and spasms. There is only one small human trial of Kudzu for migraines using a proprietary Kudzu extract (Kuzik®). In this study 89% of the participants had a significant reduction in headache days, with 57% achieving a 50% reduction (Tullo, et al, 2019). In an observational study Kudzu decreased the intensity and/or frequency of cluster headaches (Sewell, 2009). In TCM Kudzu is frequently combined with Notopterygium for treating occipital headaches.

Dose: Tea: 1-2 tsp. dried root, 12 oz. water, decoct 15-20 minutes, steep 1 hour, take 2-3 cups/day

Tincture: 3-5 mL TID/QID

Extract granules (5:1): 1 g, 1-3 times per day mixed in water

**Sweet Melilot flowering herb (*Melilotus alba, M. officinalis*)** – is used for sharp, stabbing pain, including migraines, optic neuralgia, brachial radiculopathy, sciatica and ovarian neuralgia. The herb has analgesic and anti-inflammatory activity and it enhances vascular integrity. It is of benefit for any migraine with sharp pain, described by the sufferer as “it feels like I am begin stabbed by a knife or ice pick”.

Dose: Tea: 1 tsp. recent dried herb, 8 oz. hot water, steep covered for 1 hour, take 4 oz. 2-3x/day

Tincture: 1-2 mL BID/TID



**Tree Peony bark (*Paeonia suffruticosa*)** – or Mu Dan Pi, is used in TCM to clear heat and cool the blood. It has anti-inflammatory, analgesic and neuroprotective effects. It is very useful for liver fire symptoms, including headaches, or migraines with a red head, red ears, red eyes, painful eyes, dizziness or hypertension. For liver fire (excess/heat) migraines, I use it with Feverfew, St. John's wort, Baikal Skullcap or Gambir spines to relieve pain and severity of the headaches.

Tea (Decoction): 1/4-1/2 tsp. dried bark, 8 oz. water, decoct 15 minutes, steep 1 hour, take 4 oz. 3x/day

Tincture (1:5), 50-60% ETOH Dose: .5-1 mL (10-20 gtt.) TID

Extract granules (6:1): 1 g., 1-2 times per day mixed in water

**Virgin's Bower leaf (*Clematis virginiana*)** – can be used for migraines where the head feels full, “like it will explode”, with a red face, red ears or red eyes and visual disturbances (migraine with aura). It is most effective if used when the headache is just starting and combined with Gambir, Feverfew and White Peony.

Dose: Tea: ½ tsp. dried leaf, 8 oz. hot water, steep 30-40 minutes take 2 oz. TID

Tincture: 10-30 gtt TID

**White Peony root/Bai Shao Yao (*Paeonia lactiflora*)** – is a very effective analgesic, anti-inflammatory, antispasmodic, neuroprotective and cerebral stimulant/nootropic. It can be used to help control petit mal seizures, liver fire headaches (red ears, eyes or head with expansive pain), excess/heat migraines and brain fog. In animal studies pretreatment with White Peony prevented nitroglycerin-induced migraines by inhibiting CGRP (Liao, et al, 2019). A TCM formula, Qi Long Tou Tong, was found in an animal migraine model to increase serotonin, beta-endorphin, 5-HT, dopamine and noradrenalin levels, while decreasing plasma calcitonin gene-related peptide (CGRP) and blood viscosity (Wu, et al, 2014). This formula contains White Peony, Astragalus, Dang Gui, Kudzu, Tribulus, Ligusticum root, Chrysanthemum, earthworm, Licorice, Frankincense, Myrrh and Gastrodia.

Dose: Tea (Decoction): 1/2-1 tsp. dried root, 10 oz. water, decoct 10 minutes, steep 40 minutes, take 4 oz. 3x/day

Tincture: 1.5-2.5 mL TID

Extract granules (10:1): 0.5 g, 2-3 times per day mixed in water

### **Herbs for Deficient/Cold Migraines**

*(this includes wind/cold and wind/damp headaches)*

Symptoms of the pattern include white circles around the eyes, bluish scleras, a pale face, the person feels cold, with dull throbbing pain that is often described as if the head is in a vise or compressed by a steel band. Other symptoms include brain fog, lethargy, sinus congestion (wind/damp headaches), a slow pulse and a pale tongue. Hot applications usually make the pain feel better.

**Arnica flowers (*Arnica montana*)** – was used by the Eclectics for headaches with a sore or bruised feeling in the scalp muscles and tensive pains that are exacerbated by motion. It can be combined with Ligusticum root/Chuan Xiong, Sweet Melilot, Siler/Fang Feng or Du Huo.

Dose: Tincture (1:5 or 1:2), 60% ETOH Dose: 1-2 gtt. TID/QID

**Bacopa herb (*Bacopa monnieri*)** - is an anxiolytic, nootropic, neuroprotective, nervine, cerebral anti-inflammatory and has antiseizure activity. I use Bacopa to speed healing of head trauma injuries (with St. John's wort, Chinese Polygala, Rosemary or standardized Ginkgo), nervous exhaustion and stroke recovery. Bacopa enhances cerebral blood flow and has been shown to have antinociceptive effects (Bhaskar & Jagtap, 2011).

Dose: Tea: 1 tsp. dried herb, 8 oz. water, steep 45 minutes, take 4 oz. 3x/day

Tincture: 1.5-2.5 mL TID/QID

Capsules (standardized extract-55% bacoside): 300 mg–600 mg per day

**Bai Zhi root (*Angelica dahurica*)** – is used in TCM for expelling wind/damp and wind/cold. It is very effective for relieving sinus congestion, sinus headache, allergic rhinitis and arthritic pain. Small amounts of Bai Zhi used with *Corydalis* dramatically increase its analgesic effects. Bai Zhi can also be used for frontal headaches and migraines. For frontal headaches it is often combined with Baikal Skullcap/Huang Qin. *Angelica dahurica* is frequently used in a formula known as Pian Tou Tong Wan (migraine pills) which contain Bai Zhi, Ligusticum root, Chinese mint, Dang Gui, Du Huo, Fang Feng/Siler, Gao Ben (*Ligustrum sinense*), Chinese Vitex, *Notopterygium* and *Vaccaria* seed.

Dose: Tea: 1 tsp. dried root, 8 oz. water, decoct 10 minutes, steep covered 40 minutes, take 4-8 oz.

2-3x/day

Tincture: 1-2 mL TID/QID

Extract granules (5:1): 1 g, 1-3 times per day mixed in water

**Blue Flag rhizome (*Iris versicolor*)** – the Eclectic physicians highly extolled the use of Iris for treating sick headaches, i.e., migraines (without aura) with nausea, vomiting, dyspepsia or neuralgic pain over one eye. I use it with Du Huo, *Notopterygium*, Ligusticum root or Siler.

Dose: Tea: 1/4 - 1/2 tsp. recently dried root, 8 oz. water, decoct 10 minutes, steep 1/2 hour, take 2 oz. 2x/day

Tincture: 1-8 gtt. BID

**Bushy Lippia leaf/lower (*Lippia alba*)** – is a shrub that grows in Florida, Texas, the Caribbean, Mexico and Central and South America. It is used in traditional medicine as a sedative, analgesic, anti-inflammatory and antidepressant. In two human clinical trials, a tincture of the leaf was effective in relieving migraine frequency and intensity (Carmona, et al, 2013; Conde, et al, 2011)

Dose: Tea: 1 tsp. dried leaf, 8 oz. hot water, steep 20-30 minutes, take 4 oz. TID

Tincture: 1 gtt of the tincture for every Kg of body weight (so a 150 lb. person would take approximately 3-5 mL BID)

**Cinnamon bark (*Cinnamomum verum*)** – in a RDBPC trial 50 people with migraine without aura were given Cinnamon capsules (600mg TID) or a placebo for 60 days. While both groups experienced improvements in migraine frequency and severity, the Cinnamon cohort had much more significant improvements in all parameters, especially headache duration, as well as serum IL-6 and NO levels (Zareie, et al, 2020).

**Coriander seed (*Coriandrum sativum*)** - in Middle Eastern medicine, Coriander is used to treat headaches. In a randomized, triple blind placebo-controlled trial, a Coriander syrup significantly reduced migraine duration, severity and frequency (Delavar Kasmael, et al, 2016). In a second study of Coriander syrup, migraineurs who took the herb had a higher probability of being migraine-free and had headaches of shorter duration (Mansouri, et al, 2020). It was also noted the treatment worked best in the final weeks of

the study and for people under 30 with migraine without aura. In another RCT a combination of Coriander seed, Violet flowers (*Viola odorata*) and Rose flowers (*Rosa damascena*) along with propranolol (20 mg BID) was given to people suffering with migraines. The patients who received the herbs (500 mg TID) along with the medication had reduced migraine frequency, severity and duration compared to those who got a placebo along with the propranolol (Kamali, et al, 2018).

Dose: Tea: 1/4 - 1/2 tsp. dried, powdered seed to 8 oz. water, take 1-2 oz. TID

Tincture: 1-2 mL TID

**Du Huo root (*Angelica biserrata*)** – is commonly used in TCM for external wind (spasmodic) headaches along with Ligusticum/Chuan Xiong and Siler/Fang Feng. Du Huo has analgesic, anti-inflammatory and antispasmodic activity.

Dose: Tea: 1 tsp. dried root, 8 oz. water, steep covered 40 minutes, take 4 oz. 3x/day

Tincture: 1-2mL TID

Extract granules (6.7:1): 0.5 g, 1-3 times per day mixed in water

**Ginger root/rhizome (*Zingiber officinalis*)** – has anti-inflammatory, circulation enhancing and mild antiplatelet activity. In a RCT, Ginger was as effective as sumatriptan for relieving pain in people experiencing migraine without aura (Maghbooli, et al, 2014). The Ginger group also experienced far fewer adverse effects than the sumatriptan group. In two clinical trials, a combination of Feverfew and Ginger was effective for preventing full blown migraines if taken at an early stage when there was only a mild headache (Cady, et al, 2011, Cady, et al, 2005). In a RCT Ginger added to a standard treatment for migraines (100 mg ketoprofen) improved outcomes, reducing pain more than the pharmaceutical as a stand alone treatment (Martins, et al, 2019). In a laboratory study, Ginger decreased levels of CGRP and inhibited calcium influx, both of which are believed to play a role in migraine pathogenesis (Slavin, et al, 2016).

Dose: Tea : 1/4-1/2 tsp. dried, powdered root, 8 oz. water, steep covered 10 minutes to 1/2 hour, take 4 oz. 3x/day

Tincture: .5-1.5 mL TID/QID

Capsules: 1-2 capsules BID/TID

Extract granules (3:1): 1 g, 1-3 times per day mixed in water

**Ginkgo standardized extract (*Ginkgo biloba*)** - the concentrated extract of this herb has been shown to enhance cerebral circulation, act as a nootropic, and inhibit cerebral inflammation. An isolated constituent, Ginkgolide B (along with Co-Q-10 and B-2), was found in a preliminary human study to reduce visual symptoms and pain in people experiencing migraine with aura (Allais, et al, 2013). In other studies Ginkgolide B by itself reduced the frequency and severity of migraines (Usai, et al, 2011; Esposito, et al, 2011; D'Andrea, et al, 2009). A proprietary product containing Ginkgo, Myrrh, Co-Q-10 and B2 was shown in a small preliminary open label study to reduce migraine frequency and severity (Tonini & Giordano, 2018).

Dose: Standardized extract (50:1) - 80-240 mg. per day (in some studies up to 480 mg per day has been used).

**Lavender flower (*Lavendula angustifolia*)** – the tea, tincture and EO have antidepressant, antispasmodic, anxiolytic, nervine and nootropics effects. Lavender has a long history of use for nervous and bilious headaches. It can be used as part of a protocol for migraines with nausea, cloudy thinking or insomnia (also see topical treatments).

Dose: Tea: 1/4-1/2 tsp. dried flowers, 8 oz. hot water, steep covered for 15-20 minutes, take up to 2 cups/day

Tincture: .75-1.5 mL TID/QID

Gelcaps – 80-160 mg of a Lavender oil preparation

**Ligusticum root/Chuan Xiong (*Ligusticum striatum*)** – is the most frequently used herb in TCM for relieving headaches. It is a prominent remedy for wind/damp headaches (the head feels full and heavy, thinking is difficult, the person is tired and the head pain is dull or throbbing), wind/heat headaches (sharp pain, the head feels like it will explode, the person has a red face, ears or head) and wind/cold headaches (pain in the neck, occiput or top of the head, the person feels cold). For this last type of headache, especially if the pain is felt on the vertex (top of the head), Ligusticum is used with Evodia fruit/Wu Zhu Yu. In an animal study, a Chinese patent medicine, Tou Feng Yu pill (it contains Ligusticum root, Angelica dahurica/Bai Zhi and Green tea) was effective for improving cerebral blood flow, relieving neurogenic inflammation and increasing the pain threshold in a migraine model (Li, et al, 2011). In Chinese medicine Ligusticum is often paired with Gastrodia/Tian Ma to treat wind/heat and blood stagnation migraines in a formula known as Da Chuan Xiong (Wang, et al, 2013) or Tianshu capsules. In an animal study, a ratio of 4 parts Ligusticum to 3 parts Gastrodia had the greatest activity for treating migraines. The herbs increased brain levels of 5-HTP and 5-HT and decreased excitatory neurotransmitters glutamate and aspartate (Wang, et al, 2016). In a human RDBPC trial, Tianshu capsules (Chuan Xiong 0.784g and Tian Ma 0.196g) reduced the frequency and severity of migraines, which allowed for reduced use of pain medication. Another TCM formula, Chuan Xiong Ding Tong, reduced migraine severity, headache days and the use of analgesic medications compared to people taking a placebo (Fu, et al, 2012). This formula contains Ligusticum root, Cyathula root, Dioscorea hypoglauca, Chrysanthemum flower, Gambir spines, Tribulus fruit, Coix seed, Cardamom and Processed Pinellia. In a meta-analysis of the Chinese formula Chuanxiong Chatiao San (it contains Ligusticum root, Du Huo, Notopterygium, Chinese Wild Ginger, Siler, Chinese Catnip, Mint and Licorice) found it can reduce the duration as well as the number of headache days for migraine sufferers (Wang, et al, 2019). The studies showed it was more effective than conventional western medicines (with fewer adverse effects) and when combined with the pharmaceuticals it enhanced their activity. One of the constituents of Chuan Xiong, senkyunolide I, has been shown in animal research to have antinociceptive activity, reduce nitric oxide levels in a migraine model (Wang, et al, 2011) and improve neurotransmitter levels. Another constituent, ligustrazine, has been found to inhibit muscle spasms and platelet aggregation, improve cerebral blood flow and decrease release of pro-inflammatory compounds (Zhou, et al, 2013).

Dose: Tea: 1-2 tsp. dried root, 8 oz. water, steep covered for 30-40 minutes, take 2-3 cups/day

Tincture: 2-3 mL TID/QID

Extract granules (6:1): 0.5 g, 1-3 times per day mixed in water

**Night Blooming Cereus stem or flower (*Selenicereus grandiflorus*, *S. pteranthus*)** - was used by the Eclectic physicians for tensive pain that felt like the head or organ is in a vise. It can be combined with Rosemary, Bacopa, Ligusticum root or Du Huo.

Dose: Tea: Is not an effective form to take this herb, as drying it renders it inert.

Tincture: 5-15 gtt. TID

**Periwinkle leaf (*Vinca minor*)** – is used for deficient migraines where the scalp muscles feel tight and constricted and the person has “brain fog”. It can be used with Night Blooming Cereus, Bacopa or Ligusticum root.

Dose: Tea: 1 tsp. dried leaf, 8 oz. hot water, steep 30 minutes, take 2 oz. TID

Tincture: 1-1.5 mL TID

Capsules: 2 capsules TID

**Pulsatilla flowering herb (*Anemone patens* and other *Anemone spp.*)** – has a long history of use for menstrual headaches and deficient migraines. It is most effective for people (often women) who are anxious or afraid and cry easily. I often use it with Ligusticum root, White Peony and Ginger.

Dose: Tincture (1:2), 50% ETOH Dose: 3-5 gtt. QID\*

**Qiang Huo root (*Notopterygium incisum*)** – is used in Chinese medicine to dispel wind, cold and dampness. It has anti-inflammatory and analgesic effects. It is used to treat sinus headaches, deficient/cold migraines and occipital headaches (use it with Kudzu and Passionflower). I frequently use it with Ligusticum root, Bai Zhi, Lavender, White Peony or Rosemary.

Dose: Tea: ½ tsp. dried root, 10 oz. water, decoct 15 minutes, take 4 oz. BID/TID

Tincture: 1-2 mL TID

Extract granules (5:1): 1 g, 1-3 times per day mixed in water

**Rosemary herb (*Salvia rosmarinus*)** – is a cerebral stimulant, nervine and anti-inflammatory. It enhances cerebral blood flow, inhibits vascular inflammation and promotes improved memory, mood and brain wave activity. Although research does not currently support this, I suspect it inhibits cortical spreading depression, a possible cause of migraines.

Dose: Tea (Infusion): 1/2 tsp. powdered herb, 8 oz. hot water, steep covered for 15-20 minutes, take 4 oz. 3 times per day

Tincture: 1-2 mL TID

Capsules: 1-2 (00) capsules BID

**Siler root/Fang Feng (*Saposhnikovia divaricata*)** – is frequently used in Chinese medicine to treat migraines along with Chuan Xiong, Du Huo and White Peony. In an animal study the combination of Fang Feng, Ligusticum/Chuan Xiong, Bai Zhi/Angelica dahurica and Green Tea was effective for migraine pain relief (see Ligusticum/Chuan Xiong). A Korean pharmaceutical known as Shinbaro® is made with Siler, Achyranthes, Acanthopanax/Wu Chia Pi, Cibotii/Gou Ji, black soy bean, and Eucommia bark. In a pilot study people with migraines took Shinbaro® (600 mg BID) for 12 weeks. In this preliminary study (not placebo controlled or a double-blind) the participants exhibited reduced migraine frequency, need for acute pain medication and serum CGRP levels dropped significantly (Jung, et al 2019). Fang Feng can also be useful for treating sinus headaches, TMJ and facial nerve pain and optic neuralgia (use it with Sweet Melilot).

Dose: Tea: 1 tsp. dried root, 8 oz. water, decoct 10 minutes, steep covered 30 minutes, take 4 oz. 3x/day

Tincture: 1.5-2 mL QID

Extract granules (6:1): 1 g, 1-2 times per day mixed in water

## Cerebral Anti-inflammatories/Neuroprotective Herbs

(also see *Bacopa*, *Rosemary*, *Ginkgo* and *White Peony*)

**Chinese Polygala root/Yuan Zhi (*Polygala tenuifolia*)** – has antispasmodic, antidepressant, antiseizure and neuroprotective effects. It is a powerful anxiolytic and in animal research protects against toxin-induced neuronal damage. Polygala has been shown in preliminary research to have cerebral anti-inflammatory activity. It can be especially useful for stress- or anxiety-induced migraines or headaches.

Dose: Tea : 1/2 tsp. dried root, 8 oz. water, decoct 10 minutes, steep 40 minutes take 4 oz. 2x/day

Tincture: 1-2 mL TID

Extract granules (5:1): 0.5 g, 1-3 times per day mixed in water

**Gotu Kola herb (*Centella asiatica*)** – has anti-inflammatory, anxiolytic, nootropic and neuroprotective activity. It can be used as part of a protocol for mental exhaustion, head trauma injury recovery, to relieve petit mal seizures and reduce cerebral inflammation causing migraines. In an animal migraine model both oral and intranasal use of a standardized Gotu Kola extract prevented nitroglycerine and Bradykinin-induced migraines (Bobade, et al, 2015).

Dose: Tea: 1-2 tsp. dried herb, 8 oz. hot water, steep covered 45 minutes, take 4 oz. 3x/day

Tincture: 1.5-2 mL TID

**Turmeric root/rhizome (*Curcuma longa*)** – and its isolated curcuminoids, have powerful anti-inflammatory activity. It acts as a cerebral anti-inflammatory and has been shown in human clinical trials to have antidepressant activity. In animal studies it exhibited neuroprotective, antiseizure and anti-Alzheimer's activity (it helped inhibit tau protein and amyloid plaques in animal studies). In a case control study, patients with episodic migraines and chronic migraines were tested for their oxidant/antioxidant balance. Chronic migraine sufferers had significantly lower levels of SOD and catalase, with higher serum levels of pro-inflammatory nitric oxide and malondialdehyde. There was a clear correlation between higher antioxidant status (TEAC) and reduced headache days (Togha, et al 2019). This may help explain why anti-inflammatory/antioxidant herbs or supplements such as Turmeric, Rosemary, Gotu Kola, Ginger, Ginkgo, Co-Q-10, and ALA can be useful for treating migraines.

Dose: Tea: 1/2 tsp. dried, freshly powdered rhizome, 8 oz. hot water, steep covered for 45 minutes, take 4 oz. 4x/day

Tincture: 2-4 mL TID/QID

Capsules-standardized Curcumin (with Piperine or Phosphatidylcholine): up to 900 mg QID

Extract granules (5:1): 1 g, 2-3 times per day mixed in water

## Analgesics for the Trigemincervical Pain System

(also see *Sweet Melilot*)

**Cannabis (*Cannabis sativa*)** – was used to treat headaches in ancient Greece and India. It continued to be used by practitioners of Greco-Arabic medicine (Unani-Tibb) and was re-introduced into European practice along with the teachings of Arabic medicine in the 13<sup>th</sup> century. In the 1800s, both orthodox and Eclectic physicians commonly recommended Cannabis (usually as a tincture) for sick-headaches (migraines). Herbert T. Webster, MD, the influential California Eclectic, said it was effective for migraines, facial neuralgia and menopausal headaches with intense throbbing or aching pains in the forehead (Webster, 1898:35-6). In a human clinical trial, the use of medical Cannabis (MC) for migraines was associated with a long-term reduction of migraine frequency in 65% of treated patients, with less debility and use of antimigraine medications such as opioids or tryptans (Aviram, et al, 2020). High CBD (cannabidiol) strains of the plant, which lack the mind-altering effects associated with this drug, can effectively treat migraine pain. The most effective products contain not only CBD, but also small amounts of THC (0.3%), other cannabinoids and terpenes. These products have very active antinociceptive, antiseizure, anti-inflammatory and analgesic effects. Preliminary research suggests that CBD can affect peripheral trigeminovascular activation, spinal 5-HT (5-Hydroxytryptamine) and 5-HT(2A) receptors (Taylor, 2010) and inhibit cortical spreading depression (Kazemi, et al, 2012). Some studies indicate that migraines may be caused by endocannabinoid deficiency which is linked to increased glutamate signaling, CSD, increased levels of CGRP, platelet instability and neurogenic inflammation (Lochte, et al, 2017).

Dose: As needed.

**Corydalis rhizome/Yan Hu Suo (*Corydalis yanhusuo*)** – is one of the most powerful analgesics in TCM. It also has anti-inflammatory and antispasmodic activity and it relieves blood stagnation. Combined with Bai Zhi in a formula known as Yuan Hu Zhi Tang, it is used to treat trigeminal neuralgia, migraines, torticollis and tension headaches.

Dose: Tea: 1 tsp. dried rhizome, 10 oz. water, decoct 15 minutes, steep 1 hour, take 2-4 oz. 3-4x/day  
Tincture: 1-2 mL QID

Extract granules (10:1): 0.5 g, 1-2 times per day mixed in water

**Gastrodia root/Tian Ma (*Gastrodia elata*)** – has neuroprotective, antiseizure, analgesic, antispasmodic, antidepressant and anti-inflammatory activity. It is used in TCM to extinguish liver wind conditions such as spasms, seizures, headaches, tinnitus and supraorbital neuralgia. I frequently use Gastrodia along with Feverfew, Ligusticum root, White Peony or Kudzu for excess/heat migraines. In animal research a combination of Gastrodia and Ligusticum root decreased blood-brain barrier permeability, increased serotonin levels, while decreasing glutamate levels (Wang, et al, 2015). A TCM formula, Toutongning capsules, have been shown to decrease migraine frequency (72.5% of the people taking this formula had a 50% or more decrease in migraines after 4 weeks). The formula contains Gastrodia (0.27g), Smilax glabra (0.36g), prepared Reynoutria multiflora (0.27g), Dang Gui (0.18g), Siler (0.18g) and Scorpion (0.03g) per capsule (Yu, et al, 2019). In other research on this formula, it has been found to decrease CGRP levels as well as proinflammatory cytokines.

Dose: Tea: 1/2 - 1 tsp. dried root, 8 oz. hot water, steep 30-40 minutes, take 2 oz. 3x/day  
Tincture: .75-1.25 mL TID

Extract granules (5:1): 1 g, 1-3 times per day mixed in water

**Jamaica Dogwood bark (*Piscidia piscipula*)** – is one of the strongest non-narcotic herbal analgesics. It is useful for intense pain, especially associated with facial nerve pain, neck or brachial nerve pain and migraines. I often use it with Corydalis, Ligusticum root, Kudzu, Siler or White Peony.

Dose: Tea (Decoction): 1 tsp. dried c/s bark, 10 oz. water, decoct 15 minutes, steep 45 minutes,  
take 2 oz. 4x/day  
Tincture: 1-2 mL TID/QID

**Mullein root (*Verbascum thapsus*)** – is indicated for facial nerve pain (TMJ pain, trigeminal neuralgia). It is an anti-inflammatory and analgesic to the trigeminocervical nerves. For migraines, I use it with Jamaica Dogwood, St. John's wort, Corydalis and Sweet Melilot.

Dose: Tea: 1 tsp. dried root, 8 oz. water, decoct 10 minutes, steep for 1 hour, take 2 cups/day  
Tincture: 1.5-2 mL QID

**St. John's wort flowers and buds (*Hypericum perforatum*)** – is used for nerve pain, no matter where it occurs. Hypericum is an antinociceptive, antidepressant, anti-inflammatory and nervine. I use it for facial nerve pain, recovery from head trauma injuries and migraines.

Dose: Tea (Infusion): 2 tsp. dried flowers/buds, 8 oz. hot water, steep covered for 45 minutes,  
take 4 oz. 4x/day  
Tincture 2-3 mL (40-60 gtt.) TID/QID

### Nutrition/Diet for Migraines

**Ketogenic diet** - in a human trial, a very low-calorie ketogenic diet was effective in reducing migraine frequency and severity (Di Lorenzo, et al, 2015). The ketogenic diet was superior to a standard low-calorie diet and the researchers suggested this diet was beneficial due to its ability to enhance mitochondrial energy metabolism and to inhibit neural inflammation.

**Vegan diet** – in a RCT, people who ate a vegan diet that also eliminated common migraine trigger foods (wheat, rye, corn, peanuts, chocolate, sugar, tea, alcohol, nuts and seeds, alliums, nightshades, etc.) had decreased headache intensity and slightly decreased migraine frequency while on this diet (Bunner, et al, 2014).

**DASH diet** – the “dietary approaches to stop hypertension” (DASH) diet has been shown to reduce migraine frequency and duration as well as concurrent depression and stress (Arab, et al, 2021). The diet is rich in vegetables, fruits, whole grains, fiber, potassium, magnesium, calcium and protein. It limits consumption of sodium, saturated fat and refined carbohydrates.

### Nutritional Supplements for Migraines

**Alpha-lipoic Acid (ALA)** – enhances mitochondrial oxygen metabolism and ATP production. Since mitochondrial dysfunction is a possible cause of migraines, a small study looked at the use of this supplement for treating it. While the study was underpowered, preliminary evidence suggests 600 mg/day of ALA reduced migraine frequency (Magis, et al, 2007). In a second exploratory study, the use of 400 mg BID/day of ALA also reduced the frequency and length of migraines (Cavestro, et al, 2018). In a RDBPC trial people who had migraines were given ALA (300 mg/BID) or a placebo for 12 weeks. The participants taking ALA had reductions in headache frequency, severity, clinical symptoms as well as vascular cell adhesion molecule-1 levels (Kelishadi, et al, 2022).

Dose: 600 mg per day



**B-2 (Riboflavin)** – is an essential B vitamin that acts as a co-enzyme necessary for energy production, normal cellular function, metabolism of fats and the effective metabolism of niacin and B6. It has also been shown to reduce neuroinflammation, prevent cortical spreading depression and mitochondrial dysfunction, all of which are involved in the genesis of migraines (Yamanaka, et al, 2021). Studies indicate that children, teens and young adults who suffer from migraines often have riboflavin deficiencies (Cincinnati Children’s Hospital Medical Center, 2016). In a human clinical trial (either 200 mg or 400 mg per day) of riboflavin over 3, 4 or 5 months reduced pediatric and adolescent migraines by 50% (Condó, et al, 2009). In a RDBPC trial of pediatric migraine sufferers, high-dose B-2 reduced migraine frequency but not intensity (Talebian, et al, 2018). In a second trial a combination of B-2, magnesium and Feverfew reduced the frequency and severity of migraines (Evans & Taylor, 2006). In a more recent RCT, a combination of riboflavin, magnesium and CO-Q-10 reduced migraine severity and possibly frequency as well (Gaul, et al, 2015).

Dose: 400 mg per day or Riboflavin 5’-phosphate-36.5 mg TID

**B-6, B-12 and Folic Acid** – a combination of these B complex vitamins was found to reduce homocysteine levels and migraine frequency and severity in people with a MTHFR mutation (Lea, et al, 2009). In women with impaired mitochondrial methylation, increased levels of dietary folate were associated with reduced migraine frequency (Menon, et al, 2015). In two RCTs, pyridoxine (B-6) supplementation (80 mg/day) significantly reduced the severity and duration of migraines (Sadeghi, et al, 2015) and a combination of pyridoxine (80 mg/day) and folic acid (5 mg/day) also decreased migraine severity and frequency (Askari, et al, 2017).

Dose: B-6 (as pyridoxal 5’-phosphate-PLP): 25 mg

B-12 (as methylcobalamin): 200 mcg

Methylfolate: 1 mg

**CO-Q-10** – some research suggests migraines can be triggered by mitochondrial dysfunction with impaired oxygen metabolism. Co-Q-10 is essential for cellular oxygen metabolism and in a study of children, teens and young adults with migraines, a high percentage were deficient in C-Q-10 (Cincinnati Children’s Hospital Medical Center, 2016). In preliminary research a low dose of Co-Q-10 (150 mg/day) over 3 months reduced the number of days with migraine headaches by 50% (Bianchi, et al, 2004). In a RCT, Co-Q-10 was superior to placebo (47.6% for CO-Q-10, 14.4% for placebo) for preventing migraines, reducing headache days and nausea (Sándor, et al, 2005).

Dose: 100 mg TID

**5-HTP**- or 5-Hydroxytryptophan helps modulate serotonin levels while promoting endorphin release. It has been suggested as a possible remedy for migraines, especially in people with concurrent sleep disorders. In two small clinical trials 5-HTP was effective for reducing the frequency of migraine attacks, although less so than propranolol (Maissen & Ludin, 1991) and it reduced the severity and duration of migraines as effectively as did methysergide, with fewer adverse effects (Titus, et al, 1986).

Dose: 200-300 mg per day, divided into 3 doses

**L-Carnitine** – in a RCT, people with migraines were given L-carnitine (500 mg/day), magnesium oxide (500 mg/day) or a combination of both. All 3 arms of the trial showed efficacy in reducing the frequency and severity of migraine headaches (Tarighat Esfanjani, et al, 2012).

Dose: 500 mg per day

**L-Theanine** – is a non-protein amino acid that crosses the blood/brain barrier and promotes GABA production. In animal research it lowered glutamate activity while enhancing GABA, dopamine and serotonin levels (Nathan, et al, 2006). Elevated glutamate levels are associated with increased migraine frequency.

Dose: 200-400 mg per day

**Magnesium** – several human trials have found that magnesium (500 mg/day) and magnesium with L-carnitine can be effective in helping to prevent migraines (Tarighat Esfanjani, et al, 2012; Bianchi, et al, 2004). Magnesium deficiency increases neurogenic inflammation and approximately half of all migraine sufferers have a magnesium deficiency (Manskop & Varughese, 2012). A meta-analysis of RCTs using magnesium for migraine treatment found that IV magnesium can relieve a migraine in 15-45 minutes and oral magnesium reduces the frequency and intensity of migraines (Chia, et al, 2016).

Dose: 400-600 mg per day

**Melatonin** – several studies have found that people with migraines have lower than normal levels of melatonin. In one RCT with adults, 2 mg of melatonin did not show any benefits in preventing migraines (Alslandkang, et al, 2010). In a preliminary study, 3 mg of melatonin was effective for migraine prophylaxis (Peres, et al, 2004) and in two RCTs, 3 mg of melatonin was as effective as amitriptyline or sodium valproate (with fewer side effects) for preventing migraines (Goncalves, et al, 2016; Ebrahimi-Monfared, et al, 2017). In children, melatonin (0.3 mg/Kg) also significantly reduced the frequency, duration and severity of migraine headaches (Fallah, et al, 2014).

Dose: 3 mg at bedtime

**Omega 3 Fatty Acids (EPA/DHA)** – in a human clinical trial, increasing Omega 3 fatty acid consumption while decreasing pro-inflammatory Omega 6 fatty acid levels resulted in significant reduction of headache days in people with chronic headaches (Ramsden, et al, 2013). In a RDBPC trial, the use of Omega 3 fatty acids reduced the number of headache days in people with migraines to a much greater degree than did a placebo (Soares, et al, 2018). Omega 3 fatty acids are anti-inflammatory, promote circulation and are neuroprotective.

Dose: 2-4 g per day

**Probiotics** – In an open label pilot study, 29 migraine patients were given a multispecies probiotic. There was a significant decrease in headache days and severity of migraine pain (de Roos, et al, 2013). In a RDBPC trial, people with episodic and chronic migraines were given a multispecies probiotic or a placebo for ten weeks. The participants who took the probiotic had decreased migraine frequency, severity and duration and it reduced the need for analgesic pain medication (Martami, et al, 2019). There is a known link between chronic abdominal pain in children (abdominal migraines) and a high incidence of inflammatory GI conditions and migraines in adults. Some research suggests a possible link between increased gut permeability, GI inflammation and migraine (van Hemert, et al, 2014). In a clinical study of people with migraines and IBS, taking probiotics and following an IgG elimination diet showed significant benefits for both conditions (Xie, et al 2019).

**Vitamin D** – a majority of the American population has low serum vitamin D levels, as do a high percentage of children, teens and young adults who suffer from migraines (Cincinnati Children's Hospital Medical Center, 2016). This essential nutrient has been shown to have many therapeutic benefits and preliminary data suggests it may help with migraines. In children the addition of vitamin D to amitriptyline therapy significantly enhanced its effectiveness, reducing the number of migraine attacks (Cayir, et al, 2014).

In another clinical study of children with migraines, approximately 35% had vitamin D insufficiency (between 10-20 ng/mL) and 10.8% had vitamin D deficiency. The children with overt deficiency had greater migraine frequency, duration and disability. The addition of six months of supplemental vitamin D reduced the duration, frequency and severity of pediatric migraines (Kilic & Kilic, 2019). A RDBPC study of adults with migraines found that 100 mg of vitamin D3 per day (333 i.u.) for 24 weeks reduced the number of migraine days in the participants (Gazerami, et al, 2019). In two case reports a combination of vitamin D and calcium dramatically reduced the frequency and duration of migraines (Thys-Jacobs, 1994).

Dose: 2,000-4,000 i.u. per day

### External Treatments

**Basil essential oil** (*Ocimum basilicum*) – daily topical application of Basil EO (2, 4, or 6%) in a carrier oil to the frontal and temporal regions of the head was shown to decrease the frequency and intensity of migraines (Ahmadifard, et al, 2020).

**Capsaicin** – in a small clinical trial topical Capsaicin reduced pain in scalp arteries in people with migraines. It helped inhibit pain and scalp tenderness in the absence of a migraine in 17 of 23 people and during migraine in 11 of 17 people (Cianchetti, 2010).

**Chamomile** (*Matricaria chamomilla*) – an oleogel made from Chamomile extracted into sesame oil was used topically to treat people experiencing migraine without aura. The cohort of patients receiving the Chamomile oleogel had significant reductions in pain, nausea, vomiting, photophobia and phonophobia within 30 minutes compared to those who received a placebo (Zargarani, et al, 2018).

**Lavender essential oil** (*Lavandula angustifolia*) – inhalation of Lavender EO was found to be a safe and effective treatment for migraines. Inhaling the oil for 15 minutes reduced headache severity to a much greater degree than did placebo (Sasanejad, et al, 2012).

**Menthol** – is a crystalline organic compound often extracted from mints, especially Wild Mint (*Mentha arvensis*). It has topical anesthetic and analgesic properties and is commonly used to relieve local muscle and nerve pain. In a RDBPC trial, a 10% menthol solution was applied to the forehead and temporal area during a migraine. The use of the menthol was associated with a significant reduction in pain, nausea/vomiting and light sensitivity compared to placebo (Lopresti, et al, 2020).

**Rose essential oil** (*Rosa damascena*) – in a RDBPC trial people with migraines were treated with a topical application of Rose EO or a placebo. Initial responses showed little difference in outcomes. When participants were classified according to migraine type (“hot” or “cold”), it showed that the EO was very effective for relieving hot migraine pain, but not cold migraine pain (Niazi, et al, 2017).

### Physical Therapies for Migraines

**Aerobic exercise** – in an unusual clinical trial, people with migraines were given amitriptyline or a combination of the drug along with aerobic exercise. While both therapies were beneficial, the addition of aerobic exercise significantly enhanced the efficacy of the medication (Santiago, et al, 2014).

**Acupuncture** – both traditional acupuncture and electro-acupuncture have been shown to be as or more effective than orthodox medication for relieving migraine pain (Da Silva, 2015) and the people who received acupuncture also had improved psychological profiles (Vijayalakshmi, et al, 2014). The combination of acupuncture and tuina (Chinese massage therapy) was more effective than acupuncture by itself (Nie, et al, 2019).

**Chiropractic and osteopathic manipulation, physical therapy and massage** – have all been found to be as effective as pharmaceutical medications (propranolol and topiramate) for relieving migraine frequency and severity (Chaibi, et al, 2011). While there are no studies on the use of naturopathic manipulation, this technique is likely to also be effective for migraine relief.

**Craniosacral therapy** – in a small clinical trial, six craniosacral sessions improved migraine symptoms (Arnadottir & Sigardardottir, 2013). Larger studies are needed to confirm these preliminary results.

**Trigger Point therapy** – in a significant number of cases of migraine, trigger point activation, especially in the cervical muscles, is common (Calandie, et al, 2006). Various therapies (electrostim, botox injections, acupuncture, myofascial release) can reduce migraine frequency and intensity caused by myofascial trigger points (Giamberardino, et al, 2007).

**Yoga** – in a RCT of people suffering from migraine without aura, 3 months of yoga therapy significantly reduced migraine frequency and severity, as well as anxiety (John, et al, 2007).

### **Mind/Body Techniques for Migraines**

**Cognitive-Behavioral Therapy** – as well as other mind/body techniques (biofeedback, neurofeedback, relaxation training) have been found to help prevent episodic migraines and augment orthodox treatment (Christiansen, et al, 2015; Stokes & Lappin, 2010).

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## ***In Person Intensive: Propagating & Growing our Native Medicinals***

**Ed Fletcher**

I will discuss some of the propagation and growing techniques I have utilized over many years of experience and share some secrets also. We will talk about sustainable propagation, growing and harvesting techniques. I encourage each of you to recall and share your stories and experiences about some of your favorite medicinal botanicals also. This is how we learn and contribute to the community of our botanical friends.

Then we will get our hands dirty and I'll demonstrate some of the techniques we talk about, so bring your gloves and we'll have some pots to take some plants home with you if you can.

# *Plant Allies for Emotional Resilience*

Emily Ruff

## **Plant Allies for Emotional Resilience Reading List**

- Care of the Soul – Thomas Moore
- Trauma Stewardship – Laura van Dernoot Lipsky
- Sustaining Spirit – Naomi Ortiz
- The Ecology of Care – Didi Pershouse
- Positive Spirituality in Health Care – Frederic C Craigie, Jr, PhD
- The Little Book of Trauma Healing – Carolyn Yoder
- The Wild Edge of Sorrow – Francis Weller
- Entering the Healing Ground – Francis Weller
- The Smell of Rain on Dust – Martin Prechtel
- Ritual – Malidoma Some
- Waking the Tiger - Peter Levine
- The Body Keeps the Score - B. Van der Kolk
- Everything is Temporary - Iris Gottlieb
- Adaptogens – Winston and Maines
- Trauma and Recovery - Herman
- Under Pressure and Ease your Mind - Janet Kent
- Sacred Instructions - Sherri Mitchell
- What We Wish Were True - Tallu Schuyler Quinn
- Pocketful of Miracles - Joan Borysenko PHD
- The Grief Recovery Handbook - John James *and* Russel Friedman
- A Grief Observed – C. S. Lewis
- It's OK that you're not OK – Megan Devine
- How to Carry What Can't Be Fixed – Megan Devine
- The Art of Good Living – Svevo Brooks
- Come of Age: The Case for Elderhood in a Time of Trouble *and*
- Die Wise: A Manifesto for Sanity and Soul – Stephen Jenkinson

# Plant Allies for Emotional Resilience

## Materia Medica

Tulsi - *Ocimum tenuiflorum*,  
*O. gratissimum*, *O. sanctum*

Rose - *Rosa rugosa*, *R. canina*

Milky Oat Tops - *Avena sativa*

Wood Betony - *Stachys betonica*

Florida Betony - *Stachys floridana*

Nettle - *Urtica dioica*

Scullcap - *Scutellaria lateriflora*

Vervain - *Verbena hastata*, *V. officinalis*

Jamaican Vervain - *Stachytarpetta  
jamaicensis*, *S. cayensis*

Linden - *Tilia europa*, *T. vulgaris*

Chamomile - *Anthemis nobilis*

Magnolia - *Magnolia grandiflora*

Passionflower - *Passiflora incarnata*

Valerian - *Valeriana officinalis*

Catnip - *Nepeta cataria*

Lemon Balm - *Melissa officinalis*

St John's Wort - *Hypericum perforatum*

Mimosa - *Albizia julibrissin*

Peach Leaf - *Prunus persica*

Hawthorn - *Crataegus oxycantha*

Motherwort- *Leonorus cardiaca*

Violet - *Viola odorata*

Ocotillo - *Fouqueria splendens*

Reishi *Ganoderma spp.*

Licorice *Glychrrhiza glabra*

Ashwaganda *Withania somnifera*

Gotu Kola *Centella asiatica*

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International Herb Symposium 2023  
Wheaton College

# ***Pharmaco-energetics and Phyto-prevention: Keys to our Herbal Future***

**Gabriel Mojay LAc, CertEd, FIFPA**

## **Garden Entrance with abstract posted on the wall...**

*In my recorded and live presentation entitled 'Pharmaco-energetics and Phyto-prevention: Keys to our Herbal Future,' I present a therapeutic understanding of medicinal and aromatic plants and their extracts which is at once pharmacological and bioenergetic, evidence-based and empirical — a direct way of grasping and elucidating the energetics of herbs according to their researched-based pharmacologies.*

*This 2-hour class focuses on this combined scientific-TCM interpretation of medicinal plant activities with special reference to the antimutagenic, neuroprotective and anticancer properties of aromatic herbs and their essential oils in particular ~ specifically rosemary (*Salvia rosmarinus*), German chamomile (*Matricaria recutita*) and sandalwood (*Santalum spp*).*

*While scientific medicine seeks to develop chemopreventive compounds to prevent carcinogenesis, phytomedicines offer a greater degree of both efficacy and safety in terms of cancer prevention, and offer a 'phytopreventive' alternative to conventional chemoprevention.*

*The pharmacoenergetic understanding of plant medicines together with applying in clinical practice their profound phytopreventive properties are vital keys to the future of herbalism.*

## **An Introduction as we ramble towards the center of the Garden...**

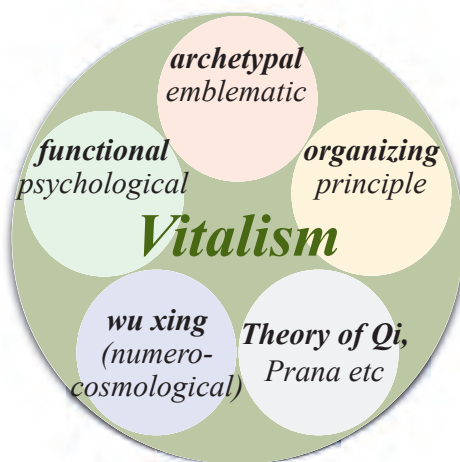
*Accompanying my online presentation of *Pharmacoenergetics and Phytoprevention* is a 35-page PowerPoint handout, containing abundant research references for your reading pleasure. *I beseech thee, gentle delegate ~ please do download a copy!**

*In this class, I offer an invocation to the Buddha of Medicines: a transcendent manifestation, for me, of the healing power inherent in Green Nature. Indeed, I speak of Nature as my consummate Teacher... and as this numinous plant healer holds the adaptogenic Ayurvedic panacea Haritaki (*Terminalia chebula*), I delve briefly into the amazing anti-cancer activities of that hydrosylable tannin-rich super-medicine's pharmacoenergetic properties: the elegance of its science and ancient beauty of its classical therapeutic wisdom.*



## Deeper into the Garden as we mosey along...

I move along in my online and live exposition to consider and attempt to define exactly what we mean by *energetic*, as in *vital energy*. Thus I look at five dimensions of vitalism from the five Five Element perspectives ~ namely, the **numero-cosmological** origin of *correspondances énergétique* (Water); their **archetypal** significance framed emblematically by Fire; vitalism as the **organizing principle** that, for example, underpins the diagnostic patterns embedded with in both TCM and Auyurveda (Earth); vital energy as **vital essence**, intrinsic to Metal, as the Lungs govern and circulate the the Qi; and finally, germane to my presentation, the **functional** dimension of vitalism, which intersects most profoundly with the psychospiritual.



In this way, the psyche may be considered the *functional aspect of consciousness* in that its prime function is to organize and regulate consciousness in the same way that the pre-frontal cortex regulates the triune brain — a subject of interest to David Winston, one notes.

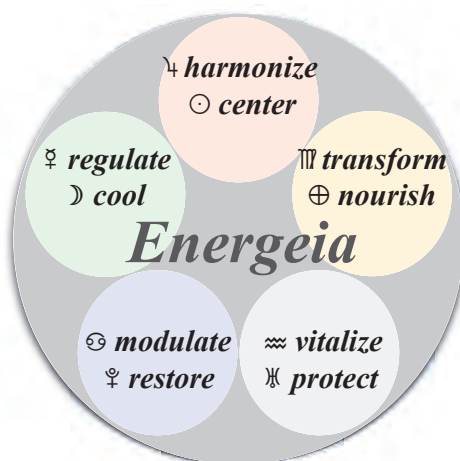
The distinction in particular between vital energy as essence - *energeia*, as defined by Peter Holmes - and vital energy as TCM *function (dynamis)* was emphasized in particular by Giovanni Maciocia when I studied with him in the 1980s.

Once we have accessed a more integrated, intuitive grasp of the full nature of vitalism, we can turn our attention to its application to the research-based medicinal properties of plants as part of what we may describe ontologically as *pharmacoenergetics*.



To further clarify this therapeutic concept, I define what I consider to be the ten most important activities fulfilling the promise of being both *scientifically well-founded and enshrined in the classical literature* of a plant medicine tradition such as TCM and Ayurveda.

I cover several key examples rather than all ten, as time permits. But ultimately the main focus of our pharmacoenergetic study is on the activity among these most closely associated with the Metal Element: that of *protection*. The Lung govern both the Nutritive (Meridian) Qi and the Defensive Qi — and are responsible to this important extent for the body’s biological integrity. To *protect* in an *overall sense* is essentially a yang function.



Medicinal and aromatic plants exert above all else a *protective* action through their ubiquitous capacity to neutralize free radicals including oxidized lipids and proteins and, in so doing, *protect the DNA* and, in TCM terms, our genetic Essence (*Jing*) from metabolic injury and mutagenesis.

## Let's dwell for a while in Saint Hildegard's *Physic*, her Medicinal Plant Garden...

Medicinal plant compounds readily donate electrons to help restore *redox balance* in the body, as well as to encourage normal *apoptosis*— the intrinsically natural cycle of cell growth and death, disrupted due to energetic dysfunction most often involving chronic inflammation (pathogenic Heat), to become *proliferative* in nature. This, of course, is the fulcrum of carcinogenesis and cancer.

Countries which consume a greater proportion of herbs and spices compared to people in North America suffer with less occurrence of carcinoma ~ the direct result one may surmise from the general relative dirt of these important natural factors in the diet.

The ability of medicinal plant compounds to encourage apoptosis is another *key pharmacoenergetic activity* of medicinal plants — one which intersects with their centrally *protective* function.

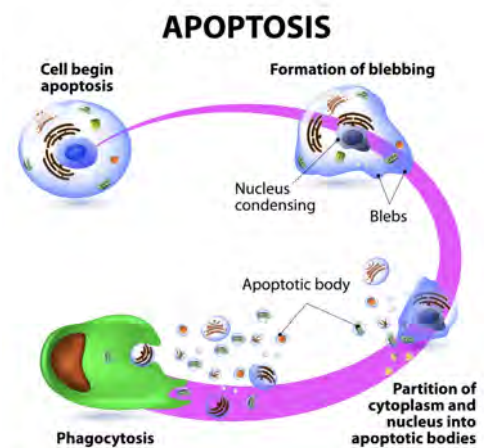
Inseparable from this activity is that of *modulating* the body and mind — the ability of medicinal plant compounds to exert what we might call an *immunogenetic* action: that is, by stimulating the body's natural immune response through gene expression and other infinitely complex processes to produce a therapeutic benefit which *cannot be wholly explained*, it has been observed through research, by the *actual quantity* of constituents delivered to the body.

One can see when exploring PubMed how many research papers compare the activity of the whole plant or essential oil with its key individual compounds— and the fact that the whole medicinal plant or essential oil is, *time and time again*, more *biologically active* than those compounds identified as the 'active constituents'.

This of course demonstrates the importance of *synergy*, and of the *synergistic activities* of medicinal plant compounds which, as we all know, are *manifold*. In other words: there are different *kinds* of synergy — as has been eloquently pointed out by others in the wider Green community... the result of different biophysical processes.

The second part of my class goes on to elucidate these phramacoenergetic activities through three key botanicals, namely ~ rosemary (*Salvia rosmarinus*), German chamomile (*Matricaria recutita*) and Western Australia sandalwood (*Santalum spicatum*).

As mentioned, all 140 slides are available along with my video presentation as a PDF you are most welcome to download.





Here I will share, in support of the class and as evidence of *Santalum*'s protective faculty, in particular, infographic elements of a paper I was commissioned to author on Western Australian sandalwood ~ by a sandalwood oil company co-owned by the Martu Aboriginal community and Estée Lauder. It gave me the opportunity to delve into all the fascinating research on *Santalum*, finding to my amazement a plethora of studies in support of this sublime aromatic's capacity to prophylactically protect human beings against carcinogenesis of the skin, breast and prostate, in particular.

I obtained and studied over 100 papers on *Santalum* to produce a 5-page summary in table form, abridged here into a single page, together with analyses of the chemical components of *Santalum album* and *S. spicatum*, and a summary explanation of the latter's detailed TCM pharmacoenergetic actions.

Finally, I finish, in honor of the divine hemiparasite, a poem to *Santalum* ~ in her honor of her diffusive serpent shaktipat.

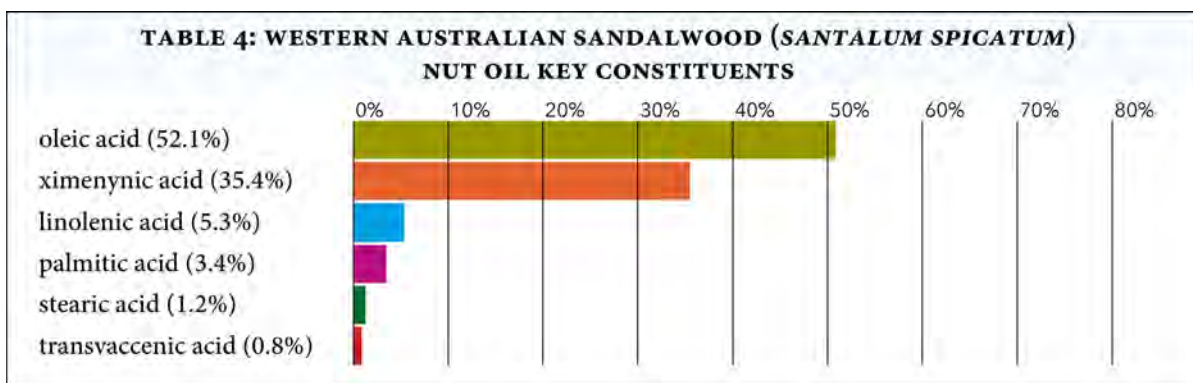
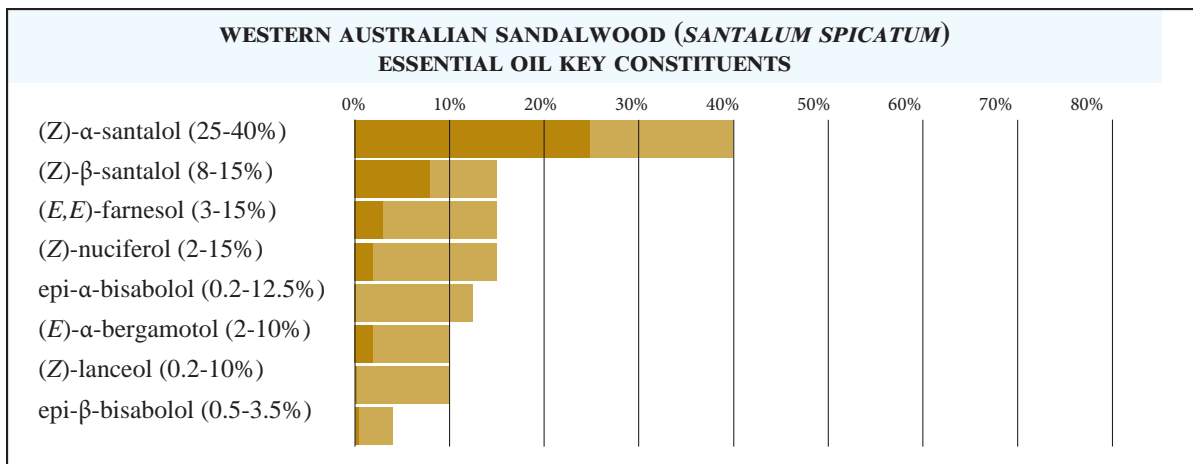
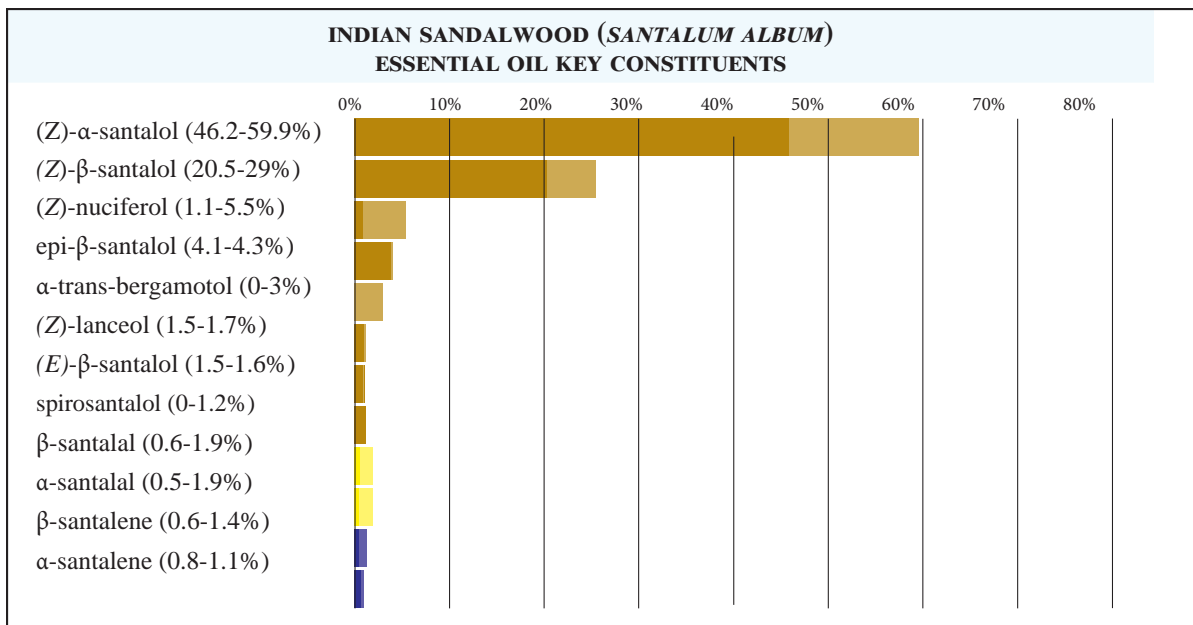


**Image:** Chairman of Dutjahn Custodians, Mr. Darren Farmer, and harvesters in the bush alongside *Santalum spicatum* and host tree. Western Australian sandalwood is known as *dutjahn* by the Indigenous Martu, the sacred tree's ancestral Guardians, and is one of 6 *Santalum* species endemic to the Continent, concentrated in the arid and semi-arid of western Australia.

**Ref:** Harbaugh DT et al. Taxonomic revision of the endangered Hawaiian red-flowered sandalwoods (*Santalum*) and discovery of an ancient hybrid species. *Syst Bot.* 2010; 35:827–838.

## SANTALUM SPECIES

SPECIES	HABIT	ORIGIN	CHEMISTRY	IUCN STATUS
<i>Santalum spicatum</i> West Australian sandalwood <i>dutjahn</i> (Martu); <i>waang</i> (Noongar)	shrub	southwest Australia	<i>ess oil</i> : (Z)- $\alpha$ -santalol (25-40%), (Z)- $\beta$ -santalol (8-15%) <i>nut oil</i> : ximenynic acid (35%)	Vulnerable
<i>Santalum album</i> Indian sandalwood <i>chandana</i> (Sanskrit); <i>chandan</i> (Sanskrit)	tree	India, Sri Lanka, eastern Indonesia, northern Australia	<i>ess oil</i> : (Z)- $\alpha$ -santalol (46-60%), (Z)- $\beta$ -santalol (20-29%)	Vulnerable
<i>Santalum acuminatum</i> desert quandong; sweet quandong <i>guwandhang</i> (Wiradjuri); <i>wolgol</i> (Noongar)	shrub	central & southern Australia	<i>ess oil</i> : No santalols. <i>nut oil</i> : ximenynic acid (32-46% of total fatty acids)	Vulnerable (TPWC Act)
<i>Santalum austrocaledonicum</i> Coral Sea sandalwood <i>sandalwud</i> (Vanuatu); <i>bois de santal</i> (French)	tree	New Caledonia & Vanuatu	<i>ess oil</i> : (Z)- $\alpha$ -santalol (46-50%), (Z)- $\beta$ -santalol (18-25%)	Near Threatened
<i>Santalum boninense</i> Bonin Islands sandalwood <i>muninbakudan</i> (Japanese)	shrub	Ogasawara-shoto, Japan	[not extracted]	Endangered: Japan
<i>Santalum ellipticum</i> coastal sandalwood <i>'iliahialo'e</i> (Hawaiian)	tree	Hawaiian Islands	[not extracted]	Imperiled (NatureServe)
<i>Santalum fernandezianum</i> Chile sandalwood <i>sándalo de Juan Fernandez</i> (Spanish)	tree	Juan Fernández Islands, Chile	[not extracted]	Extinct
<i>Santalum freycinetianum</i> forest sandalwood, Freycinet sandalwood <i>iliahi</i> (Hawaiian)	tree	Hawaiian Islands	[not extracted]	Endangered
<i>Santalum haleakalae</i> Haleakala sandalwood <i>'iliahi</i> (Hawaiian)	tree	East Maui volcano Maui, Hawaii (slopes of Haleakalā)	[not extracted]	Vulnerable
<i>Santalum insulare</i> Polynesian sandalwood <i>puahi</i> (Marquesas Islands, French Polynesia)	tree	eastern Polynesia	[not extracted]	Endangered
<i>Santalum involutum</i> Involute sandalwood <i>'iliahi</i> (Hawaiian)	tree	Hawaiian Islands (Kaua'i)	[not extracted]	Endangered
<i>Santalum lanceolatum</i> desert quandong, northern sandalwood bale bush, <i>dumbuyumbu</i> (Marra; Alawa)	shrub	eastern & northern Australia	<i>ess oil</i> : (Z)- $\alpha$ -santalol (0.6-2.6%), (Z)- $\beta$ -santalol (2-4.3%), Z-lanceol (20-90%)	Endangered: Northern Australia
<i>Santalum macgregorii</i> Papua New Guinea sandalwood <i>botto</i> (Motu)	tree	Papua New Guinea	<i>ess oil</i> : (Z)- $\alpha$ -santalol (0.5-51%), (Z)- $\beta$ -santalol (>24%), (Z)-lanceol (0-72%)	Critically Endangered
<i>Santalum murrayanum</i> bitter quandong <i>coolyar</i> (Noongar)	tree	southern Western Australia	[not extracted]	Endangered: Australia
<i>Santalum obtusifolium</i> blunt sandalwood southern sandalwood; scrub sandalwood	shrub	eastern Australia	<i>nut oil</i> : ximenynic acid (72%), oleic acid (14%)	Vulnerable: Australia
<i>Santalum paniculatum</i> mountain sandalwood, Hawaiian sandalwood, <i>'iliahi</i> (Hawaiian)	tree	Hawaiian Islands	<i>ess oil</i> : (Z)- $\alpha$ -santalol (35-40%), (Z)- $\beta$ -santalol (11-16%)	Vulnerable
<i>Santalum papuanum</i> ba bu ya tan xiang (Chinese)	tree	New Guinea	[not extracted]	[not listed]
<i>Santalum pyrularium</i> Kaua'i forest sandalwood	tree	Kaua'i, Hawaiian Islands	[not extracted]	Endangered
<i>Santalum yasi</i> yasi; yasi dina (Fijian)	tree	Fiji, Tonga, Niue	[not extracted]	Endangered



**Key to functional group:**

- |   |   |  |
|---|---|--|
| <span style="color: brown;">■</span> sesquiterpenol | <span style="color: olive;">■</span> monounsaturated omega-9 fatty acid     | <span style="color: magenta;">■</span> C16 saturated fatty acid        |
| <span style="color: yellow;">■</span> aldehyde      | <span style="color: orange;">■</span> polyunsaturated acetylenic fatty acid | <span style="color: green;">■</span> octadecanoic saturated fatty acid |
| <span style="color: blue;">■</span> sesquiterpene   | <span style="color: cyan;">■</span> polyunsaturated omega-3/6 fatty acid    | <span style="color: red;">■</span> trans-unsaturated fatty acid        |

## *Santalum* • RESEARCHED ACTIVITIES

ACTIVITY	DF RD		AUTHORS
<b>Oncology</b>			
<b>cytotoxic anticancer</b> (oral cancer; <i>HNSCC</i> )	EC VT	<b>α- &amp; β-Santalols</b> interact with tubulin to inhibit microtubule polymerization, similar to chemotherapeutic agents, but without the potency and toxicity of agents that interact directly with tubulin. This activity is clinically relevant to head and neck squamous cell carcinoma (HNSCC), 6th most common cancer.	Lee et al, 2015
<b>cytotoxic proapoptotic antiangiogenic anticancer</b>	EO EC SR	<b>Santalum album EO</b> and <b>α-Santalol</b> are safe and promising cancer chemopreventive/therapeutic agents with potential to target various pathways involved in carcinogenesis. Mechanisms of action include proapoptotic, antiproliferative, antiangiogenic, antioxidant and anti-inflammatory activities.	Santha & Dwivedi, 2013
<b>Dermatology</b>			
<b>chemopreventive antiproliferative anticancer</b> (skin cancer)	EC VV	<b>Topical α-Santalol</b> treatment (1.25% & 2.5% conc.) significantly reduced the TPA-induced ODC activity and incorporation of [3H]thymidine in DNA in the epidermis of mice. There was no significant difference in the effects of 1.25% & 2.5% concentrations of α-santalol on tumour incidence and multiplicity.	Dwivedi et al, 2005
<b>chemopreventive antikeratotic anticancer</b> (skin cancer)	EO VT	<b>Santalum album EO</b> demonstrated a chemopreventive activity resulting from a blockade of cell cycle progression in pre-treated HaCaT keratinocytes as well as an inhibition of UV-induced AP-1 activity, two cellular effects known to drive skin carcinogenesis, inhibiting pre-cancerous cells associated with actinic keratosis (AK) progressing into skin cancer.	Dickinson et al, 2014
<b>anti-inflammatory antioxidant radioprotective</b>	EO CT	<b>Santalum album and Curcuma longa EOs</b> prevented radiodermatitis in patients with head and neck cancer undergoing radiation therapy, and reduced the occurrence of Grade 3 dermatitis to a statistically significant degree.	Palatty et al, 2014
<b>Gynecology</b>			
<b>chemopreventive proapoptotic anticancer</b> (breast adenocarcinoma)	EC VT	<b>α-Santalol</b> has been shown to inhibit breast cancer cell growth <i>in vitro</i> by inducing apoptosis. In this study, we demonstrate that α-santalol targets the Wnt/β-catenin pathway to inhibit migration of cultured breast cancer cells. Exposure of MDA-MB 231 and MCF-7 cells to α-santalol significantly reduced their migratory potential and wound healing ability. α-Santalol inhibits the migration of breast cancer cells by targeting the Wnt/β-catenin pathway.	Bommareddy et al, 2018
<b>Endocrine</b>			
<b>antihyperglycemic hyperlipidemic anti-inflammatory hepatoprotective antidiabetic</b> (type 2 diabetes)	SO VV	<b>Santalum spicatum nut oil</b> significantly attenuated glucose intolerance, hyperglycaemia, obesity, and hepatic lipid accumulation in 50 high-fat/high-sucrose diet (HFHSD)-induced insulin resistant male Sprague-Dawley rats. The nut oil reduced the serum levels of pro-inflammatory factors IL-6, IL-1β and TNF-α compared to control, activated the PI3K/AKT insulin signaling pathway, and down-regulated the JNK/NF-κB inflammatory signaling pathway in the liver. Ximenynic acid-rich <i>Santalum spicatum</i> nut oil ameliorated the effect on insulin resistance by reducing hepatic inflammation and thereby preventing disruption of the insulin signaling pathway.	Zhang et al, 2021
<b>Nervous &amp; Psychological</b>			
<b>sedative soporific</b> (insomnia)	EC VV	<b>Inhaled α-santalol</b> was investigated for its effect on the sleep-wake cycle. It caused a significant decrease in total waking time and an increase in total non-rapid eye movement (NREM) sleep time. Further tests revealed that α-santalol acts via the circulatory system rather than the olfactory system, being absorbed into the blood through the respiratory mucosa. Therefore α-santalol may be useful for those experiencing sleep hygiene without being affected by subjective differences in fragrance preference.	Ohmori et al, 2007

**KEY • DF:** dose form; **EO:** essential oil; **EC:** essential oil constituent; **HE:** herbal extract; **SO:** cold-pressed nut oil; **RD:** research design; **VT:** *in vitro* study; **VV:** *in vivo* study; **EV:** *ex vivo* study; **SR:** systematic review; **CT:** clinical trial.

## WEST AUSTRALIAN SANDALWOOD (*S. SPICATUM*) TCM-ENERGETIC ACTIONS

**Fragrance energy:** sweet-woody; milky, musky, urinous, animalic – *calming, pacifying, restoring*

**Energy:** *cooling, moistening, draining*

### Systemic actions:

- ***Clears Heat, protects and regulates the Essence, reinforces the Yang:*** oxidative stress and redox imbalance, chronic inflammation, neuroinflammation, type 2 diabetes, mutagenesis; leukemia, skin cancer, breast cancer, oral cancer, head and neck squamous cell carcinoma, prostate cancer, bladder cancer, lung cancer; chemopreventive; radioprotective.

### Organ system actions:

- ***Tonifies Spleen-Qi, regulates homeostasis, drains Damp-Heat, pacifies the Yi (Intellect):*** chronic lethargy, mental fatigue, overthinking and worry, migraine, irritable bowel syndrome, colitis, acute diarrhea [suppl\*], type 2 diabetes [suppl\*].
- ***Clears Heat and Damp-Heat, cools the Blood, benefits the skin, restrains infection:*** dermatitis, eczema, psoriasis, urticaria, acne, rosacea, shingles, genital herpes, vitiligo vulgaris, actinic keratosis, skin cancer chemopreventive.

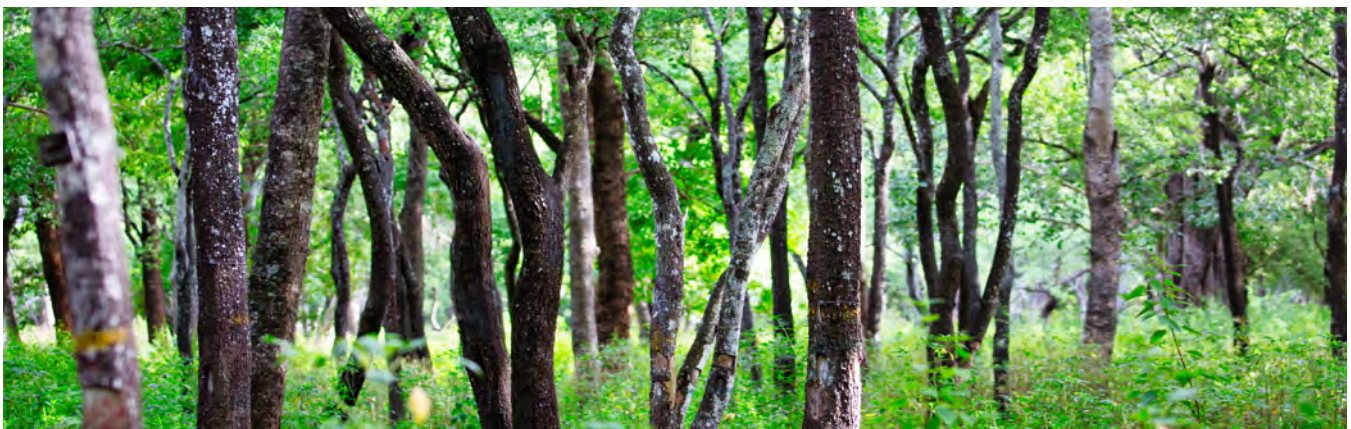
- ***Regulates Heart-Qi, cools Heart-Fire, clears Heart Phlegm-Fire, sedates the Shen (Mind):*** chronic nervous tension, insomnia and poor sleep hygiene, overthinking and worry, restlessness, ‘workaholic’ syndrome, nervous exhaustion, neurasthenia†, hypomania, bipolar disorder, Parkinson’s disease [suppl\*], dementia [suppl\*].

- ***Cools Lung-Heat, expels Wind-Heat and Lung Phlegm-Heat, supports Lung-Yin:*** cough (accompanied by sticky yellow sputum), acute and chronic bronchitis, extrinsic asthma, pharyngitis, laryngitis.

- ***Supports Kidney-Qi and-Yin, drains urogenital Damp-Heat:*** leucorrhoea, vaginal candidiasis, genital herpes, squamous intraepithelial lesion.

\* **suppl** = strictly supplementary intervention.

† **neurasthenia** is a 19th century term implying “weakness of the nerves”. When used in psychology, it describes a condition characterized by chronic lethargy, mental fatigue, mild depression, poor concentration, loss of appetite, and insomnia. Further possible symptoms include headache, dizziness, myalgia, weight loss, restlessness, anxiety, excessive sweating, irritability, and tachycardia.



## Example aromatic formulae

### 1. SOOTHING ANTIPRURITIC-ANTIDERMATITIC-ANTI-ECZEMATOUS FORMULA FOR SKIN APPLICATION

**Indications:** itching, dermatitis, eczema

**Dose form:** non-aqueous ointment

**Container:** 2 oz (or 60 ml) glass jar

**EO concentration:** approx. 0.5%

**Formulation:**

Beeswax ( <i>Cera alba</i> ) (pastilles)	12 g
<i>Calendula officinalis</i> herbal oil	15 ml
Rosehip ( <i>Rosa rubiginosa</i> ) oil	15 ml
<i>Santalum spicatum</i> nut oil	15 ml
<i>Santalum spicatum</i> EO	120 mg (≈ 4 gtt.)
<i>Matricaria recutita</i> EO	60 mg (≈ 2 gtt.)
<i>Lavandula angustifolia</i> EO	60 mg (≈ 2 gtt.)

Application: Apply to affected area 2-4 times/ day.

### 2. NURTURING CHEMOPREVENTIVE FORMULA FOR BREAST (NIPPLE) APPLICATION

**Indications:** chemopreventive use in clinical context according to individual risk factors and lifestyle

**Dose form:** non-aqueous ointment

**Container:** 2 oz (or 60 ml) glass jar

**EO concentration:** approx. 4%

**Formulation:**

Beeswax ( <i>Cera alba</i> ) (pastilles)	12 g
<i>Santalum spicatum</i> nut oil	15 ml
<i>Calendula officinalis</i> herbal oil	15 ml
Rosehip ( <i>Rosa rubiginosa</i> ) oil	15 ml
<i>Santalum spicatum</i> EO	1.2 g (≈ 40 gtt.)
<i>Pelargonium graveolens</i> EO	0.3 g (≈ 10 gtt.)
<i>Rosmarinus officinalis</i> CO2 ext.	0.3 g (≈ 10 gtt.)

**Application:** Apply a small volume (≈1 g) to each nipple once per day.

### 3. CALMING ANXIOLYTIC-SOPORIFIC FORMULA FOR CLINICAL DIFFUSION AND INHALATION

**Indications:** nervous tension, anxiety, restlessness, insomnia

**Dose form:** nebulized diffusion

**Container:** direct administration through diffuser

**EO concentration:** N/A

**Formulation:**

<i>Lavandula angustifolia</i> EO	40%
<i>Citrus bergamia</i> EO	20%
<i>Citrus sinensis</i> EO	20%
<i>Santalum spicatum</i> EO	20%

**Application:** Diffuse for 20-30 minutes 2-4 times per day.

## ~ Santalum ~

The *Rājanighantu*, a lexicon of healing plants, from rose to cardamom,<sup>1</sup> in sage times mentioned precious sandalwood as being through many names understood.

Its most ancient name, *chandana*, relates to *cāntu*, meaning ‘rub into a paste’. The term *chandana* is also defined as the most superlative of its kind.

White sandal paste was applied to the brow to cool the mind and devotion avow, to draw down Shiva and awaken Shakti, to enrich one’s bliss and deepen bhakti.

The scented wood’s Pure Land<sup>2</sup> perfection fueled its rise as one of the ‘seven jewels of the emperor’, a true Sattvic<sup>3</sup> tree imparting the power of divinity.

Its purity made it a ‘piece of fortune’, *śrīkhanda*, a sweet curd saffron portion: a cold, light paste with a creamy perfume known by the Devas<sup>4</sup> as the ‘scent of the moon’.

Its sweet cool aroma was regarded by the serpents that entwined and guarded sacred sandal trees on Mount Malaya as *priya*,<sup>5</sup> as enticing as a raga.<sup>6</sup>

*Chandana* was thus praised in Ayurvedic verse for cooling passions that all minds can curse, for dispersing the Fire that sears and clouds, inflames the limbs and lucidity shrouds.

Distilled from the heartwood, the tree’s essence, *Gandhasarna*<sup>7</sup> scented gem presence, clears and stills the mind, fragrances the breath, guards against, surrenders to, blesses Death.

<sup>1</sup> The *Rājanighantu*, compiled by Narahari, is a 14th century Ayurvedic medical lexicon (*nighantu*) concerning 698 drugs of plant, animal and mineral origin.

<sup>2</sup> Pure Land: the celestial realm of a buddha or bodhisattva in Buddhism, offering respite from karmic transmigration; adorned with flowers, fruits and wish-granting trees.

<sup>3</sup> Sattvic: possessing the nature of *Sattva*, one of the three *gunas* (qualities or attributes) in Hindu philosophy; the quality of balance, harmony, serenity, purity and goodness.

<sup>4</sup> Devas: celestial beings in Hinduism and Buddhism.

<sup>5</sup> *Priya*: ‘dear’; ‘beloved’.

<sup>6</sup> *Raga*: a traditional melodic pattern or mode in classical Indian music.

<sup>7</sup> *Gandhasārana*: from *gandha* - a kind of perfume; *sarana* - ‘jewel’.

## *Sustainable organic Natural Soul Perfumery*

**Gabriel Mojay LAc,CertEd,FIFPA**

*Gabriel Mojay, author of 'Aromatherapy for Healing the Spirit', shares with participants a practical and deeply sensory way of working with the dynamics of essential oil fragrance energetics in tandem with formulating one's own simple Natural Soul Perfume.*

*Sustainable organic Natural Perfumery relies on aromatic oils of organic or ethically wild-crafted origin, and interprets the ethno-symbolism as well as the fragrance energetics of natural aromatics in a way that allows hand-crafted fragrance materials to invoke aspects of one's very soul or spirit ~ those parts of us we wish to heal, deepen or more potently realize.*

The word perfume is derived from the Latin '*per fumum*,' which translates into English as '*through the smoke*'. This goes back to the ancient burning of aromatic materials such as resins, woods and incense. Alternative words for perfume are '*fragrance*' and '*scent*'.

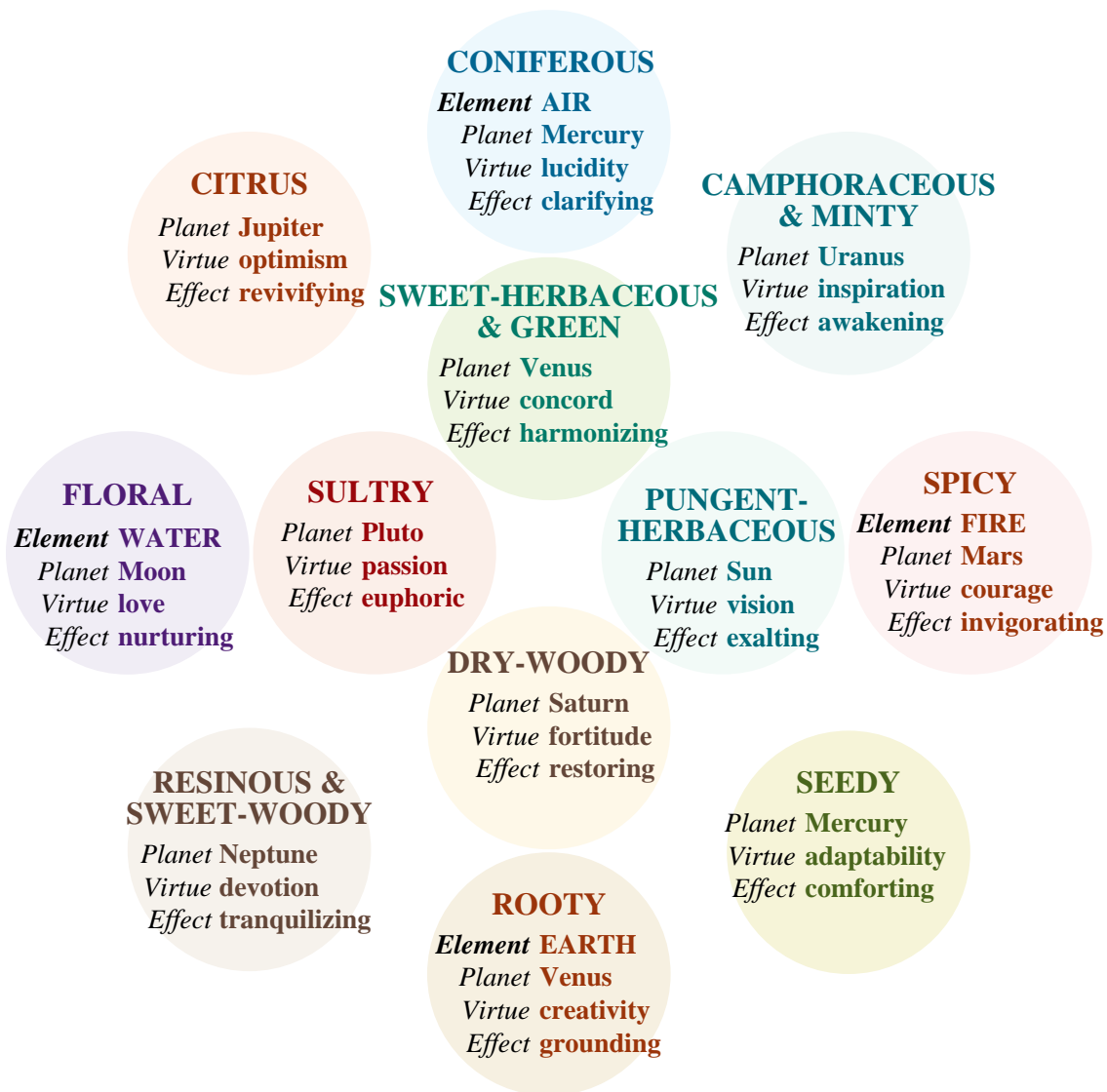
Sustainable Natural Perfumery refers to wearable fragrances created with ethically-derived botanical materials from essential oils and absolutes which are whole and unadulterated and preferably extracted from plants of organically-cultivated origin. A perfumer may work with chemical components isolated from an absolute by molecular distillation, which yields isolates, as well as rectified and fractionated oils, and also claim to be creating a natural perfume — yet this may be more sustainable than over-relying of threatened and endangered wholly natural resources.

Many natural perfumers utilize solvent extracts, CO2 extracts, tinctures, enfleurage, infusions, and resinoids and absolutes as raw materials for aromatic formulating, and this helps to broaden the palette and scope of what is achievable practically. Natural perfumes are constructed differently from aromatherapy blends. They may also contain fragrant materials that do not form part of a typical aromatherapy kit — such as absolutes, tinctures, infused oils and botanical extracts.

Natural Perfumery has more in common with the pre-modern era of perfume making — with the age when perfumes were devoid of synthetic chemical components. Natural perfumers seek to free themselves from the elitism of traditional perfume creation, informed as it is by the multi-billion dollar fragrance houses — but most importantly from the overwhelming use of synthetic fragrances which permeate our modern world and can disrupt our health and well-being.

Traditional commercial perfumes were created largely by men who were likely to describe perfumery as about *evoking* an impression — one based on the underlying principle of sexual attraction; I refer specifically to the 'classic standard text' on the psychological basis of perfumery by Paul Jellinek (1997). While I do not condemn such a perspective - after all, secondary metabolites secreted by aromatic plants attract pollinators, and so reproduction in some form is inseparable from aromatics – yet there is also the possibility of *invoking* from within archetypal energies that can transform us if we can tame their potency and benefit from the pristine Qi-energy reflected in their different fragrance notes ~ if we can direct these towards our evolution as souls, as spiritually sentient, ever-evolving conscious beings.

*Fragrance energies; their associated Four Elements, Planets, Virtues and Effects*





## *Fragrance energies and key aromatics*

<b>Fragrance energy</b>	<b>A-F</b>	<b>G-L</b>	<b>M-R</b>	<b>S-Z</b>
<i>pungent-herbaecous</i>	Bay Laurel	Hyssop	Rosemary	Sage Thyme
<i>spicy</i>	Black Pepper Cinnamon leaf	Ginger		
<i>floral</i>		Lavender Lotus	Neroli Osmanthus Rose	
<i>sweet-pungent-seedy</i>	Cardamom Coriander Fennel			
<i>coniferous</i>	Cypress Eastern Hemlock	Juniper Larch	Pine	
<i>dry-woody</i>	Cedar	Hinoki		Virginian Cedar
<i>citrus</i>	Bergamot	Grapefruit Lemon	Orange	
<i>sweet-herbaceous and green</i>	Basil Chamomile Clary Sage	Geranium Helichrysum Lemon Verbena	Marjoram Melissa Rhododendron	St John's Wort Violet leaf Yarrow
<i>rooty</i>	Angelica	Galbanum Gandhi Root		Spikenard Vetiver
<i>camphoraceous and minty</i>	Eucalyptus		Myrtle Peppermint	
<i>sultry</i>		Jasmine	Narcissus Patchouli	Tuberose Ylang Ylang
<i>resinous and sweet-woody</i>	Copaiba Balsam Frankincense	Labdanum	Mastic Myrrh Palo Santo	Sandalwood

## *Fragrance energies and key aromatics*

### **Pungent-herbaceous aromatics**

Rosemary  
Bay Laurel  
Thyme  
Sage  
Hyssop

### **Spicy aromatics**

Cinnamon leaf  
Ginger  
Black Pepper

### **Floral aromatics**

Rose  
Neroli  
Lotus  
Osmanthus  
Lavender

### **Sweet-pungent-seedy aromatics**

Fennel  
Coriander  
Cardamom

### **Coniferous aromatics**

Pine  
Larch  
Eastern Hemlock  
Cypress  
Juniper

### **Dry-woody aromatics**

Atlas Cedar  
Virginian Cedar  
Hinoki

### **Fruity aromatics**

Orange  
Bergamot  
Grapefruit  
Lemon

### **Sweet-herbaceous and green aromatics**

Marjoram  
Basil  
Clary Sage  
Chamomile (German & Roman)  
Yarrow  
Helichrysum  
St John's Wort  
Melissa  
Lemon Verbena  
Geranium  
Violet leaf  
Rhododendron leaf

### **Rooty aromatics**

Vetiver  
Spikenard  
Angelica root  
Galbanum  
Gandhi root

### **Camphoraceous and minty aromatics**

Eucalyptus  
Myrtle  
Peppermint











### **Sultry aromatics**

Jasmine  
Ylang Ylang  
Tuberose  
Narcissus  
Patchouli

### **Resinous and sweet-woody aromatics**

Frankincense  
Myrrh  
Labdanum  
Mastic  
Copaiba Balsam  
Palo Santo  
Sandalwood

*Astrological Planets: glyph, Sign rulership, principle, psychology*

	<b>glyph</b>	<b>Sign rulership</b>	<b>principle orientation</b>	<b>psychology</b>
<b>Sun</b> 	the circle of Spirit with the Quintessence at its centre	Leo <i>(Fixed Fire)</i>	Spirit <i>character</i>	self-identity purpose individuation
<b>Mars</b> 	the arrow of Will arising from the circle of Spirit	Aries <i>(Cardinal Fire)</i>	Will <i>motivation</i>	assertiveness courage achievement
<b>Moon</b> 	the crescent of Soul	Cancer <i>(Cardinal Water)</i>	Soul <i>personality</i>	subconscious feelings nurturing
<b>Mercury</b> 	Soul's crescent, Spirit's circle & cross of the bodymind	Gemini <i>(Mutable Air)</i> Virgo <i>(Mutable Earth)</i>	Mind <i>skill</i>	intellect communication acuity
<b>Saturn</b> 	the crescent of Soul anchoring the cross of the Ego	Capricorn <i>(Cardinal Earth)</i>	Realism <i>stoicism</i>	concentration commitment maturity
<b>Jupiter</b> 	the crescent of Soul lifting the cross of the Ego	Sagittarius <i>(Mutable Fire)</i>	Idealism <i>wisdom</i>	exploration philosophy optimism
<b>Venus</b> 	the circle of Spirit governing the cross of the bodymind	Taurus <i>(Fixed Earth)</i> Libra <i>(Cardinal Air)</i>	Harmony <i>sensuality</i>	love relationship artistry
<b>Uranus</b> 	the Ego receptive to the transpersonal Soul transforms the Spirit	Aquarius <i>(Fixed Air)</i>	Universal Mind <i>inspiration</i>	individuality innovation enlightenment
<b>Pluto</b> 	Ego-Soul is receptive to the transforming Universal Spirit	Scorpio <i>(Fixed Water)</i>	Universal Will <i>impulse</i>	collective unconscious transformation regeneration
<b>Neptune</b> 	the Ego is absorbed by and surrenders to the Universal Soul	Pisces <i>(Mutable Water)</i>	Universal Soul <i>intuition</i>	transcendence spirituality devotion

*An herbalist in a white coat: effective herbal remedies  
for common complaints in a low income primary care clinic*

Ingrid Bauer, MD

## Neurological & Pain Conditions

### Headache

**Red flags:** sudden onset severe headache, vision changes, associated high blood pressure, change in mental status

**Treatments:**

- Lifestyle: dark room, lower lights, ice pack to back of the head, acupressure to GB41 (between 4th and 5th toes about 2 fingers up from webbing), avoid alcohol, avoid excessive caffeine
- Pain: skullcap (*Scutellaria lateriflora*), Sichuan lovage (*Ligusticum chuanxiong*), corydalis (*C. yanhusuo*), blue vervain (*Verbena* spp), California poppy (*Eschscholzia californica*)
- Nausea: peppermint or ginger EO inhalation
- Supplements: B complex

### Nerve pain

Red flags: numbness, weakness, persistent pain, associated spinal injury, associated diabetes

Treatments: St John's Wort (*Hypericum perforatum*), cannabis (*C. sativa*), topical cayenne & menthol

### Neck and back pain

Red Flags: sudden onset after trauma, numbness/tingling in the extremities

Treatments:

Antispasmodic herbs: kava (*Piper methysticum*), skullcap (*Scutellaria lateriflora*), valerian (*Valeriana officinalis*)

Antiinflammatory herbs: turmeric (*Curcuma longa*), black pepper (*Piper nigrum*), rosemary (*Rosmarinus officinalis*)

Analgesics: California poppy (*Eschscholzia californica*), corydalis (*C. yanhusuo*), cannabis (*C. sativa*)

## Respiratory Conditions

### Sinusitis

**Red flags:** high fever (>101.1 F), severe pain (wakes from sleep), swelling around the eyes

**Treatments:**

- Saline rinse +/- yerba mansa or goldenseal tea/tincture
- Steam inhalation +/- eucalyptus, thyme, sage, cedar fresh leaf or EO
- Internal: ragweed (*Ambrosia* spp.), yerba mansa (*Anemopsis californica*), goldenseal (*Hydrastis canadensis*), thyme (*Thymus vulgaris*), garlic (*Allium sativum*), nettles (*Urtica dioica*)
- Supplements: vitamin C, quercetin, bromelain

## Sore throat

**Red flags:** high fever (>101.1 F), severe pain (wakes from sleep), tonsillar exudate, severe difficulty swallowing, high pitched sound on inhalation

**Treatments:**

-Salt water gargle +/- yerba mansa or goldenseal tea/tincture  
-Internal: Echinacea spp, red root (Ceanothus spp), toothache plant (Spilanthes acmella), figwort (Scrophularia californica), garden sage (Salvia officinalis), honeysuckle flower (Lonicera japonica), burdock seed (Arctium lappa), peppermint (Mentha piperita), licorice root (Glycyrrhiza glabra)

## Cough

**Red flags:** high fever (>101.1 F), audible wheezing, shortness of breath at rest, chest pain, rapid heart rate, low oxygen saturation, tripod positioning

**Treatments:**

Dry: marshmallow (Althea officinalis), slippery elm (Ulmus rubra), licorice root (Glycyrrhiza glabra), wild cherry (Prunus serotina), gua luo (Trichosanthes kirilowii fruit)  
Wet: yerba mansa (Anemopsis californica), goldenseal (Hydrastis canadensis), thyme (Thymus vulgaris), garlic (Allium sativum), ginger (Zingiber officinale), yerba santa (Eriodictyon californica), elecampane (Inula helenium)  
Tight: Lobelia (L. inflata), ephedra (Ephedra chinensis)

## Digestive Conditions

### GERD

**Red flags:** Difficult or painful swallowing, exertional chest pain

**Treatments:**

-Lifestyle: weight loss, avoidance of alcohol/coffee/chocolate/peppermint/acidic foods/smoking, upright position after eating, smaller meals  
-Herbs: marshmallow (Althea officinalis), slippery elm (Ulmus rubra), licorice root (Glycyrrhiza glabra), ban xia (Pinellia ternata), licorice mint (Agastache spp)

### Dyspepsia/Gastritis

**Red flags:** persistent stabbing epigastric pain esp radiating to the back, pain 30 minutes after eating, dark stool, symptoms of anemia (fatigue, lightheadedness, shortness of breath), exposure to *H. pylori*

**Treatments:**

-Lifestyle: avoidance of alcohol/coffee/acidic foods  
-Heal the gastric mucosa: marshmallow (Althea officinalis), slippery elm (Ulmus rubra), licorice root (Glycyrrhiza glabra), calendula (C. officinalis), plantain (Plantago spp.), yarrow (Achillea millefolium)  
-Clear microbes: yerba mansa (Anemopsis californica), goldenseal (Hydrastis canadensis), Oregon grape (Berberis repens)  
-Restore proper acid balance: artichoke (Cynara scolymus), gentian (Gentiana luteus), fenugreek (Trigonella foenum-graecum)

## **Irritable bowel syndrome**

**Red flags:** Persistent abdominal pain, weight loss, bloody stool, vitamin deficiencies, family history of inflammatory bowel disease, celiac disease or colon cancer

Treatments

-Lifestyle: stress reduction, exercise, sleep, identify dietary triggers (gluten, corn, coffee, alcohol, dairy, eggs, soy, fructooligosaccharides)

-Constipation: triphala, flax seed, hemp seed, psyllium husk, marshmallow (*Althea officinalis*), slippery elm (*Ulmus rubra*), licorice root (*Glycyrrhiza glabra*), calendula (*C. officinalis*), fenugreek (*Trigonella foenum-graecum*), burdock root (*Arctium lappa*)

-Diarrhea: triphala, psyllium husk, yerba mansa (*Anemopsis californica*), plantain (*Plantago* spp.), yarrow (*Achillea millefolium*), blackberry root (*Rubus fruticosus*),

-Cramping: ginger (*Zingiber officinalis*), fennel seed (*Foeniculum vulgare*), cardamom (*Elettaria cardamomum*), fenugreek (*Trigonella foenum-graecum*), wild yam (*Dioscorea opposita*), peppermint (*Mentha piperita*)

## **Metabolic Conditions**

### **High LDL cholesterol**

Red flags: smoker, diabetes, hypertension, personal or close family history of cardiovascular disease

Lifestyle: quit smoking, lose visceral fat, limit animal fats, increase green leafy veggies & alliums

Herbs to lower lipids: guggul (*Commiphora wightii*), triphala, eleuthero (*Eleutherococcus senticosus*), fenugreek (*Trigonella foenum-graecum*)

Herbs to reduce vascular inflammation: hawthorn berry (*Crataegus* spp), turmeric (*Curcuma longa*)

Supplements: red yeast rice, deodorized garlic, co-q-10

### **High triglycerides**

Red flags: elevated blood glucose, elevated liver enzymes, abdominal pain

Lifestyle: lose visceral fat, limit processed foods and sugar, increase fiber, intermittent fasting

Cholagogues: Artichoke (*Cynara scolymus*), mugwort (*Artemisia* spp), dandelion root & leaf

(*Taraxacum officinalis*), Oregon grape (*Berberis repens*), fenugreek (*Trigonella foenum-graecum*)

### **Pre-diabetes**

Red flags: excessive thirst or urination, numbness/tingling in hands or feet, vision changes, family history of diabetes especially with complications or use of insulin

Lifestyle: Lifestyle: lose visceral fat, limit processed foods and sugar, increase fiber, intermittent fasting

Herbs: Dandelion leaf (*Taraxacum officinalis*), fenugreek (*Trigonella foenum-graecum*), Oregon grape (*Berberis repens*), eleuthero (*Eleutherococcus senticosus*), ashwagandha (*Withania somnifera*), cinnamon (*Cinnamomum cassia* or *C. vera*), holy basil (*Ocimum sanctum*)

Supplements: chromium

## **Hypertension**

Red flags: Blood pressure persistently >140/>90, headaches, vision changes, chest pain, history of stroke or cardiac conditions

Lifestyle: moderate cardiovascular exercise, mindful movement (hatha yoga, tai chi, qigong), avoid alcohol, avoid NSAIDS, minimize processed foods

Herbs:

-Diuretics: dandelion leaf (*Taraxacum officinalis*), nettle leaf (*Urtica dioica*), fu ling (*Poria cocos*)

-Relaxing nervines: motherwort (, passionflower (*Passiflora* spp), linden (*Tilia cordata*)), hawthorn leaf & flower (*Crataegus* spp.), valerian (*Valeriana officinalis*)

-”Adaptogens”: reishi (*Ganoderma lucidum*), eleuthero (*Eleutherococcus senticosus*), American ginseng (*Panax quinquefolium*)

# *Integrative Pharmacology for Herbalists*

**Ingrid Bauer, MD and Benjamin Zappin, LAc**

## Objectives

- Explore how to evaluate scientific & traditional evidence
- Understanding pharmacokinetics, pharmacodynamics, and herb-drug interactions
- Identify common herbs that involve CYP pathways
- Learn about herb-drug interactions in specific health conditions

### 1. Evaluating Evidence

- a. Levels of evidence
- b. Reading a scientific paper
- c. Value of empirical & traditional knowledge
- d. Efficacy & safety classes for herbs

### 2. Pharmacology Basics

- a. Pharmacodynamics
  - i. Therapeutic vs adverse effects
  - ii. Additive vs buffering effects
- b. Pharmacokinetics
  - i. Absorption
    1. P-glycoprotein
  - ii. Distribution
  - iii. Metabolism
    1. Cytochrome P450
  - iv. Elimination

### 3. Herbs and CYP pathways

- a. St Johns Wort
- b. Ginkgo
- c. Guggul
- d. Black Cohosh
- e. Echinacea
- f. Garlic
- g. Goldenseal
- h. Kava kava
- i. Milk Thistle
- j. Cannabis



4. Condition-specific precautions with herbs & drugs
  - a. Hypertension
  - b. Congestive heart failure
  - c. Hyperlipidemia
  - d. Diabetes
  - e. Antiplatelet medications and blood thinners
  - f. Auto-immune conditions
  - g. Organ transplant recipients & immunosuppressants
  - h. Cancer
  - i. Antidepressants & antipsychotics
  - j. Anti-epileptics

## ***Improving Communication Between Herbalists and Allied Health Professionals***

**Ingrid Bauer, MD and Benjamin Zappin, LAc**

### Objectives:

- Learn strategies for collaborative treatment planning with the healthcare team
  - Learn how to communicate about herbal medicine to conventional healthcare providers
  - How to document and communicate to benefit patients, family, and other practitioners
1. Identify resources
    - a. Referrals to and from outside providers
    - b. Community resources patients access
  2. Scope of practice
    - a. Be clear about your scope
    - b. What is the role of specialization
    - c. Choosing the right patients for your practice
  3. Building your practice
    - a. EMR
    - b. Forms
    - c. Faxing/emailing
    - d. HIPAA
  4. Communication
    - a. Translating herbology to conventional providers
    - b. Translating Western medical treatments to patients
    - c. Patient-centered negotiation with care team members
  5. Discussion

# *A Dive into Distillation*

**Dr Jamie Moran LAc**

I have always loved fragrant plants, so the marriage of my career as a doctor and the use of scented herbs as medicines has been a happy one. With the help of a number of influential people, conferences and herbal groups, I began to explore the herbal world, growing, drying and tincturing, like mad! Eventually, I started distilling my own homegrown herbal friends, including lemon balm (*Melissa officinalis*), lavender (*Lavandula angustifolia*), holy basil (*Ocimum africanum*), rose (*Rosa species*), geranium (*Pelargonium graveolens*), rosemary (*Rosmarinus officinalis*), white pine (*Pinus strobus*), and clary sage (*Salvia sclarea*)

Like many people, I was keenly interested in producing essential oils, which generally makes up a very small part of the products of the distillation process. Some plants, such as lemon balm, produce almost no essential oil under ordinary circumstances, hence the phenomenal price of this oil. I ultimately ended up mainly producing bottles of hydrosols and other than spritzing my skin, I have primarily used them to replace the water in skin care products for topical preparations for pets and people. However, this barely touches the tip of the proverbial iceberg of their possible uses. As is always the case, as I prepare for this talk, I am learning as much as you will be!

There are a great many plants with medicinal properties, but only about 1% of the world's plants are fragrant. The volatile compounds which give a plant its odor can be released from the plant and captured through distillation. The parts of the plant that can be used are the leaves, flowers, bark, roots, seeds and nuts, and fruits and resins. The aromatic substances are formed and stored in a variety of ways: in glandular hairs, cells, and scales (i.e. in thyme, marjoram, rosemary, and sage), in oil or resin cells, as in laurel leaves, cinnamon and cassia, in oil or resin canals (i.e. in the fruit of caraway, anise seed, fennel, coriander, celery, and in some conifers), or in oil reservoirs, as is found in members of the rue family and citrus varieties.

The process of distillation involves boiling the plant material in a closed system, so that the aromatic compounds are released into the water vapor, and then collected after this vapor condenses back into water. The apparatus that is used for this operation is called a still and the products of this process are essential oils and floral waters. There are many names that have been given to the water that is produced. Hydrolat is the name used in France, while we tend to use a word coined by Jeanne Rose, hydrosol, in the United States.

## **Hydrosols Through the Ages**

People have used the process of distillation for many thousands of years. Archaeologists have discovered evidence that still-like tools have been used since as early as 3000 BC. The Greeks had lab apparatus dated to AD 200 to 400 and the Egyptians used a distillation process that existed before the fourth century BC. Muslim scholars, especially Avicenna, absorbed and advanced many practices and brought them closer to the techniques we use today. This fascinating history reveals that although plant essential oils were produced in some form and used as medicines (i.e. rosewater, rose essential oil and camphor), it wasn't until Arnaldus de Villa Nova (1235 to 1311), a Catalán physician, that essential oils and distilled plant waters resembled the products we have today. Arnaldus praised the therapeutic qualities of distilled waters and fostered their continued and excepted use by others, including Abbess Hildegard of Bingen and the Countess of Hainaut, who sent the recipe for Royal Hungary Water to her daughter, the wife of King Edward the III during the 14th century. This lovely preparation is still used today.

The perceived, relative value between hydrosols and essential oils has changed over time, with one often being favored over the other depending on the time period. Today, the world's love affair with essential oils has begun to cool a bit as we realize their limitations: cost, quality control, toxicity, overuse, and sustainability issues. As a result, we are seeing a bit of a rebirth in the interest of the possibly less sexy, aromatic sister, the hydrosol!

Hydrosols are incredibly mild and water soluble for ease of administration and absorption. Hydrosols can even be diluted down to homeopathic proportions if desired. They are effective, yet gentle medicine for our especially fragile patients, including children, the elderly, pets, and individuals with health complications. They can be used topically and orally with or without dilution and can be added to preparations in place of water, mixed with tinctures, and use synergistically with essential oils. In addition, hydrosols are much less tricky to use than essential oils or tinctures and are stronger than teas as they have at the very least 1:1 up to 3-4:1 plant to water ratios (teas have about 0.08-1 herb to water ratios.)

### **The Making of Hydrosols**

Hydrosols are the water extract of plants containing the hydrophilic components of the plant, the essential oils that are soluble in water. They generally contain the polar molecules, such as the oxygenated alcohols, and aldehydes, which are heavier than the hydrocarbon compounds like the monoterpenes and the sesquiterpenes, which float on the surface and can be captured. Essential oils dissolve slightly into water at a rate of 0.03 to 0.05%, giving a dilution of 1 in 2000 parts essential oil. They are nearly always acidic in pH ranging from 2.9 - 3.14 (rock rose, *Cistus ladanifer*) to 5.6 - 5.94 (lavender). They have a fragrance that may or may not be reminiscent of the essential oil of the mother plant.

Ideally, when you are distilling, it is good to decide whether you primarily want essential oil or hydrosol. While you can get both, to achieve the maximum amount of essential oil from a plant like rose or lemon balm, more processing may need to be done.

A hydrosol should be from one single botanically-identical plant grown under certified organic or biodynamic conditions without chemicals, or with sustainably, wild-crafted material and tested for chemical contamination. This material is distilled or extracted for therapeutic use and stored and transported to maintain therapeutic value. It is also desirable to include information about the place and conditions where the plant was grown and details about harvest if they are available. In general, if you are distilling plants for hydrosols, it is preferable to use fresh or slightly wilted rather than dried plants harvested at the appropriate time for maximal volatile components. This is true for most herbal collections, but it is a good idea to investigate the particular qualities of the plant of interest before harvesting.

Hydrosols can be purchased or produced at home but, as with any herbal product, it is important to purchase or produce a hydrosol that is well-made and properly stored and handled. Understanding the process of distillation will help even the herbalist who decides to purchase a hydrosol what is needed to have a good product.

There are a number of different types of stills available for purchase, including those made of stainless-steel, glass, and copper. I have learned from Jeanne Rose that hydrosols made in copper stills are sweeter because yeast is removed by the copper.

In essence, the distillation process is as follows: water that has been heated to boiling rises through plant material as steam, capturing the volatile components of the plant, then condenses back into water which is captured in a collection vessel. Sometimes the plant material is placed in the same pot as the water and other times there is a separate water-containing flask depending on the type of still. Some stills have a built-in collection mechanism for essential oil and others rely on other ways of separating out the essential

oils. In general, you can expect to get 1 to 5 L of hydrosol per kilogram of plant distilled depending on the plant. Typically, much less essential oil is produced, but the exact quantity depends in part upon the plant and processing. The time that this process takes varies with the material being distilled and the technique but my distillations usually last 1-2 hours.

After the distillate has been collected in sterile bottles, the material can be allowed to rest for some time before the available essential oil is taken off of the hydrosol. The amount of hydrosol that you obtain depends on the plant and the individual characteristics of the distillation process. In general, however, it is not recommended to collect more than a half of the original volume of water as hydrosol. This will ensure a good quality hydrosol that is not contaminated other metabolites or diluted with water.

It is ideal to place the prepared hydrosol into cobalt blue or amethyst violet spritzer-sized bottles, if possible. However, other sorts of glass and hard plastics such as Nalgene can be used. The goal is to store and use the hydrosol in such a way as to minimize contamination and degradation. Hydrosols must be stored in a temperature controlled, dark environment at around 50° F. Unless you have access to a special temperature-controlled room, a refrigerator is the best place for storage. This might sound like hydrosols are too fussy, but, if handled properly, they will last up to two or more years. Hydrosols are rarely, if ever, preserved with something like alcohol because such treatment will make internal use and many external uses and applications undesirable. Checking the pH of hydrosols can help ascertain their quality and there are ways of filtering products that may have started to deteriorate thereby restoring their therapeutic value.

Even though hydrosols are very gentle, we must still consider the pH and the amount of essential oil that may still be present. It is still prudent to dilute hydrosols when using them on children, the elderly, and pets. This, of course, depends on the condition being treated and whether or not the application is internal or external. The dilutions that are used for babies can generally be safely used on pets.

### **Hydrosols and Animals**

#### *Ideas for Cats: From Suzanne Catty*

If you wish to treat a cat's drinking water, use a half a teaspoon per liter of water. Make sure to provide a secondary source of untreated water for them to drink as well. For acute illness, try a half a teaspoon per pound of body weight divided into 6 to 8 doses given throughout the day until you see improvement. For chronic problems, decrease the dose to 1/4 teaspoon per pound divided into two or three doses for three weeks, then reassess the condition. In general, the hydrosols that you would choose, might be the same that you would choose in another form such as a tincture or a tea for the same purpose. For example, for digestive issues, you might choose 3 to 5 drops of undiluted hydrosol in food for three weeks using coriander, yarrow, fennel, or rosemary. For wound care in a cat, you might use pure undiluted lavender hydrosol to wash the area or if it's infected use 60% or more hydrosol to dilute 3% hydrogen peroxide.

#### *Ideas for Dogs: From Suzanne Catty*

For small dogs, use 1 to 1 1/2 teaspoons per day. For medium dogs, (like Labradors) 1/2 to 1 tablespoon per day adjusting up and down for the size of dog and condition and diluting these with water. Hydrosols can be used both internally or externally for an increased effect. For example, you could choose eucalyptus, elecampane, rosemary, thyme, or a blend used internally two or three times a day in a respiratory infection situation, including a rubbing of neat (undiluted)hydrosol onto the chest and abdomen twice a day. It is always best to start with a more dilute application and increase the concentration as needed based on the response.

## Sample Recipes

I will leave you with a few recipes from Kristen Leigh Bell:

Soothing skin spray for Dogs:

- 1 teaspoon Vegetable Glycerin
- 1/2 ounce (15ml) Grain alcohol or Vodka
- 1 teaspoon Sulfated Castor Oil
- 1/2 ounce Aloe Vera
- 1/2 ounce German Chamomile Hydrosol, *Matricaria recutita*
- 1/2 ounce Lavender Hydrosol, *Lavandula angustifolia*
- 10 drops Grapefruit Seed Extract
- 5 ounces Distilled Water

Two drops geranium (*Pelargonium graveolens*) essential oil, six drops rosewood (*Aniba rosiodora*) essential oil, six drops lavender essential oil, one drop roman chamomile (*Anthemis nobilis*) essential oil and two drops carrot seed (*Daucus carota*) essential oil. Shake well before use and apply to itchy, red or irritated skin. Additionally, this can be used on cotton pads or paper towels, stored in a jar and kept in the refrigerator.

Feline calming spray:

- 2oz (60 ml) Lavender Hydrosol, *Lavandula angustifolia*
- 1 oz (30ml) Rose Hydrosol, *Rosa damascena*
- 1 oz (30 ml) Orange Blossom Hydrosol, *Citrus aurantium*
- 1 oz (30 ml) Geranium Hydrosol, *Pelargonium graveolens*
- 1oz (30 ml) Vodka
- 4oz Spring or Distilled Water

Mix the ingredients together and shake well before using. Spritz the environment or massage into your cat. You can also add flower essences such as Bach's Rescue Remedy or other choices to the mix to help with specific needs.

I have not touched on the applications for people but the above recipes could certainly be used for two-leggers as well.

## Additional Resources

For this talk, I have used a number of wonderful books in which you can find many more recipes that may be helpful!!!

- Holistic Aromatherapy For Animals, A Comprehensive Guide To The Use Of Essential Oils And Hydrosols With Animals by Kristen Leigh Bell
- Hydrosols, The Next Aromatherapy by Suzanne Catty
- The Modern Herbal Dispensary, by Thomas Easley and Stephen Horne
- The Essential Oil Makers Handbook by Bettina Malle and Helge Schmickl

- Understanding Hydrolats: The Specific Hydrosols For Aromatherapy by Len and Shirley Price
- The Aromatherapy Book: Applications And Inhalations by Jeanne Rose
- 375 Essential Oils And Hydrosols by Jeanne Rose
- Distillation: A How-To Booklet by Jeanne Rose and Ben Alkire
- The Aromatic News, the newsletter from the aromatic plant project
- Medical Aromatherapy: Healing With Essential Oils by Kurt Schnaubelt
- Advanced Aromatherapy: The Science Of Essential Oil Therapy by Kurt Schnaubelt
- ADR II: The Animal Desk Reference, Essential Oils For Animals by Melissa Shelton Dvm
- The Complete Book Of Essential Oils And Aromatherapy by Valerie Ann Worwood

### **Contact Information**

If you have any questions about my class or anything that I mentioned in this handout, please feel free to contact me at [flowerfairy@verizon.net](mailto:flowerfairy@verizon.net). Thank you!

# *Herbal Wellness from Field to Function*

Jane Hawley Stevens

**Four Elements Organic Herbals, North Freedom, WI**  
**[www.fourelementsherbals.com](http://www.fourelementsherbals.com)**

Four Elements Organic Herbals was established in 1987.  
Certified organic since 1989, farm on 130 acres in the pristine Baraboo Bluffs.  
Apothecary, office, production, and shipping 8 miles south in North Freedom, WI.

## **How to start a grassroots herb company**

What is your passion? Start small, Farmers Markets, Local Herb Events, Regional Herb Events. This gives you time to try out your recipes and packaging. Is certification for you? Stay informed on what trends are happening with health concerns or the herb market.

## **SEED SAVING**

Seeds should be stored in a cool, dark place with little humidity. Warmth and humidity are what will ruin viable seeds. Mine are in various seed packs in a tight plastic bin in the coolest part of the basement. I have them separated by herbs, vegetables, root crops, and flowers. I have been saving my own seeds for many years and found it worthwhile to buy uniform packets to keep them tidy and easier to find in the box. Being one of the ultimate recyclers, it took me a while to not just use any random envelope, but purchase 2x4" manilla envelopes for this purpose. It makes the seeds much more manageable to handle.

## **SOWING SEEDS**

Why would you bother to start growing seeds in February or March when transplants can just be purchased in May? There are several reasons.

1. You enjoy growing and experience the thrill of watching seeds germinate. I have been excited when I plant in the First or Second Quarter in a Cancer, Taurus, Capricorn, or Scorpio sign and seeds emerge in two days!
2. You have a much greater selection of plants when you order seeds, plus you can get more specific with species, colors, and timing. Specialty catalogs offer an expansive collection of any interest in plant groups: ornamentals, medicinals, vegetables, or woody plant material.
3. You know the plant is true to type, usually. You can choose your genus, species, selection of color, shape, and flavor more specifically than if you go to a nursery. Farmer's Markets have expanded dynamically over recent years and you can often find a good selection of plants there. But if you seek rare herbs, you will have a broader range of selection from seed catalogs.



4. You can plant when the Moon is under the correct influence for maximizing a successful growing season. You can even fine-tune your desired outcome for use, by planting under the appropriate sign that governs that body system.
5. You can time your plants to get into the ground with more precision. Transplants that have been stressed in a retail location have a much harder time maximizing their genetics. Plants can develop very tight root balls and often are not watered in a timely fashion, breaking down the cell structure and losing leaves. That vigor is difficult to rebound, but by cutting the bottom off a tight root ball, you can encourage more robust root growth.
6. You really get to know the plant and feel more kinship with the plant when you grow it from seed. Grow it to know it!

## **LET'S GET STARTED**

In Zone 4, I start the earliest crops around Valentine's Day. These are crops that take longer to germinate and grow and those that can go out very early when it still may freeze or frost. Plants in this category are perennials, parsley, and onions. Perennials can be started the previous fall if you are selling larger transplants.

Crucifers like broccoli and cabbage can be sown a couple of weeks later, on March 1st. Generally speaking, start seeds six to eight weeks before planting time.

I use straight sterile medium or large vermiculite, with a 1/2 inch of soil mix on the bottom to hold the necessary moisture. Plants need air for healthy roots, in fact, roots grow in the air spaces between the soil and water. unless we are talking about bog plants, those adapted to mucky soils which withstand less airy conditions. Air is what generates root hairs and a healthier root system.

It is important to use a "sterile" medium to germinate seeds indoors. When I say sterile, I do not mean Petrie dish sterile, just free from pathogens and weed seeds. Seeds planted outdoors, in the ground, have the balance of pathogens and beneficial microbes creating a healthy environment for root growth. This is not the case in pots.

Soil taken directly from the earth and put into pots to grow seeds results in ruin. Pathogens take over causing the roots to rot and other nasty occurrences leading to failure to thrive.

Just buy bagged light soil or plain vermiculite to start seeds.

If you are adamant about giving your garden soil a go at starting seeds, it should be sterilized at 180 degrees for 30 minutes. Do not go above that temperature, or chemical imbalances can occur leading to future crop failure. Place moist soil in a pan, no more than four inches deep, and cover with foil, with a hole to let a thermometer in. Bring to 180 degrees for 30 minutes. Remove from oven. Keep foil on to hold moisture in. Cool before use.

Another reason vermiculite or sterile mix works well for seeding is seeds don't need nutrients until after their first true leaves appear, after the cotyledons, or carbohydrates stored inside the seed are diminished. Once leaves appear, plants begin to create their own energy but need the addition of nutrients. When the first true leaves appear, transplant the seedlings into pots. Gently loosen the soil around the newly formed root to lift out without damaging the plant. There is a very narrow trowel made for this purpose, but a short butter knife will work almost as well.

The next size pot can be the size you will finish your transplants in, usually a 2-4" pot. Fast-growing seeds like basil can be directly sown into flats for transplanting to the field in 6-8 weeks. Some seeds prefer to be sown directly into the garden bed, such as dill and cilantro. Plants are ready to be transplanted either to the ground or a bigger pot when the roots show through the bottom of the container. If the root ball gets too tight within the pot, it can cause stunting of the plant. When potting up, or transplanting to the field and the plant is root bound, loosen up the root or even cut the bottom portion off to encourage new, free root growth, following gravity, not the pot's rigid sides.

Watering plants in pots is a balancing act. Most transplants suffer from overwatering. Too much moisture in pots causes weak root growth and increases the habitat for flea beetles and other pests and pathogens that feed off weak roots. If you can check your seedlings several times a day, it helps to keep them on the dry side to encourage root growth. **I cannot overstate how important it is to not overwater transplants.** Drier soil encourages healthy root growth and root hairs, therefore, a healthier plant. Of course, if you know you won't be around to catch them at this point, it may make sense to keep them moist. Every time you water, make sure the soil is completely saturated, penetrating to and through the bottom of the pot. Watch them drip to ensure you watered them completely. I often go over the plants with water a couple of times to make sure the soil is saturated.

## **HARDEN OFF!**

Before greenhouse or grow light-produced plants get transplanted to the field, they need to be hardened off. This means that they need to be placed outdoors in a protected spot to strengthen the stem and toughen them up for the full sun and wind that comes with the outdoors. Hardening off plants thickens the cuticle so they can withstand the elements and lose less water through transpiration. This helps to reduce transplant shock, so the plant can make a smooth transition to the field. Ideally, plants could be hardened off for a week, but even three days will make a difference. You should include this in determining the timing of seeding to transplant time.

1. Once the plants are the desired size for transplanting, place them outdoors in a protected spot, like under a tree or next to a building so they do not get full sun and wind exposure. It is best to do this afternoon, so the first day is not in the elements for 100% of the time. If it gets too cold at night, plan on bringing them back in.
2. A wagon or wheelbarrow makes it easier to move the plants in and out in case of nighttime frosts or severe weather.
3. After about two days, you can move them into increased sunshine and wind.
4. Be careful with watering. They will need more water in the small pots out in the wind and sun and you don't want to eliminate all the progress you and the plants have gained with wilting.
5. Ideally, you would transplant on a still, cloudy day to reduce transplant shock.
6. Make sure to water plants in directly. Not only does it encourage the roots to spread out into the adjacent moist soil, but watering connects the root ball to the soil by filling in any air pockets near the root ball.
7. Planting by the correct moon sign and quarter is most important when initially planting the seeds, but I still try to match transplanting times with these influences.

The best times to transplant are like seed planting, in the First or Second Quarter in a Water or Earth sign, and in the Third Quarter for roots in Capricorn, Taurus, or Virgo.

Label all plants and flats as you sow your seeds. This can be done ahead of time and the labels brought to the site with the seed packets. This is a great time to practice Latin names. Include the name, and date and I like to specify where the moon is at the time of planting with the astrological symbol that indicates the influence of the day.

For example, *Echinacea purpurea*, 10 Feb 2020, ● ♍

## THE BEST ROOTING MEDIA

### INGREDIENTS:

- 2 parts perlite
- 1 part peat

## STEPS TO SUCCESSFUL CUTTING PROPAGATION

1. Gather Peat and Perlite
2. Wet with water to diminish dust
3. Mix soil media/ peat and perlite until thoroughly combined.
4. Put in pots or flats
5. Wet again to tamp down the media in the container.
6. Dibble or insert a stick creating a hole for each cutting into the mix.
7. Take cuttings that are about 4", depending on the plant, with a very sharp knife.
8. Insert cutting in hole, gently tap media around the cutting to hold it in place.
9. Water in cuttings, wetting soil completely.
10. Cover with a plastic lid, plastic bag, or mist bench, creating 100% humidity to decrease desiccation/ wilting of plants.
11. A heat source below greatly increases success. Check plants after 7 days. Cuttings can root from one week to several months depending on the species. For Example, Bay Tree takes several months and is extremely difficult, while Artemisias can root in a couple of weeks.

12. When cuttings have developed a healthy root structure, pot into pots, not much bigger than the root ball. Water in and watch your babies grow into full-grown beauties! Some additional organic fertilizer would benefit their development once the roots are established.

### **Prepare fields with cover cropping**

From a field of wild plants, my husband David has created excellent organic production fields.

1. Cultivate three times, letting the grasses sprout each time, weakening the roots.
2. Plant warm-season buckwheat that goes from seed to seed in six weeks and has broad leaves that smother out weeds. You can let it reseed for another crop of buckwheat.
3. Can plant oats after buckwheat and collect the seeds in the milky stage for herbal medicine, and the stalk and leaves for teas. Delicious!
4. Plant hairy vetch and winter wheat around Labor Day weekend, up to three weeks before frost

## **Herb Harvesting**

Harvest roots when they emerge in spring or after the frost in fall.

Harvest flowers as they come into bloom, then every other day to twice a week for continued bloom.

Harvest leaves before they bloom, after the dew is dried, and before the heat of the day makes the essential oils volatilize away.

Harvest barks as the sap begins to flow, as buds swell in spring, or when the leaves fall in autumn.

Harvest when you are there, and the plant is there.

## **Drying Herbs**

Harvest after the dew is dry

Do not harvest leaves that the soil has splashed up on. That can be left to go back into the soil.

We only wash roots, not foliage of herbs.

Dry in a dark place to keep the color intact. Herbs' colors should remain in the dried herbs.

Remove as soon as herbs are dried to the crumbling point. Check them in a few days to a week to make sure they dried properly.

## **Herb Storage**

Label with all the information to trace back to the field, including date, field, and lot number.

Store in a dark place with low humidity and preferably cool.

Store in tins, or woven poly-fiber bags for up to one year for flowers and foliage. Roots will last longer, up to three years.

## **Processing**

Decide what products you will be creating and how much volume you will need of each herb.

Grow crops you are curious about and want to possibly incorporate into future products.

We like to make our salves with fresh herbs. Tinctures, creams, and soaps are made with dried, except in the summer we use fresh and adjust our recipes accordingly.

Follow your passion and doors will open has been my experience. The world needs more herbalists!

# Seasonal Rhythms: Five Elements Lifestyle Medicine

Jiling Lin LAc

五行 | The Five Phases of East Asian Medicine

Jiling Lin, L.Ac. 2023 • JilingLin.com

五行	水 WATER	木 WOOD	火 FIRE	土 EARTH	金 METAL
Season	東 Winter	春 Spring	夏 Summer	長夏 Late Summer	秋 Autumn
Direction	北 North	東 East	南 South	中央 Center/ Southwest	西 West
Meridians	腎 Kidney 膀胱 Bladder	肝 Liver 膽 Gallbladder	心 Heart 小腸 Small Intestine	脾 Spleen 胃 Stomach	肺 Lung 大腸 Large Intestine
Emotion	恐 Fear	怒 Anger	喜 Joy	思 Contemplation	悲 Grief
Virtue	智 Wisdom	仁 Compassion	禮 Propriety	信 Integrity	義 Equity
Spirit	志 Will	魂 Hun ( <i>Ethereal Spirit</i> )	神 Spirit	意 Intention	魄 Po ( <i>Corporeal Spirit</i> )
Senses	耳 Ears & hearing	目 Eyes & vision	舌 Tongue & speech	口 Mouth & taste	鼻 Nose & smell
Tissues	骨 Bones	筋 Tendons	脈 Vessels	肉 Flesh	皮毛 Skin
Climatic Factors	寒 Cold	風 Wind	暑 Heat	濕 Dampness	燥 Dryness
Flavor	鹹 Salty	酸 Sour	苦 Bitter	甘 Sweet	辛 Pungent
Recipe	Soup, porridge	Wild greens, brek-blend	Cuke salad, sun tea	Roasted roots	Ferments
Practice	Rest	Move	Connect	Nourish	Create

水 WATER | 養生 Nourishing Life in *Winter*

Jiling Lin, L.Ac. 2023 • JilingLin.com

REST	MOVE	CONNECT	NOURISH	CREATE
<b>Make space</b> to just be. <i>Less DOing, more BEing.</i>	<b>Just do it!</b> <i>Take small steps toward big goals.</i>	<b>Have fun!</b> <i>Take risks, let loose, flow.</i>	<b>Strengthen your roots.</b> <i>Ground into reality.</i>	<b>Get inspired.</b> <i>Get high on a mountain.</i>
<ul style="list-style-type: none"> <li>• Rest deeply. <i>Sleep early, wake late</i></li> <li>• Reflection</li> <li>• Dreamwork</li> <li>• Meditation. <i>Vipassana, Oneness, walking</i></li> <li>• <i>Ujjayi</i> breath</li> </ul>	<ul style="list-style-type: none"> <li>• Slow down</li> <li>• Fluid rhythmic movements. <i>Swimming, vinyasa, lyrical dance</i></li> <li>• Breath-integrated</li> <li>• Circular</li> <li>• Non-linear</li> <li>• Restorative</li> <li>• Supine/ prone</li> <li>• Spine</li> <li>• Bones</li> <li>• Hips &amp; pelvic bowl</li> <li>• Lymph</li> </ul>	<ul style="list-style-type: none"> <li>• Take baths</li> <li>• Soak in nature</li> <li>• Dream big</li> <li>• Ancestor offerings. <i>Revisit photo albums. Cook trad fam recipes. Research genealogy. Research/ travel to ancestral lands</i></li> <li>• Wear flowing clothes</li> <li>• Sensual fabrics</li> </ul>	<ul style="list-style-type: none"> <li>• Warm &amp; nourish</li> <li>• Store nutrients. <i>Roots, seafoods, heavier grains</i></li> <li>• Healthy fats/ oils/ protein sources</li> <li>• Soups: Bone broth or veggie scrap stew, miso/ seaweed/ tonifying soups (<i>Shi Quan Da Bu Tang, Ba Zhen Tang</i>)</li> <li>• Porridges: congee (sweet/ savory), kitchari</li> <li>• More bitter/ sl pungent. <i>Less salty.</i></li> <li>• Tonics/ adaptogens/ mushrooms</li> </ul>	<ul style="list-style-type: none"> <li>• Imaginative unstructured play</li> <li>• Watercolors. <i>Use wild water, tea, watercolor pencils</i></li> <li>• River-writing</li> <li>• Read fiction</li> <li>• Flowing improv</li> <li>• Slow relaxing music</li> <li>• Silence</li> </ul>

REST	MOVE	CONNECT	NOURISH	CREATE
<b>Relax into the flow.</b> <i>Saturate with water.</i>	<b>Get moving.</b> <i>Exercise outside!</i>	<b>Cheer for risk-takers.</b> <i>Encourage &amp; uplift!</i>	<b>Share meals.</b> <i>Cook for friends, or eat together.</i>	<b>Clarify &amp; beautify.</b> <i>Savor clean food/ spaces.</i>
<ul style="list-style-type: none"> <li>• <b>Sleep less.</b> <i>Sleep later, wake earlier</i></li> <li>• <b>Take breaks</b></li> <li>• <b>Schedule rest</b></li> <li>• <b>Mantra</b></li> <li>• <b>Affirmations</b></li> <li>• <b>Box-breathing</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Explore!</b></li> <li>• <b>Forest bathing</b> <i>(shinrin-yoku)</i></li> <li>• <b>Walking</b></li> <li>• <b>Dynamic movement.</b> <i>Twisting, patting, sweeping, vinyasa</i></li> <li>• <b>Consistent movement practices.</b> <i>Morning/ evening rituals</i></li> <li>• <b>Connective tissue</b></li> <li>• <b>Joints</b></li> <li>• <b>Fascia</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Clarify</b> visions/ intentions</li> <li>• <b>Implement</b> projects</li> <li>• <b>Learn</b> new skills</li> <li>• <b>Volunteer</b> for worthy causes</li> <li>• <b>Plant plants</b></li> <li>• <b>Declutter/</b> optimize space</li> <li>• <b>Floral arrangements</b></li> <li>• <b>Natural materials</b></li> <li>• <b>Comfy activewear</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Fresh wild greens,</b> diverse leafy veg, <b>sprouts.</b> <i>I.e. wild greens frittata, tofu scramble, pancake</i></li> <li>• <b>Light quick</b> cooking</li> <li>• <b>Steaming</b></li> <li>• <b>Eat regularly.</b> <i>Have healthy snacks</i></li> <li>• <b>Schedule/ prep meals.</b> <i>Breakfast blends: oatmeal mix, chia blend, nut mix</i></li> <li>• <b>Relax &amp; sit down</b> to eat</li> <li>• <b>Eat clean.</b> <i>Reduce processed foods/ subst.</i></li> <li>• <b>More sweet/ sl pungent.</b> <i>Less sour.</i></li> <li>• <b>Bitters &amp; nervines</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>Vision board</b></li> <li>• <b>Mind maps</b></li> <li>• <b>Breath-integrated art.</b> <i>Breath waves/ spirals</i></li> <li>• <b>Line drawings</b></li> <li>• <b>Contour drawings</b></li> <li>• <b>Nature-sketches</b></li> <li>• <b>Watercolors</b></li> <li>• <b>Nature-writing</b></li> <li>• <b>Make noise.</b> <i>Drumming, percussion</i></li> <li>• <b>Upbeat rhythmic music.</b> <i>Beatbox, rap, hiphop</i></li> </ul>

REST	MOVE	CONNECT	NOURISH	CREATE
<b>Hydrate.</b> <i>Cool &amp; quench w/ water, tea, soup.</i>	<b>Schedule sleep.</b> <i>Maintain sleep hygiene.</i>	<b>Dance party!</b> <i>Fast &amp; fun movement.</i>	<b>Get grounded</b> <i>w/ friends, places, rituals.</i>	<b>Appreciate small things.</b> <i>Enjoy simple pleasures.</i>
<ul style="list-style-type: none"> <li>• <b>Sleep less.</b> <i>Sleep later, wake earlier</i></li> <li>• <b>Sleep outside.</b> <i>Campout!</i></li> <li>• <b>Sunrise</b> meditation</li> <li>• <b>Metta</b> meditation</li> <li>• <b>Kapalabhati</b> pranayama</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Vigorous outdoor</b> exercises &amp; adventures</li> <li>• <b>Core</b></li> <li>• <b>Cardio</b></li> <li>• <b>Cool-down</b></li> <li>• <b>Heart-openers</b></li> <li>• <b>Uplifting</b> movements</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Travel</b></li> <li>• <b>Play</b></li> <li>• <b>Align passion &amp; purpose</b></li> <li>• <b>Complete</b> projects</li> <li>• <b>Community</b> gatherings</li> <li>• <b>Honor downtime</b></li> <li>• <b>Moisturize</b> body</li> <li>• <b>Playful, colorful,</b> or sexy clothing/ decor</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Fresh, colorful, raw,</b> light fruits/ veggies</li> <li>• <b>Sun-warmed</b> foods</li> <li>• <b>Sun teas</b></li> <li>• <b>Light quick</b> cooking</li> <li>• <b>Steaming</b> veggies</li> <li>• <b>Salads.</b> <i>I.e. Taiwanese smashed cuke, Israeli</i></li> <li>• <b>Diversify</b> meals</li> <li>• <b>Try new recipes</b></li> <li>• <b>Healthy snacks</b></li> <li>• <b>More pungent/ sl sour.</b> <i>Less bitter. I.e. ginger, garlic, scallions, mints</i></li> <li>• <b>Nervines &amp; cardiac</b> trophorestoratives</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Playful inner child</b></li> <li>• <b>Express emotions</b></li> <li>• <b>Focused longer</b> projects</li> <li>• <b>Colors</b></li> <li>• <b>Abstract art</b></li> <li>• <b>Messy experiments.</b> <i>Pastel, charcoal, crayons</i></li> <li>• <b>Love-letters</b></li> <li>• <b>Manifestos</b></li> <li>• <b>Music w/ driving beat.</b> <i>Dance, pop, house, electronica</i></li> </ul>

REST	MOVE	CONNECT	NOURISH	CREATE
<b>Soak it in!</b> <i>Water-immersion.</i>	<b>Make a plan.</b> <i>Schedule priorities.</i>	<b>Express creativity.</b> <i>Play &amp; have fun!</i>	<b>Mother yourself.</b> <i>Center self-care.</i>	<b>Cleanse senses.</b> <i>Clear clutter, add beauty.</i>
<ul style="list-style-type: none"> <li>• Follow the seasons</li> <li>• Transition into longer sleep</li> <li>• Nourish self-care rituals</li> <li>• Gratitude practices</li> <li>• Soft belly meditation</li> </ul>	<ul style="list-style-type: none"> <li>• Grounding movements</li> <li>• Get on the ground</li> <li>• Earthing</li> <li>• Walking meditation</li> <li>• Slow movements</li> <li>• Shape &amp; stillness</li> <li>• Zhan zhuang 站桩</li> <li>• Group exercise</li> <li>• Legs, feet</li> <li>• Belly</li> </ul>	<ul style="list-style-type: none"> <li>• Earth-rituals</li> <li>• Gardening</li> <li>• Wildcrafting</li> <li>• Go barefoot</li> <li>• Sit-spot</li> <li>• Community celebrations</li> <li>• Cuddles! <i>Nourishing touch</i></li> <li>• Comfy clothes</li> <li>• Earth-tones</li> </ul>	<ul style="list-style-type: none"> <li>• Celebrate the harvest</li> <li>• Preserve foods</li> <li>• Roots, squash</li> <li>• Baking. <i>I.e. roasted roots w/ aromatic spices</i></li> <li>• Warm, well-cooked, home-cooked</li> <li>• Regular nourishment</li> <li>• Eat with friends</li> <li>• Slow food</li> <li>• More sl sweet. <i>Reduce damp/ cool.</i></li> <li>• Digestive support</li> </ul>	<ul style="list-style-type: none"> <li>• Simple, playful</li> <li>• Natural materials</li> <li>• Earth altars</li> <li>• Land art</li> <li>• Blocks of color</li> <li>• Intention-circles</li> <li>• Handmade goods. <i>I.e ceramics, incense, botanical medicines, visible mending</i></li> <li>• Thank you letters</li> <li>• Grounding music. <i>Deep bass, heartbeat rhythm, lyrical</i></li> </ul>

REST	MOVE	CONNECT	NOURISH	CREATE
<b>Get messy.</b> <i>Loosen control; create!</i>	<b>Pick a spot.</b> <i>Clear clutter, get organized.</i>	<b>Light a flame.</b> <i>Build a fire .</i>	<b>Help out.</b> <i>Volunteer!</i>	<b>Create rhythm.</b> <i>Make life more predictable.</i>
<ul style="list-style-type: none"> <li>• Sleep more. <i>Sleep earlier, wake later.</i></li> <li>• Simplify schedule</li> <li>• Energy work</li> <li>• Flower essences</li> <li>• Visualization</li> <li>• <i>Tonglen</i> meditation</li> <li>• <i>Anuloma viloma</i> &amp; other pranayama</li> <li>• Do nothing</li> </ul>	<ul style="list-style-type: none"> <li>• Slow &amp; gentle</li> <li>• Breath-awareness practices. <i>Qigong, yoga</i></li> <li>• Gentle inversions</li> <li>• Light aerobics</li> <li>• Chest-openers</li> </ul>	<ul style="list-style-type: none"> <li>• Clear space &amp; simplify</li> <li>• Create sacred space</li> <li>• Take a retreat</li> <li>• Self-massage/ oiling</li> <li>• Aromatherapy</li> <li>• Calm monochrome colors</li> <li>• Visit high inspiring spaces</li> </ul>	<ul style="list-style-type: none"> <li>• Harvest &amp; preserve</li> <li>• Root veggies &amp; concentrated nutrients</li> <li>• Healthy fats &amp; oils</li> <li>• Slow-cook &amp; bake</li> <li>• Soups, porridges</li> <li>• Preserve &amp; ferment. <i>Dehydrate, freeze, jam, pickle, infuse, etc.</i></li> <li>• Increase fiber</li> <li>• Moisten, nourish yin</li> <li>• Arrange beautiful food</li> <li>• Eat more sour/ sl. bitter. <i>Less pungent.</i></li> <li>• Immune &amp; respiratory</li> </ul>	<ul style="list-style-type: none"> <li>• Reflective rituals</li> <li>• Build ancestor altars</li> <li>• Patterns</li> <li>• Monochrome</li> <li>• Chinese calligraphy</li> <li>• Write &amp; read poetry</li> <li>• Play with haiku</li> <li>• Sound bath</li> <li>• Ethereal music. <i>Arrhythmia, drone, bowls, chimes, synth</i></li> <li>• Stillness &amp; silence</li> </ul>

## 五行疑問 Five Elements WONDERings

*Reflective journaling questions*



### 水 WATER

**North. Winter. Fear. Wisdom 智. Will 志. Kidneys. Bones. Roots. Listen. Salty. Cold.** Dark. Purpose. Rest. Restore. Flow. Depth. Generations. Ancestors. Potential. Limits. Adventure. Patience. Hibernation. Peace. Time. Resilience. Regeneration. Sleep. Dreams. Mystery. Wonder.

- **Who am I?** *Why* am I here? *Where* am I from?
- What **unseen roots** feed my **gifts & limits**?
- How am I dancing with my **fears**?
- When do I experience **restorative rest**?

### 木 WOOD

**East. Spring. Anger. Compassion 仁. Hun 魂. Liver. Sinews. Sprouts. Shouting. Vision. Sour. Wind.** Dawn. Creativity. Movement. Ideas. Decisions. Spontaneity. Hope. Freedom. Birth. Growth. Goals. Exploration. Stress. Align. Tensegrity. Flexibility. Adapt. Wander. Balance. Equilibrium.

- What is my **vision** for my life? For our world?
- How am I **navigating obstacles** as I **grow** into the fullest expression of my Self?
- How am I nourishing the **thriving** parts of myself?
- How am I tending to my **stagnant/ dying** parts?

### 火 FIRE

**South. Summer. Joy. Propriety 禮. Spirit 神. Heart. Bloom. Laughter. Flavor. Bitter. Heat.** Love. Passion. Play. Wild. Manifest. Humor. Chaos. Authenticity. Core. Circulation. Connection. Expression. Communication. Focus. Pleasure. Presence. Practice. Dedication. Celebration.

- How are my **Actions blossoming** my Purpose & Visions to life?
- How am I **expressing love** for myself? My community? My natural environment?
- When do I feel most vibrantly **alive**?
- What sparks **joy**?

### 土 EARTH

**Center. Southwest. Midsummer. Empathy 思. Integrity 信. Intention 意. Stomach. Flesh. Fruits. Sweet. Damp.** Food. Family. Home. Digestion. Belonging. Reciprocity. Nourishment. Foundation. Gratitude. Harvest. Gravity. Comfort. Harmony. Ease. Stability. Abundance.

- When, where, & with whom do I feel most at **home**?
- How am I **nourishing belonging & reciprocating care** with *my* Body-Mind-Spirit-*and* **community**?
- How am I **digesting & integrating** life lessons?
- How am I offering **gratitude** for what's **fruiting beauty** in my life?

### 金 METAL

**West. Autumn. Grief. Praise. Equity 義. Po 魄. Lungs. Skin. Seeds. Scent. Spicy. Dry.** Sacred. Respiration. Excretion. Reflection. Inspiration. Boundaries. Surrender. Intuition. Ritual. Truth. Sacrifice. Impermanence. Respect. Sky. Aspiration. Transformation. Compost. Death. Power.

- How am I becoming a good **ancestor**?
- How am I **praising** what I've *got* (& *welcome*), and **grieving** what I've *lost* (& *release*)?
- What practices & rituals help me **transform** passing experiences into lasting **change**?
- How am I upholding integrity with my **boundaries**?



# Writing from the Roots: Journaling Practices for Herbalists

Jiling Lin LAc

## WRITING FROM THE ROOTS

Journaling Practices for Herbalists

**WRITING WARM-UP:** courting the linguistic muse

- **Draw**
  - **Breath waves/ spirals**
  - Doodle
- **Freewrite**
  - **Set timer** 1, 2, 5, or 10 min
  - **Write 1-3 full pages** without stopping/ censoring
- **Collect cards.** Randomly pick, then freewrite
  - **Wonder Box:** collect questions/ wonderings
  - **Word Box:** collect inspiring/ interesting words

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## WRITING FORMS

**OBSERVATION:** note what's right in front of you

- **Draw:** blind contour, contour, color blocks, shapes, shadows, patterns, etc.
- **Write** objective & subjective observations
  - Location/ habitat
  - Time/ season
  - Appearance/ botanical details: leaf, flower, bud, stem, fruit, seed, etc.
  - Organoleptic/ sensory observations: *What do you see? Smell? Feel? Hear? Taste? Sense?*

**RIVER-WRITING:** freewrite stream-of-consciousness, sans filtration

- **Direct:** short sentences, line-breaks, short paragraphs, lists, bullet-points
- **Floral:** big adjective-filled sensory-overload run-on-into-a-whole-paragraph sentences
- **Welcome everything:** imagination, intuition, free-association, mythology, story, questions, personal experience, doodles, etc.

**POETRY:** flow into succinct surprises

- **Haiku** (5-7-5 -ish syllables)
- **Rhyming**
- **Non-rhyming**

**INQUIRY:** walk with a question. Write what you receive. Converse. Open to wonder.

Possible questions (for self, plant(s), landscape, etc.):

- What's *alive* for me right now? (What's alive for *you* right now?)
- What's *challenging* me right now? (What's challenging *you* right now?)
- How are my *relationships* right now? (How are *your* relationships right now?)
- What am I *grateful* for right now? (What's nourishing *you* right now?)
- How am I *changing* right now? (What's changing in *our* environment right now?)

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## WRITE ON

**ROOTS:** cultivate consistent creative connection

- **Write everyday** (ie. Morning pages)
- **Write outside** (ie. Sit spot)
- **Write on** (freehand, typing, letters no self/ others/ land/ nobody... experiment & play!)

**BRANCHES:** savor, share, soar

- **Monographs** (Appearance, habitat, constituents, collecting, stability, preparation, medicinal uses, other uses)
- **Recipes**
- **Personal publishing:** newsletter, blog, social media, Substack
- **Publish:** local paper, environmental organizations, herbal organizations (ie. Plant Healer)

# TEA TALKS: A Simple Recipe for Creating Community

Jiling Lin LAc

## TEA TALKS

A Simple Recipe for Creating Community

*Cha dao* 茶道, or the “Way of Tea,” is a way of life that centers tea in both introspective reflection and community connection. The below loose leaf Tea Talks score is inspired by *cha dao*, and modeled after dance scores, or choreography— where the *structure* creates *space* for freedom, improvisation, and connection. In sharing this Tea Talks score, I hope that you create and share Tea Talks— and other Way of Tea gatherings— in your own communities. *Gan bei* 乾杯! Cheers!

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## SUPPLIES

### Tea Options

- Here, “tea” includes both *Camellia sinensis* and other botanical water infusions, or tisanes
- For a *smaller* group: steep and share looseleaf tea in *one* teapot
- For a *larger* group: have *multiple* teapots for loose leaf tea, or tea *bags* for individual cups
- If serving *multiple* teas, then consider having both caffeinated and non-caffeinated options available

### Loose Leaf Tea Supplies

- Teapot(s)
- Tea(s)
- Cups (ie. smaller teacups)
- Hot water boiler/ dispenser

### Tea Bag Supplies

- Teabags
- Cups (larger mugs)
- Hot water boiler/ dispenser

### Optional Supplies

- Mindfulness bell (to note individual sharing time)
- Talking object to pass around (for the speaker to hold)
- For community questions
  - Small papers
  - Pens
  - Questions-bowl
- Post-event contact-list sign-up sheet

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## RECIPE

### Tea Talks: the Score

- **Welcome:** get tea, mingle, write community questions (optional)
  - For community questions (with questions-bowl, papers, pens prepared as folks enter)
    - Invitation (tape next to questions-bowl): “*Write one question that you’d love to ask others here today, or would love someone to ask you.*”
      - Each person places their written question into questions-bowl

- **Tea 1\*:** **Opening circle** (share around the circle)
  - Your name, current home, optional pronoun
  - Opening question, such as, *“What landscapes/ plants/ medicines have shaped your life & body— and the lives & bodies of your ancestors?”*
    - If larger group, then set time limit for each person, such as 1-3 minute maximum per share. Ding bell to denote time, if needed.
- **Tea 2:** **Community Questions circle** (optional)
  - Go around the circle. Each person pulls a question from the bowl, then answers it
  - Invitation to others in group (depends on time/ group size): *“If this question speaks deeply to you, then please share as well— while respecting time and being concise.”*
- **Tea 3:** **Closing circle** (some possibilities)
  - Circle Story
    - Go around the circle. Each person in the group adds a line to the story, compiling a group blessing or community vision.
  - Resource circle
    - Share an observation/ highlight from the Tea Talk, along with optional events/ projects/ contacts

\*Tea # denotes the number of pourings, if serving loose leaf tea from a teapot. This is the number of times we are pouring tea around the circle. Consider taking a pause between pourings (and tea #) to savor tea in silence, before continuing to share.

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## MORE OPTIONS

### Other Tea Talks

- Tea Sit
  - In silence
  - Sense Meditation
- Tea Talk affinity spaces
  - Ie. BIPOC Tea Talks, LGBTQIA+, professional affinity spaces, etc.

### Other Question Possibilities

- Welcome
  - What’s alive for you right now?
  - How has your natural environment shaped you into who you are today?
  - What are your three most commonly used herbs, foods, or formulas for this season? (For yourself? That you recommend for others?)
- Peak experiences
  - What are some moments, big or small, that have shaped you?
  - Describe an experience where you felt like an herbal (or other) rockstar.
  - Name a peak experience that transformed the trajectory of your life.
- Moving through change
  - How do we bear witness *to* and be present *in* what is unfolding here and now, without getting consumed by it?
  - How do we find our ground in a groundless reality when anything can shift at a moment’s notice?
  - What are the pathways of healing that can be walked at this time?
  - What are the stories we need to hear in this moment of great change— and what are the stories that need to be told?

# *heartfelt herbcraft... herbs for cardiovascular resilience*

**jim mcdonald**

## **heartfelt herbcraft... herbs for cardiovascular resilience**

*...presented by herbalist jim mcdonald*

Heart disease is serious, and it's scary. Unlike many other illness (we're not talking about injuries and accidents here), heart conditions can sometimes lead to death in a moment, seemingly out of nowhere. And while I think a lot of people have heard that heart disease is the leading cause of death in "men", it's also the leading cause of death in "women". While presentation of symptoms can differ, this is not a gendered health condition.

Diet and lifestyle play an undeniable role, but are not always causative. Activity and exercise play an undeniable role, but too many of us don't move as much as we need. Habitual tobacco use plays an undeniable role, and while every and anyone who uses tobacco habitually needs to be focused on ending that use... it can be really hard. Stress plays an undeniable role, but is baked into the very structure of our society. Heredity plays an undeniable role, but we shouldn't think of our genetics as creating inevitabilities... our genes influence, but do not determine, our fate. The best strategy to lessen the risk of heart disease is to look at as many variables as possible, and address them all. There is no "one thing" you can do or take while ignoring others.

### **lifestyle**

So many times I've heard something like "If diet and lifestyle haven't worked, consider such and such drug...", and I think about friends and family members who have been prescribed a drug before being coached on diet and lifestyle, or with enough time for it to manifest its benefits. And largely, medical doctors are not nutritionists; while they may offer some dietary advice, they're often not knowledgeable enough (nor do they even remotely have the time) to create comprehensive and individualized dietary plans for all their patients.

So, let's start by pondering the cluster\_\_\_\_\_ that is "a heart healthy diet". If you're vegetarian or vegan, I'm sure you consider that a heart healthy diet. If you're paleo or keto, I'm also sure you consider that a heart healthy diet. If you're all in the same room, you're probably arguing about what a heart healthy diet is, why yours is and theirs isn't, and ironically raising your blood pressure in the process. I would suggest that different dietary options work for different people at different times in their lives. You may find the diet you want to have works well for you, or you might find it doesn't. Our bodies don't always align with our ideologies. We're all different. I've seen some people do quite well on some diets and other people's health spiral downward on the same diet. Goodness, there are even some people who just eat horrible and seem to somehow not have it affect them (I don't advocate that).

Though I have my own (ever evolving) take on "what the heart healthy diet is", I'm going to forgo telling you how to eat and make some broad, universally applicable suggestions that I think should apply to all diets: eat lots of nutrient dense plants, eat lots of dark leafy greens (some of them should be bitter), eat lots of colorful vegetables, eat lots of colorful berries, make sure herbs and spices are well represented, limit refined carbs and sugar, remember that dark chocolate is awesome, try not to eat anything made with/

cooked in partially hydrogenated oil/transfat, if you think you have a food allergy or sensitivity, see if you feel better avoiding that food, try not to rush eating, chew your food well, if your diet doesn't provide enough of certain nutrients, adapt it or take supplements, if you are attached to your diet but are seeing signs it's not working for you, reconsider it, and (importantly) remember, always, that food should not only nourish you, but bring pleasure.

Another essential part of lifestyle is activity and exercise. We need to move around; we need to be dynamically active. Integrate it into your life. Do things that get your heart pumping (yes, that too!). Cardio or aerobic exercise lowers blood pressure, decreases resting heart rate, and lowers cardiovascular risk. But we also need resistance exercise. Carry heavy stuff, chop wood, do push ups, get a kettlebell, carry a toddler around an art fair all afternoon. Resistance exercise raises HDL, lowers LDL, burns calories and tones muscles. Be sure to be active. Inactivity is not passively harmful, it's actively harmful.

Stress is a major contributor to cardiovascular diseases of all kinds. I feel that the western model of culture (and capitalism) is so infused with stress and overwork that it is just as much a factor in cardiovascular illness. When I talk to friends and family and clients, almost everyone states they feel under constant pressure to keep up with all the societal responsibilities and expectations (especially financial), and often feel (and appear physiologically to be) stuck in sympathetic nervous system (fight or flight) overdrive.

Another major factor in cardiovascular disease is uncontrolled diabetes and metabolic/insulin resistance syndrome (sometimes called "pre-diabetes"). When these disrupted endocrine states exist, it takes a toll on the cardiovascular system. I highly recommend looking at Paul Bergner's extensive work on insulin resistance.

Oh: don't smoke tobacco habitually, and if you do, seek help to quit. Assume "don't smoke and smoke less while actively trying to quit" when considering all cardiac (and other) imbalances.

Looking beyond stuff we eat and stuff we do, we need to think about who we are. How are we living our life? Is it fulfilling? If not, how can our hearts thrive? What are our relationships like? Often, we have been wounded by relationships, and our hearts carry this memory. Is there something that can be forgiven? Can we forgive ourselves? These are all questions, questions not in search of answers, but attention.

We also need to remember what we are: we are a part of this infinite living force and process that is nature. Too often, we forget that. We're caught up in a web of ideas people have created, a web of constructs that often do not serve us, do not bring out the best of what we are, and can become. I'd posit that this perceived disconnect (perceived because we never really are disconnected) harms our hearts. It deprives them of something they need. Go to nature, be it a forest or a flower. The principle by which they grow also resides in you.

## **essential cardiac nutrition**

### **vitamin D**

Vitamin D is an important nutrient, primarily provided by exposure to midday sunlight. Unfortunately, people who live in higher latitudes, or who can't easily get a lot of skin exposure midday can't easily make use of this free source of Vitamin D. Also, magnesium deficiency inhibits the conversion of vitamin D into its active form. Vitamin D (ideally in the form of D3) lowers cardiovascular inflammation, works to resolve damage to the blood vessels, inhibits vascular calcification, and helps to normalize blood pressure. I most often suggest 4,000 to 6,000 IUs of Vitamin D3 daily.

## **omega 3 essential fatty acids**

Omega 3 Essential Fatty Acids (EFAs) are, well, essential. Found most abundantly in wild fatty fish, but also to a lesser degree in the meat of wild animals and some plants, they appear to have significant health benefits across multiple organ systems. Fish and animal based sources are richest in DHA and EPA. While plant sources contain ALA, only a small percentage of this is converted to DHA and EPA (veg/ans can get DHA/EPA more effectively from algae based products). Omega 3 EFAs in fish and other foods decrease high blood pressure, lower triglycerides, increase HDL cholesterol, lessen cardiovascular inflammation, and lower elevated fibrinogen levels (fibrinogen creates fibrin which provides the structure upon which clots may form). There have been some recent conflicting and confusing large scale studies on the effects of Omega 3 EFAs from fish oil supplements on heart health. Currently, it seems EPA, or fish oils with much higher levels of EPA compared to DHA, offer the most notable benefits. If you can eat wild fatty fish, do that (salmon is yummy but sardines and anchovies are also quite wonderful sources). If using fish oil or some other Omega 3 supplement, I generally shoot for between 1,000 to 3,000mg of Omega 3s. A superb, though unfortunately expensive, product is Nordic Naturals Ultimate Omega Xtra (get the 8 fluid ounce liquid one). The best algae based Omega 3 EFA supplements I know of (Nordic Naturals Algae Omega and Vegetology's Opti3) both have higher DHA levels compared to EPA.

## **magnesium**

Essential for hundreds of biological processes, adequate magnesium intake is imperative for cardiovascular health. Magnesium deficiency is rampant, and because of ever decreasing levels in our food due to poor agricultural practices, magnesium supplementation is an essential part of cardiac wellness. Many common cardiovascular issues from high blood pressure to arrhythmias like atrial fibrillation at least in part result from magnesium deficiency. Chelated forms of magnesium like magnesium glycinate, taurate and orotate are specifically helpful for cardiovascular health. I often suggest 600-800mg, in divided doses (twice a day) to prevent loose stool.

## **vitamin K2**

Vitamin K2 is a form of Vitamin K distinct from K1 that helps (among many things) the body properly utilize calcium. Specifically, it lessens calcium buildup in the blood vessels, arterial stiffening, and the establishment atherosclerosis (hardening of the arteries). While leafy greens are often rich sources of K1 (which contributes to the blood's ability to clot), dietary sources of K2 (which acts to inhibit clot formation) are commonly deficient in the modern diet. There is also evidence that statins inhibit the conversion of vitamin K1 to K2. Consider a 100-200mcg/day.

\* \* \*

These nutrients cover much larger nutritional needs, and are essential for everyone. Some nutrients, though, may be considered targeted nutrition for the heart itself...

## **coenzyme Q10**

CoEnzyme Q10, also called ubiquinone, is a vitamin-like antioxidant that helps to protect your tissues from being damaged by inflammation, and also assists the mitochondria in your cells to produce ATP; the actual cellular energy that makes your body work. CoQ10 levels tend to decrease as we age, and with heart disease or damage. Both statins and beta blockers inhibit the production of CoQ10, and necessitate its supplementation. Dosage varies according to need. There's also debate about ideal forms (ubiquinone vs ubiquinol). I actually prefer a form called Q-Gel, which is both water and lipid soluble, and raises CoQ10 levels higher and faster at lower dosages.

## **L-carnitine**

L-carnitine, and the related acetyl-L-carnitine and glycine propionyl-L-carnitine (GPLC), act like CoQ10 to facilitate efficient ATP production, as an antioxidant, and also as a vasodilator. As the name “carnitine” suggests, it is most concentrated in animal protein, but your body will create it given adequate lysine & methionine (beans and rice!). Deficiency symptoms can mimic those of magnesium: muscle cramping, soreness, and weakness, and this applies to cardiac muscle tissue as well as skeletal. Again, dosage varies according to need. GPLC is most concentrated in heart tissue, but a combination of all forms can cover many bases. Life Extension’s Optimized Carnitine combines acetyl-L-carnitine and GPLC.

## **D-ribose**

Whereas CoQ10 and L-carnitine help the mitochondria in cells generate ATP, D-ribose is a building block of ATP. Though your body produces it, people with heart disease may not be able to make enough to meet their body’s needs. Supplementing it supports the production of energy in heart tissue, which can be utilized to recover from or resolve recent or preexisting cardiac illness. Again, dosage varies by situation.

These last three nutrients, along with magnesium, make up integrative cardiologist Steven Sinatra’s “Awesome Foursome”, which he recommends enthusiastically for heart failure or after cardiac events and suggests are broadly safe with common heart meds.

## **taurine**

Taurine is an amino acid that, similar to CoQ10 and l-carnitine, improves cellular ATP production and acts as an antioxidant to ally inflammation throughout the body. It also seems to possess a cytoprotective effect, appears to lessen hypertension and atherosclerosis, and along with magnesium is among the most important nutritional strategies to address cardiac arrhythmias. I’ve already mentioned taurine in the form of magnesium taurate, but it may also be used by itself in doses from 1-3 grams.

Oh, and: On the whole, say no to calcium supplements, which have been shown to increase calcification of the arteries. Get calcium from food, not supplements, unless there is some very specific need (like parathyroid illness).

## **cardiac tonics & trophorestoratives**

Though not “nutrients”, trophorestorative herbs are believed to somehow target nutrition to certain parts of the body. Some herbs have long traditions as “heart tonics”, not so much acting medicinally on the heart and cardiovascular system, but strengthening and restoring its function. I strongly advise such herbs should be taken preventively if someone knows or suspects they have risk factors that may lead to heart issues, whether they be hereditary or related to lifestyle.

## **hawthorne various crataegus species**

No herb used in western herbalism is as well known a heart tonic as hawthorne (the “e” at the end is from older spellings). This rose family tree’s virtues are infused in its spring flowers, leaves & twigs and autumnal berries. Hawthorne is considered energetically cooling, and all parts are possessed of anti-inflammatory properties. It’s helpful to lower elevated blood pressure, to lower cholesterol levels, to ease palpitations, arrhythmias, and chest pains. It strengthens the heartbeat while relaxing the blood vessels. Hawthorne is used restoratively in heart failure. But more than possessing a slew of medicinal actions, hawthorne can be viewed as a strengthening cardiovascular tonic. It makes your heart stronger, and as a result it works better. Teas, tinctures and syrups are all effective, though berries are probably more stable over time than leaves and flowers.



**considerations & contraindications...** Hawthorne may interact with digitalis based medicines, requiring a lowering of their dosage, but evidence on this is conflicting. Though it doesn't always, or most of the time, I have occasionally seen hawthorne interact with beta blockers, causing unpleasant fluctuations in blood pressure or perhaps slowing too much. These aggravations ceased upon discontinuation of hawthorne.

### ***cactus selenicereus grandiflorus***

If everyone in western herbalism knows hawthorne as a cardiac tonic, most nowadays will wonder what in the world I could mean by so generic a name a "cactus". But in the mid 1800s to early 1900s, it was cactus that was revered. Finley Ellingwood wrote "It is the heart tonic par excellence, as it produces stimulation from actually increased nerve tone, through improved nutrition of the entire nervous and muscular structure of the heart." Traditional indications were feebleness and irregularity of the pulse, valvular issues, and a sense of constriction around the heart. It is also possessed of a relaxant nervine effect, which suggests its use when anxiety and emotional distress are causative/aggravating factors in cardiovascular conditions. Here, it was often combined with milky oats. While cactus is decidedly demulcent, mucilage itself certainly isn't getting to the heart. Still, a drier constitution may indicate the use of cactus. Tinctures need to be made from the fresh cactus stems and/or flowers.

**considerations & contraindications...** As cactus is barely used and commercially rare, there is really no current information on contraindications or potential drug interactions.

### ***stone root collinsonia canadensis***

Stone root is most often known, by those who use it, as the "hemorrhoid herb". This is certainly a vascular use, but looking back to older indications, we can see it was revered as a cardiac remedy as well. Again, we refer to Ellingwood: "Collinsonia is a heart tonic of direct and permanent influence. It does not seem to stimulate the heart to sudden action, but its continued use induces steady, permanent and highly satisfactory improvement in the strength and character of the organ, and a correspondingly improved general circulation." I consider it a toning to all cardiovascular tissues, and, as an aromatic, a blood moving herb indicated by inadequate outward or congested circulation. Tincture of the entire fresh plant in flower, roots and all, should be used.

**considerations & contraindications...** The American Herbal Products Association's Botanical Safety Handbook Vol 2 notes no contraindications or adverse effects, probably because no information/studies exist to be found.

### ***arjuna terminalia arjuna***

Calling arjuna a trophorestorative is using a western herbal term to refer to a plant that comes to us from Ayurvedic tradition. Arjuna acts as an antioxidant to lessen cardiovascular inflammation, lowers blood pressure, lowers cholesterol, inhibits plaque formation in the arteries, improves heart failure and has been deemed cardioprotective. Traditionally the powdered bark was infused in milk or ghee, but tinctures can also be effective.

**considerations & contraindications...** not for use during pregnancy. Arjuna is also quite astringent, and may aggravate dry tissues.

## the emotional and spiritual heart

Viewed holistically, our hearts are not just muscular pumps. They house our emotions, our passions, and help express them outwardly as the physical heart moves the heat, oxygen and nutrition of our blood to the rest of our bodies. In a world that emphasizes the brain as the origin of all cognitive perception, processing, and emotion, why is it that we feel love in our hearts? I mean, when faced with deep emotional loss, we don't feel it in our brain, but in our hearts. Traditional medical systems viewed different organs as housing differing facets of perception. Whereas our brains excel at deductive reasoning and seeing all the parts that make up a whole, our hearts perceive the whole itself, in the "the whole is more than the sum of its parts" way. Our hearts see and feel the way we are all connected, with each other, with nature.

This is as imperative to our health as our physical hearts and vasculature.

And this especially important for herbalists. We are, after all, caregivers. We care about people, we care about plants, we care about nature. Care defines what we do. If I think about it, it seems to me that there is no situation that benefits from a lack of care. And yet, here we are, in a culture that has deprioritized care, both societally and monetarily (ever seen the salaries of caregivers for children, the disabled, the elderly?). People feel so stressed and overburdened they ration their care, and often feel uncared for. People flippantly say "I don't care" all the time. It's as though we've entirely forgotten the profound meaning of the word, and the feeling behind it, the power in it. In care lies healing. And care resides in the heart.

Whether we want to pathophysiologize it or not, we all know what we mean when we talk about the heart this way; it's integrated into our culture, our language, our music. We say things like "Follow your heart!", refer to being "heart centered", and have probably all felt broken hearted independent of physiological injury. We understand what E. E. Cummings (yes he did capitalize his name) meant when he wrote "I carry your heart with me (i carry it in My heart)...". We know what it feels like to be open hearted. We've all felt our hearts close up. We can even think in energetic terms about feeling warm hearted or cold hearted.

And since we all know and feel these things, it makes sense that we consider and address them as a part of how we use herbs to help people. Sure, we can maybe simplify some of these "heart" related feelings and emotions down to modern pathologies of the brain like "anxiety" or "depression", and consider certain herbs "antidepressants"... though that lacks any kind of nuance. Nicholas Culpeper, in his Complete Herbal, refers repeatedly to herbs that "comfort the heart", "defend the heart" or "make the heart merry", all things entirely different from something being an "antidepressant".

✿ When we think of herbs that exemplify the emotional and spiritual heart, we find ourselves again under the canopy of hawthorne; in it we see a tree bursting with abundant medicine, leaves, blossoms and berries, yet protected by thorns. You have to be mindful, collecting hawthorne. You look for areas that are open, offering. Those are the places we are welcome. I use hawthorne, leaves, flowers, berries, and, yes, the thorns, for those people whose hearts have been hurt and need to feel protected in to feel safe being open again. For loss and heartache, I not uncommonly blend hawthorne with milky oats (a supportive and sustaining nervine tonic) and lemon balm (which gladdens the heart and gives it space to see more than what it grieves).

✿ Another herb that straddles the physical and archetypal heart is cactus. Apart from its use as a trophorestorative, we'll find cactus helpful for those anxious, fearful, and unsettled by a shaken heart. Here again it combines well with milky oats.

✿ Borage gives the heart courage, and dispels excesses of melancholy... nothing can, or should, dispel melancholy altogether, as it can help us face truths we might fear (hence the need for courage).

✿ Wild bee balm can help disperse emotional anger, or help manifest heartfelt passions stuck inside us.

✿ Of course, rose. Dana O’Driscoll shares: “Multiflora rose specifically; hips, buds, and flowers. Extremely protective and healing. Good for people who need some distance and space to heal, for people who are feeling vulnerable and traumatized; multiflora helps them feel protected.”

✿ I like motherwort for unsettled hearts that respond physically to worries.

This could go on and on (but I’m maxed out at six pages!). There are a lot of plants, but also: there are many differing ways people can have relationships with and interpret them. It’s not like my indications need to be anyone else’s, or that if two people’s impressions differ one might be wrong. Just as we have differing relationships with people, we have differing relationships with plants. Go to them, open hearted. See which come to fill the space, and feel what virtues they come to offer.

# *Energetic Herbalism: Understanding the Elements of Plants and Humans for Health*

**Kat Maier RH(AHG)**

Generally, energetics in herbalism relates the energetics of the plant (cooling, moving, motherwort), to a current imbalance or condition (anxiety, tension) then lastly, to the energetics of the person or constitution (sensitive, dry). The underlying foundation is the energetics of the spirit (unconditional support) of the plant and the sacred relationship an herbalist develops with the land and these sentient beings, the plants.

- **Patterns of Intuition** - If we look at the most basic patterns utilized in traditional medicine, we will see that they represent attempts to quantify levels of heat and moisture.

The goal of energetic herbalism is to enhance our terrain, which is our inner landscape—our tissues, organs, vessels, and all the forces that are engaged to maintain our health. The aim is to create an environment where we optimize nutrition from food, breath from air, and joy from our surroundings so our vitality flows with the least hindrance.

## **Energetic Herbalism is a Sensual Art**

**Touch** is our most primitive sense. It is the first sense a fetus develops while in utero. Touch informs us of our environment. One of the greatest strengths of herbal medicine lies in the topical medicines we apply to the skin. We can bring heat and move congestion in lung tissues through an application of a mustard plaster.

Cooling, soothing chickweed (*Stellaria media*) has mucilaginous properties that draw heat from infections. Plantain (*Plantago* spp.) and slippery elm (*Ulmus rubra*) have potent properties of drawing toxins as well as even small debris (splinters) out of tissues. It is a pattern in Nature: Plants that serve as a remedy for toxic effects of other species often grow close at hand. The sting of nettle is therapeutic as it moves circulation to clear stagnation and pain. Even the thorns on hawthorn (*Crataegus* spp.) and many other members of the Rosaceae family are a signature for the protective qualities of its medicine.

**Smell** - The sense of smell is hard-wired into some of the most sensitive parts of the brain, including the amygdala, which is responsible for governing emotions, and the hippocampus, which relates aromas to memory. This means that scents go straight into our limbic system, bypassing mental processing, thereby accessing primal places that hold information not readily available through everyday cognition.

Once we know the distinctive smell of an herb, we can determine the elements or pattern the plant may hold. The aromatic oils of thyme (*Thymus vulgaris*) or rosemary (*Salvia rosmarinus*) provide the sensation of lifting or awakening, thus bringing the element of air into our being. The scent of sweet cicely roots (*Osmorhiza longistylis*) informs us that this plant has building, nutritive qualities. The bitter aromatics from *Artemisia* species such as wormwood (*Artemisia absinthium*) signal a stronger medicine.

**Sound** - The sense of hearing does not directly provide elemental information about plants. Nonetheless, it is a vital aspect of traditional energetics. A Costa Rican medicine person, Jose Ramon Campos, once explained to me that before he could harvest the medicine plants, he had to learn their songs. Beginning at age three, he shadowed his grandfather, devoting himself to learning the simple chants, some of which were only two or three notes

This healer spent eight years listening in efforts to discover who the plants were and how to be in right relationship with them. This is how Indigenous people maintain the integrity of the web of life. They sing before they take. They ask before they harvest.

**Taste** - Taste is the sense that herbalists and plant lovers revel in. This sense can bring us so much information about the medicines we work with. Plants have developed unique flavors by producing a diverse range of phytochemicals. So much of what we taste arises not only from the plant's direct effect on our taste buds but also from the aroma or sensation the plant imparts. The flavor signals the presence of a constituent of a plant that initiates a change in our bodies.

For example, bitter plants increase saliva, salty ones direct energy to our kidneys, and pungent spices move circulation. The acids in sour fruits bring us cooling flavonoids or antioxidants, and sweet herbs are building because the carbohydrates they contain are nutritive. However, it's important to identify any unknown plant and its potential toxicity before you taste it.

- **Spicy/Pungent:** warming, moving, drying
  - Stimulating, spicy plants increase circulation and wake up our senses. This is why most culinary herbs are pungent: They help increase digestive action. Aromatics like rosemary and thyme are warming and drying, reflecting the Mediterranean ecosystem they come from.. Eating spicy foods, such as horseradish or cayenne, can initiate a sweat, which is a common expression of dispersing energy outward. These herbs can be quite stimulating, so usually they are used in low doses. Pungent examples include black pepper (*Piper nigrum*), ginger, garlic (*Allium sativum*), cinnamon (*Cinnamomum verum*), and cayenne.
  - The energy of fire and air from pungent medicines is also specific for lungs, as these elements disperse energy in an outward direction
- **Sweet:** building, nutritive, balancing
  - Sweet is the subtle flavor of grains and roots. Traditionally, even honey would have been considered excessively sweet and used in moderation. Energetically speaking, the direction of this flavor is upward because these plants tonify, build, and energize. Nourishing roots and adaptogens are sweet-tasting plants due to the presence of complex sugars called polysaccharides. Sweet herbs tend to be anti-inflammatory and demulcent, especially when the content of mucopolysaccharides is high.
  - Most saponin-rich adaptogens are sweet as well. This is the energy of earth and water. Examples of these tonics are American ginseng (*Panax quinquefolius*), licorice, and astragalus (*Astragalus membranaceus*). Blood-building herbs such as red clover (*Trifolium pratense*) and burdock are also sweet.
- **Bitter:** calming, cooling, clearing
  - Bitter flavor has a downward, drying, and clearing action. Bitter cools and clears heat from the body and aids in cases of inflammation. The bitter principle stimulates bile and helps with digestion as well as elimination. In Chinese medicine, this flavor is said to go to the heart. In *Out of the Earth*, British physiotherapist and author Simon Mills wrote, "Repeatedly in the records of traditional plant medicine, we find that bitter remedies are the 'true stimulants', a notion surviving in the modern idiom that 'nasty-tasting medicines are the best for you'."
  - The bitter receptors on the tongue stimulate a reflex response that provokes an amazing array of actions: increased appetite, increased bile flow, production of hydrochloric acid and digestive enzymes, protected gut tissues, balanced blood

sugar, clearing of dampness from the digestive tract, and a low-level antimicrobial action. Bitter herbs include dandelion (*Taraxacum officinale*), blue vervain (*Verbena hastata*), and motherwort.

- Sour: cooling, astringing
  - The direction of sour moves energy inward and downward. Think cooling, natural lemonade in expansive summer heat. The sour flavor of herbs, though, is more subtle than the intensity of lemons. This flavor is represented by herbal fruits such as bilberry (*Vaccinium myrtillus*), sumac (*Rhus* spp.), and schisandra (*Schisandra chinensis*).
  - Their energies astringe tissues or bind excesses. Sour antioxidants (flavonoids) cool the tissues and are actually protective against oxidative stress (heat).
- Astringent: cooling, drying
  - Astringent is recognized as a taste in Ayurveda, but in other systems it is considered more as a sensation rather than a flavor. Either way, the mouth definitely recognizes the presence of an astringent food or herb. Astringent herbs are drying to the body and tonifying to the skin and mucous membranes. Most herbs are slightly astringing due to the presence of tannins. These compounds are prevalent in plants because they are part of the plant's immune response to disease.
  - Astringent herbs are offered to people who have diarrhea or excessive bleeding and who tend toward dampness, excessive sweating, and secretion. Herbs include witch hazel leaf (*Hamamelis virginiana*), black tea leaves (*Camellia sinensis*), and blackberry root (*Rubus fruticosus*).
- Salty: cools, moistens, softens
  - This flavor is described as having a downward direction and is specific for directing energy to the kidney. Because water follows salt, these plants are used to soften hard swellings. In herbalism, salty herbs such as dandelion leaf, chickweed, plantain, and nettle are also mineral-rich plants that are packed with nutrients. Common salty foods are seaweed, kelp, miso, and soy sauce. Herbs with this flavor can also be drying; there are many diuretics in this group. However, other mineral-rich plants, such as chickweed, moisten tissues.
  - Traditionally, salt was a tonic for the heart because it increases fluid and improves blood volume, especially in hotter weather where fluid loss can lead to mineral deficiency.
- Acrid: warming, moving, dispersing
  - Acrid plants are the main category of herbs to release patterns of tension. This flavor is actually more of an experience, as it provokes a reaction in our tissues. The felt impression is one of warmth and tingling, a prickly and some may say nauseating reaction. These herbs are generally offered in low doses, yet have a profound physiological effect. Lobelia (*Lobelia inflata*) is the quintessential acrid herb and is that perfect blend of contradiction—it is dispersing as well as relaxing.
  - Many of the antispasmodic herbs are acrid, such as kava kava root (*Piper methysticum*), black cohosh (*Actaea racemosa*), and cramp bark (*Viburnum opulus*).
- Bland: neutral, moistening
  - Bland herbs are as they sound, mostly neutral in energy. It is said they move through the body with relative ease, thus having their effect on the urinary system. Hence, they can act as diuretics. Often, they are demulcent in nature and have a slippery texture associated with mucilage. Bland herbs are oatstraw (*Avena sativa*) and corn silk (*Zea mays*).

## Elements of Nature

- The common denominator of all energetic systems is the elements of Nature. Fire, water, air, earth, wood and metal are representations of energy in many cultures., air cools and dries, and earth builds and grounds. The ways in which the elements relate to each other creates patterns in our terrain or state of health.
- *Ether* - All of the spaces that exist within our bodies are manifestations of Ether: hollow channels, vessels, organs, and spaces between cells. Ether is ubiquitous—it creates the space in which the other elements reside and holds the essence of emptiness. Ether originates in the primordial space from which vibration emerges before it reaches the ear as sound, and thus hearing is the sense related to Ether. It is said that through chanting, we have access to the vastness of consciousness. Ether’s qualities are based on the absence of an opposing quality. For example, ether is light and lacks the density of Earth, it is cold as it has no warmth from Fire and is immobile as there is no force from Air. That being said, Ether is a part of every element.
- *Air* – This is the element of movement. As the Ether element began to create subtle movements, Air was created. This element manifests in the expansion and contraction of the lungs and with peristalsis, or actions of the bowels. From the movement of muscles and joints, pulsations of the heart, and force of blood coursing through veins and arteries, down to the level of cellular structures that move in response to biochemical changes, all of these movements represent Air. The nervous system is greatly affected by this element because neural networks *run* throughout the body. Too much Air in the nervous system creates excitability; a deficiency leads to sluggishness. Qualities of Air are light, cold, rough, dry, dispersing, and mobile. Air is related to the sense of touch and the skin. Through the hands we reach out, giving and receiving.
- *Fire* - Fire transforms and moves and it evolves from Ether and Air. Ether gives Fire space in which to exist. The movement of Air gives rise to Fire, and that motion is why Fire is never still. Fire reflects the capacity for heat and light. Just as the Sun generates energy for planet Earth, Fire generates energy in our bodies through metabolism—our digestive *agni*. Fire also ignites our intellect and allows digestion of ideas. The qualities of Fire are hot, flowing, light, dry, and soft. It is natural to think first in terms of Fire’s physical nature of heat but when considering its subtler nature, we see that light is soft and revealing. To the rishis, this element also represented understanding, luster, and the power of transformation. When we shine our light on an idea or a person, they come to life and are transformed. The sense related to this element is sight. Through the eyes we receive the light of Fire in order to perceive the world around us.
- *Earth* - The fifth element, Earth, contains the other four, because Water materializes into Earth, and Water was precipitated by Fire, which was created by the friction of Air in Ether. Ultimately, all the elements arise from Ether and all are contained in Earth. Earth is the densest form of matter and represents the structure of the universe. All creation is born from Earth: the living bodies of plants and animals, as well as inorganic matter such as minerals. The qualities of Earth are cool, stable, heavy, dense, dry, dull, and hard. Solid structures in the body, including bones, cartilage, muscles, nails, tendons, skin, and hair, are made of Earth. The sense related to Earth is smell and the organ is the nose.

- *Wood* – This element represents vitality, growth, and kindness. Wood energy is also related to flexibility. A tree also represents Wood. It is well rooted, strong yet flexible, bending, yielding to wind. Since the capacity for control is in this element, if there is not enough flexibility the person can be rigid, controlling and unexpressed anger can be damaging. If the tree does not get nourishment, their limbs may be weak showing as muscle weakness or even arthritis. The emotion of Wood is **the energy of the potential for change**. As the catalyst for beginnings and new direction it requires effort - be it changing career, relationship, a new home.
- *Metal* - The metal element represents the divine breath. It is our essence, our sparkle.

It is the Principle of the heavenly father. We can go without food from the mother for days, but we can only go moments without the source of life, breath from the father. The fertility of the earth depends on trace amounts of metal. It is this interior, highly refined quality inside of everything that makes it valuable- gives it essence.

### **Gaia and our Vitalism – One and the Same**

In the late 1960s, chemist James Lovelock and microbiologist Lynn Margulis proposed the theory that the Earth is endowed with an ability to communicate across species in efforts to provide homeostasis. The well-known Gaia hypothesis or Gaia theory states that the biota communicates with organic as well as inorganic material to ensure evolution as well as feedback systems for an elegant self-regulating balance to occur. This theory is named after the Mother Earth goddess from Greek mythology. Margulis and Lovelock described planet Earth as a self-regulating being who automatically adjusts the temperature, salinity of the ocean, and atmospheric content in response to changes in the ecosystem. In this respect, the living system of Earth is identical to the workings of our bodies. We are constantly regulating temperature, fluids, and the tone of organs and tissues. *Vitalism* is a teaching that states there is an invisible force governing our health, lives, and planet that is unseen and unmeasurable. This force has the intelligence to be not only self-directing but brilliantly self-correcting.

### **Properties of Vital Energy**

Vital energy is clear, bright, active and warm. Its primary property is to be active and heat is the byproduct of that activity. When a person's vital energy is strong and healthy, they will feel clear, bright, strong and energetic, their mind will be clear and active and their limbs will feel warm, strong and capable. Vital energy is by nature always active, it takes other functions to bring about a quiet restful state.

### **Tissue States**

The six tissue states are patterns that describe our inner terrain when it is *out of balance*. These are what impede or negatively influence our vital energy. The six states are hot/cold, dry/damp, and tense/lax. The art of energetic healing lies in appreciating the subtle, nuanced shifts in these states. They are not polar opposites; they delineate a continuum along the spectrum. In this way, they are a reflection of *homeodynamics*, a concept that is replacing the conventional concept of homeostasis. Homeodynamics more accurately describes the fluidity of the natural world, the constant movement that characterizes life. Stasis is defined as a period of inactivity or equilibrium. A living organism may pass through a point of equilibrium but as a living, self-correcting system, it is constantly adjusting its internal milieu with that of the environment. Tissue states reflect the dynamic quality all organisms employ in order to maintain internal coherence.



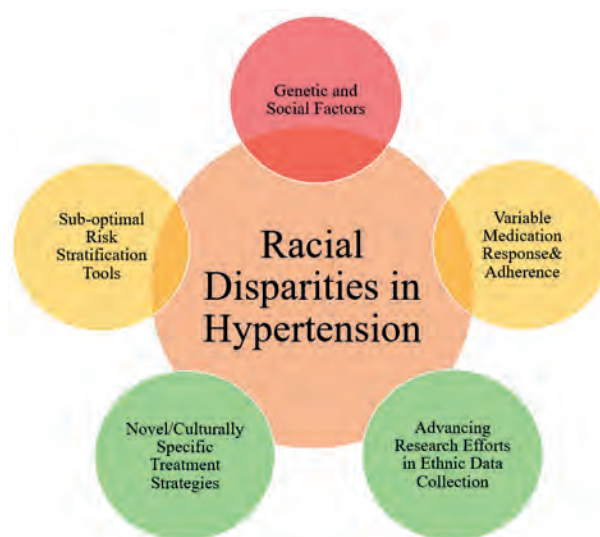
With energetic herbalism, we gather the pieces and reweave integrity back into our lives. We work with not only patterns of Nature but also the world of the sacred, which contains the stories and songs that are our birthright. When we honor the intelligence and spirit of plants, we acknowledge our place in the scheme of life. Our humanness is defined by our ability to engage in our natural world, and we express this holy life through ceremony. Ceremony is an energetic language that transcends the physical realm, and all of our work with plants is a beautiful ceremony. This can be as simple as making a cup of nourishing tea.

## ***Deep Medicine and Inflammation: How Health is Tied to the Human Condition***

**Kat Maier RH(AHG)**

- *There is a medicine that is mindful and active in resisting colonial cosmology. Fighting the damming of rivers, the invisibilizing of Black pain, the clear cutting of forests, the incarceration of minorities, the monocropping of foods,...the land theft and genocide of Indigenous people, the wage gap, and the attempt to control women's reproductive power is all parts of the healing arts that we call "deep medicine". It's a practice that any healer can begin immediately. It starts with the act of repairing those relationships that have been damaged through systems of domination.... Everything we've made, we've made from fossil fuels: energy, food, medicine, and consumer goods. The world has been organized to burn. As a consequence, the planet is inflamed.*

*Rupa Marya and Raj Patel, Inflamed: Deep Medicine and the Anatomy of Injustice*



### **Co-morbidities and COVID 19**

- The racial disparities in hypertension and hypertension-related disease outcomes have been related mortality morbidity risks compared with their white counterparts. These excess risks from elevated blood pressure have a dramatic effect on life expectancy for African-American men and women which is significantly less than for Caucasian Americans. Stroke mortality risks are two-fold greater for African Americans.<sup>1</sup> End-stage renal disease is five times more common for African-American men and women. In addition, the age of onset of diseases such as stroke is considerably earlier for African Americans. For example, a 45-year-old African-American man residing in the Southeast has the stroke risk of a 55-year-old white man in the Southeast and a 65-year-old white man residing in the Midwest.(1)

- Preexisting conditions such as cancer, heart disease, and obesity could be driving factors in higher risks for hospitalization, need for ventilation, and death due to COVID-19, according to the Centers for Disease Control and Prevention. Blacks, Latinos, and Native Americans all tend to also have more preexisting conditions than Whites. As a result, some researchers have suggested this could account for the higher rate—up to 3.7 times greater—of hospitalization and other COVID-19 complications among these racial and ethnic minority groups compared to Whites.(2)
- American Indians experience some of the highest rates of chronic conditions. With a community-based sample of 505 American Indians aged 55 years or older, this study identified the most prevalent chronic conditions, described comorbidity, and identified socio-demographic, functional limitations, and psychosocial correlates of comorbidity. Results indicated that older American Indians experience higher rates of hypertension, diabetes, back pain, and vision loss compared to national statistics of older adults. (3)
- Indigenous Conceptualization of the Self Identity is very much an inalienable feature of an interdependent world. Personal identity is holistically defined in terms of kinship, ritual, spiritual relationships, and responsibilities, all of which are inseparable from each other and the land, that is, nature itself (4)

### **The role of Epigenetics in Inflammatory Disease**

- There is considerable evidence suggesting that epigenetic mechanisms may mediate development of chronic inflammation by modulating the expression of pro-inflammatory cytokine TNF- $\alpha$ , interleukins, tumor suppressor genes, oncogenes and autocrine and paracrine activation of the transcription factor NF- $\kappa$ B. These molecules are constitutively produced by a variety of cells under chronic inflammatory conditions, which in turn leads to the development of major diseases such as autoimmune disorders, chronic obstructive pulmonary diseases, neurodegenerative diseases and cancer. Distinct or global changes in the epigenetic landscape are hallmarks of chronic inflammation driven disease (5)

**More than simply giving plant medicines and education, the herbalists role in their community can include so much more.**

#### **Landback Movement**

LANDBACK is a movement that has existed for generations with a long legacy of organizing and sacrifice to get Indigenous Lands back into Indigenous hands.

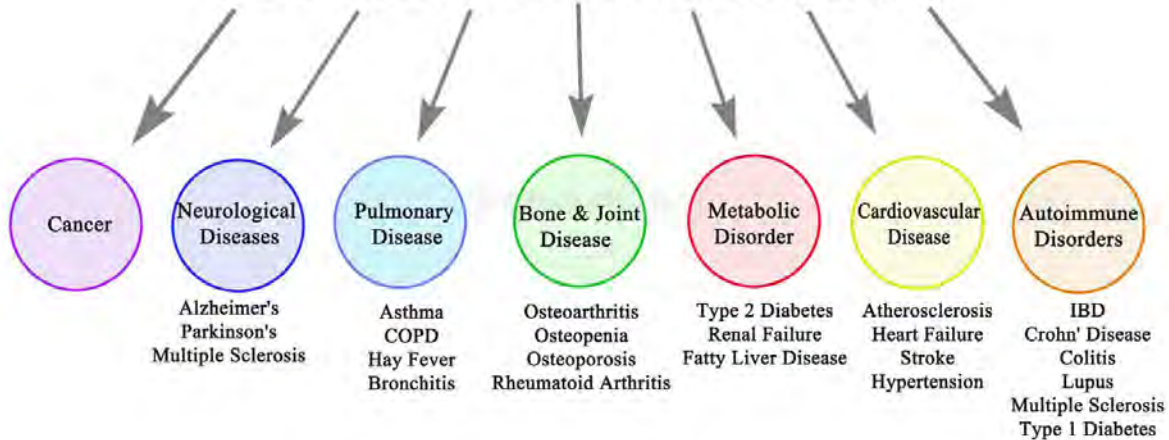
The rise of land acknowledgments — and their limitations

#### **Food Justice**

The Food Justice Movement works to ensure universal access to nutritious, affordable, and culturally-appropriate food for all, while advocating for the well-being and safety of those involved in the food production process. The movement aims to address disparities in food access, particularly for communities of color and low-income communities, by examining the structural roots of our food system. Food Justice addresses questions of land ownership, agricultural practices, distribution of technology and resources, workers' rights, and the historical injustices communities of color have faced.

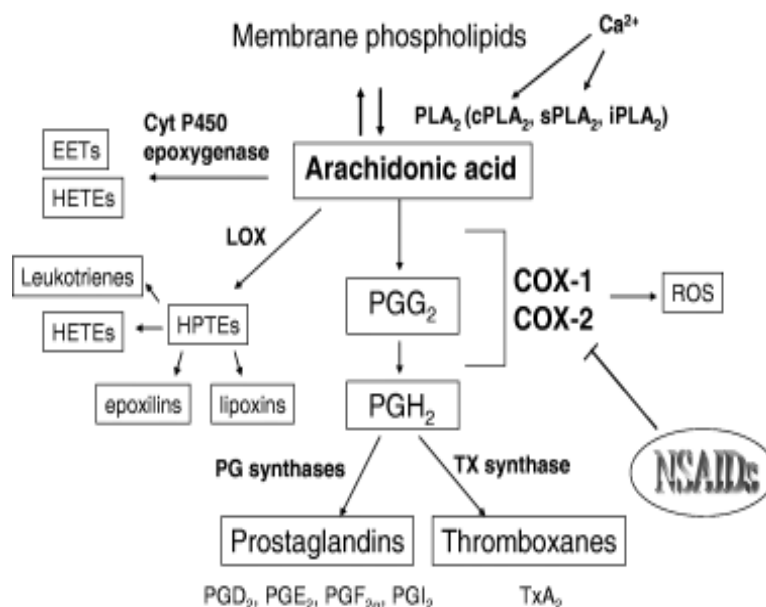
The food justice movement took a significant step forward in 1969 when the Black Panther Party launched the Free Breakfast for Children Program at a church in Oakland, California. The program was launched in direct response to the hunger and poverty in the area that made it difficult for children to attend school. (6)

# Chronic Inflammation



Clinically inflammation is recognized by the classical findings of *dolor* (pain), *calor* (heat), *rubor* (redness), *tumor* (swelling), and *functio laesa* (loss of function).

- Tissue injury results in the release of histamine which stimulates capillary dilation, resulting in vascular stasis allowing the migration of phagocytes and plasma leakage (redness, heat, and swelling).
- Release of bradykinin increases pain sensitivity in tissues containing nerve endings.
- Loss of function is regarded as a neurological reflex in response to pain. Phagocytic activity removes pathogens and the down-regulation of the inflammatory cascade results in healing.
- Inflammation is favored by factors such as IL-1, IL-6, and TNF- $\alpha$ , whilst being inhibited by cytokines including IL-10 and TGF- $\beta$ . The distinctions are not absolute, however, and some factors play dual roles.



## Chronic Inflammation – Simplistically speaking Two Inflammatory Cascades

### 1. C-Reactive Protein Induced Inflammation

Role of Free Radicals

Role of Antioxidants

### 2. Fatty Acid Pathways

Role of Dietary Fats

- CRP is a protein produced by the liver
- When bacteria or other cellular invaders threaten the body, the liver releases CRP as part of the immune response
- Elevated C- reactive proteins are now considered as importantly as blood lipids as a marker for CV health
- This early response is called an acute phase response. It is also referred to as inflammation or an inflammatory response.
- The acute phase response also can occur in chronic conditions, including some autoimmune diseases.
- Polyphenols- Flavonoids
- Flavonoids: Water soluble plant pigments • The human body cannot produce bioflavonoids, so they must be supplied in the diet.
- Yellow & Orange color (Fall leaves ie. Ginkgo)
- Reduce capillary permeability- Bruising, edema, venous issues
- Inversely associated with coronary disease
- Protect Cholesterol from oxidative damage
- Antihistaminic- Stabilize mast cell

### 3. Fatty Acid Pathways

- Role of Dietary Fats

**Saturated Fats** This is the fat that we make, the fat that traditional peoples use because they are stable and therefore will not turn rancid and cause oxidative damage in our cells.

These fats have gotten a bad name but in actuality seem to be the ones evolution has deemed safe. These are coconut oil, tallow, lard, ~~palm oil~~ and fats from animal sources. Cold water fish have polyunsaturated (more liquid) because if they had fat like us they would be hard as stone in their frigid waters.

Essential fatty acids (EFAs) are all polyunsaturated fats. The two types of essential fatty acids are omega-3 fatty acids and omega-6 fatty acids. These come in short and long chain configurations. The short-chain omega-3 is alpha-linolenic acid (LNA or ALA). Its elongated (made longer) derivatives include: eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA) and a few others, less well known and less studied.

- Sources looking at the dietary ratio of omega-6 to omega-3 fatty acids suggest that in early human history the ratio was about 1:1. Currently most Americans eat a dietary ratio that falls between 20:1 and 50:1. The optimal ratio is most likely between 4:1

and 1:1. For most Americans this means greatly reducing the omega-6 fatty acids they consume and increasing the amount of omega-3 fatty acids. Researchers involved in the Workshop on the Essentiality of and Recommended Dietary Intakes for Omega-6 and Omega-3 Fatty Acids suggest “adequate intakes” of each: omega-3: 0.65 grams (g) of EPA and DHA combined (with neither falling below 0.22 g omega-6: 4.44 g



### Energetics with Type II Diabetes

- Heat from inflammatory damage
- Depression/deficiency from lack of cellular respiration and transport
- Stagnation from cold damp terrain
- Relaxation from lack of tone
- Treatment
  - Clear heat – bitters
  - Nourish and clear - alteratives
  - Warm and move energy – aromatics & stimulants
  - Tonify
    - Rosa Family
      - Hawthorn lf, flower and berry *Crataegus* spp (also great for capillary fragility due to high proanthocyanidin)
      - Rose hip/flowers *Rosa* spp
      - Strawberry *Fragaria*
      - Peach *Prunus persica*
      - Sumac berry *Rhus* spp
      - Lemon Balm *Melissa* off.

### Energetics of Hypertension –

- Heat – Liver heat rising & inflammatory process
- Tension – Stress
- Stagnation
- Treatment
  - Clear heat
  - Relax/Anti-spasmodic
  - Vasodilation
  - Move energy- aromatics

- Anti-oxidants - Cooling foods - Polyphenols- Flavonoids
  - Flavonoids: Water soluble plant pigments • The human body cannot produce bioflavonoids, so they must be supplied in the diet.
  - Yellow & Orange color (Fall leaves ie. Ginkgo)
  - Reduce capillary permeability- Bruising, edema, venous issues
  - Inversely associated with coronary disease
  - Protect Cholesterol from oxidative damage
  - Antihistaminic- Stabilize mast cell
- Quercetin- Most abundant and most potent flavonoid in plants.
  - Onions,(esp onion skins) apples, green tea, violets, pansies, citrus.
  - Quercetin may help relieve hay fever, sinusitis, and asthma because it can block allergic reactions to pollen and reduce inflammation in the airways and lungs.
  - Quercetin blocks an enzyme that leads to accumulation of sorbitol, which has been linked to nerve, eye, and kidney damage in those with diabetes.
- Green tea – *Camelia sinensis*
- Aronia berry (*Aronia melanocarpa*) – chokeberry
- Hawthorn leaf, flower & berry (*Crataegus oxycantha*)
- Reishi- *Ganoderma lucidum*, Ling Zhi

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# Perfect Storm: Maintaining Healthy Terrain through the Tissue States

Kat Maier RH(AHG)

**Perfect Storm**

Maintaining Healthy Terrain through the Tissue States

Kat Maier, RH (AHG)

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"If I could live my life over again, I would devote it to proving that germs seek their natural habitat, diseased tissue – rather than being the cause of the diseased tissue, in the way that mosquitos seek the stagnant water, but do not cause the pool to become stagnant"


*Rudolf Virchow*

"The specific disease doctrine is the grand refuge of weak, uncultured, unstable minds, such as now rule in the medical profession. There are no specific diseases: there are specific disease conditions."

*Florence Nightingale*

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**Antione Bechamp 1816 - 1908**




- Was one of the main proponents of his time to say that microbes do not cause the disease rather micro-organisms become "pathogenic" as the of health of the tissue deteriorates. His theory was that the status of the host was the primary causal factor.
- Renowned French scientist known for great work with applied organic chemistry

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**Louis Pasteur 1822 - 1895**

- French chemist and microbiologist
- World renowned for his work with fermentation, pasteurization and vaccinations
- Worked on rabies and anthrax vaccine
- Some believe that he plagiarized his research from Bechamp and other scientists of his time, the following slide alludes to these opinions



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**Florence Nightingale - 1820 - 1910**

- In 1860, world renowned British nurse, Florence Nightingale said of infection:

*Is it not a continual mistake to look upon diseases as we do now, as separate entities, which must exist, like cats and dogs, instead of looking upon them as conditions, like a dirty and clean condition in which we have placed ourselves*




- Notes on Nursing, 1st ed., 1860 p.32

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**Pleomorphism**


- In microbiology, **pleomorphism** is the ability of some microorganisms to alter their morphology, biological functions or reproductive modes in response to environmental conditions



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- Since Bechamp, Naturopathic practice has supported the belief that the following factors contribute to infectious disease;
- pH - Acid/Alkaline balance
- Electrical charge of the cell
- Level of toxicity
- Nutritional status;
- Low oxygenation of tissues
- Stagnation in the intra-cellular matrix
- Loss of electrical charge on red blood cells, a condition known as **rouleau** or “sticky blood”



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### Tissue States – Terrain – Our Inner Landscapes

- The goal of energetic herbalism is to enhance our terrain, which is our inner landscape—our tissues, organs, vessels, and all the forces that are engaged to maintain our health.
- The aim is to create an environment where we optimize nutrition from food, breath from air, and create an ecology where health thrives Tissue states pertinent to preventing



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- We are constantly regulating temperature, fluids, and the tone of organs and tissues.
- **Vitalism** is a teaching that states there is an invisible force governing our health, lives, and planet that is unseen and unmeasurable.
- This force has the intelligence to be not only self-directing but brilliantly self-correcting.



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### Functions of Vital Energy


- Warms
  - activates
- Transports and propels
  - Blood through the vessels.
  - Food through digestive tract
- Transforms
  - Stored nutrition into energy
  - Concepts and experiences
- Protects



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### 1.Heat – Excitation

- Thurston describes this state as “an exaggeration of the normal function rate” of the tissues. This excitation arises from an increase in tissue heat and this leads to swelling, redness, irritation and increased vulnerability as the tissues are weakened due to inflammation and stress.
- More vulnerable to infection and creating ecology prone to infection.



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### Heat

**Presentation includes:**

- Increase in temperature
- Increased red in tongue, mucosa, facial coloration
- Restlessness
- Wakefulness
- Irritation of stomach and upper GI (nervous stomach)
- Over excited children/ADD /ADHD
- Sensitivity to pain/sharp pain
- Capillary fragility
- Tendency to elevated blood pressure
- Tongue – pointed, red body
- Pulse – rapid, bounding

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### Wind heat

This is heat entering the defensive level of the body. Early onset of a cold or flu. Sudden onset, feverishness and chills (feverishness more pronounced than chills), aversion to drafts, but not comfortable covered up either, start of a sore throat, slight sweat.

Treatment Principle – Expel wind heat

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- Elder Flower (*Sambucus canadensis*)

- Fresh – stimulating diaphoretic – brings sweat in those with weak circulation
- Dried – sedative diaphoretic, reducing heat, opening pores and disperses blood
- Elder opens all the tubes



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- **Yarrow** (*Achillea millefolium*)
- Bitter, pungent, acid, diffusive, astringent, aromatic
- One of the primal remedies of Western herbal traditions
- Along with diaphoretic power makes this the “master of fever”
- Moves blood to or from surface to cool or maintain heat and regulate fluids
- Cooling and warming, fluid generating and preserving



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- Peppermint (*Mentha piperita*)

- Tastes cool but is warming and this paradox helps explain actions
- Used for fever and chills or mixture of heat and cold
- Treats cold and fevers brought on by sudden cold
- 1838 popular remedy for influenza



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### Baikal scullcap *Scutellaria baicalensis*.

- Clear heat
- Drain damp
- Liver/gall bladder heat
- Clears heat toxins – ulcers, boils
- Especially useful for upper burner or chest area – bronchitis
- Baicalein – anti-oxidant
- From Baikal region of Siberia



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- **Toxic heat** – heat, often intense, producing toxins (pus). Includes sores, abscesses and poisonous bites. Treatment Principle – Clear heat, relieve toxicity.

- Heat combining with stagnant, turbid dampness and building until toxins are produced.
- Some members of this category have demonstrated marked antiviral and antibacterial activity and others have little or no demonstrated antiviral and antibacterial activity, but have a long history of treating such infections.

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## Echinacea angustifolia/purpurea

- Sweet, cool/cold, diffusive, stimulating
- Clears toxic heat
- Septicinfections/putrification
- Ulcerative pharyngitis
- Spider bites, snake bites



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## Sour – cooling, especially to the liver

- Rosa Family
  - Hawthorn lf, flower and berry *Crataegus spp*
  - Rose hip/flowers *Rosa spp*
  - Peach *Prunus persica*
- Sumac berry *Rhus spp*
- Lemon Balm *Melissa off.*



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## Cold - Depression



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- Often causes
  - Cold due to a loss of heat production – tissue depression is often found with cold.
  - Weakness, apathy, paleness, puffiness, swelling and weight gain worse if combined with cold.
  - Pulse slower if combined with cold.
  - Dampness and stagnation worse if cold involved.
- Stagnation due to a lack of transportation.
- Damp (flowing or stagnation) due to poor transformation of food and drink into fluids and nutrition.

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## Carminatives (warming bitters)

- Parsley family (*Apiaceae*)
  - Angelica
  - Osha Root Fennel Dill
- Fragrant bitters
  - Artemisia clan of the *Asteraceae* Wormwood
  - Wormseed Sweet Annie
- Anomalous fragrant bitters
  - Black Walnut Hull
  - Elecampane Sweet aromatics
- Antiseptics
  - White Pine, Pine
  - Canada Hemlock Calendula Baptisia
  - Isatis Helianthemum Thyme
  - Lavender Echinacea



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## Warm the interior

### Respiratory

- Thyme leaf
- Fresh Garlic clove
- Rosemary leaf
- Oregano leaf
- Sage leaf
- Angelica Archangelica
- Prickly Ash bark
- Cayenne pepper
- Cinnamon bark



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- **Warm the interior - metabolic**
  - **Ginger root (fresh or dried)**, Black Pepper seed, Fennel seed, Anise seed, Clove bud, Angelica Archangelica,




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- **Warm the interior**  
Defensive energy
- **Cinnamon twig and bark, Fresh Ginger root**



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- **Dry - Atrophy**
  1. This tissue state is caused by lack of water AS WELL AS oil
  2. Dehydration can be either of the above fluids
  3. This may be because the body is not able to produce the fluids or it cannot hold onto the fluids
  4. If left too long, dryness can move into atrophy where the tissues are not nourished as fluids transport nutrients



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### Symptoms of dryness

- 1. Dry skin, hair, eyes
- 2. Bloating (dry digestive juices)
- 3. Gas
- 4. Constipation/hard stool
- 5. Insomnia – caused by heat rising at night
- 6. Joint stiffness
- 7. Anxiety
- 8. Excess heat possibly at first because there are no coolants to help dampen the temperature but then after awhile without nutrition there can be cold because there is no vital energy

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### Treatment

- There are a variety of ways to nourish and moisten tissues (Wood)
  - Hydrate
  - Mucilaginous herbs
  - Oily herbs
  - Sweet Tonics
  - Meaty/Proteinaceous herbs
  - Salty Emollients
  - Mineral herbs
  - Bitter tonics
  - Steroidal Saponins

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### Damp/ Stagnation – Tissue state

- Seen as state where fluids cannot get out of normal channels of elimination
- This backup can build up into catarrh, phlegm or mucus.
- Referred to as ‘The Humors’ - Later became ‘bad blood’ or ‘impure blood’



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### Treatment

- Remedies most appropriate to this tissue state usually increase elimination and encourage greater metabolic function.
- In Western herbalism we tend to think of these sorts of herbs as *alteratives or blood cleansers*



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### Resolve damp stagnation/drain damp

- Digestive
  - Magnolia bark
  - Cardamom pod
  - Tangerine peel
  - Orange peel
  - Bitter Orange peel
  - Fennel seed
  - Anise seed
  - Dill seed
  - Caraway seed
  - Cumin seed



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### Relaxation – Lax Tissue State

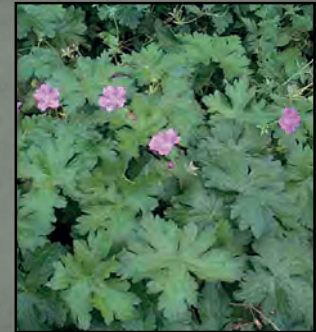
- creation of wet environs increasing infection possibilities
- tissues lacking in tone
- collapse
- leaking fluids
- free secretion of mucin
- clear copious urine, cool



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### REMEDIES - tonify & vital energy, astringe leakage

- Cinquefoil
- Agrimony
- Rose hip
- Cranesbill
- Shepherd's Purse
- Raspberry Leaf
- Blackberry root
- Lady's Mantle
- Sumac
- Schisandra berry



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### *Rosa rugosa*



### *Rubus villosus*



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### Staghorn sumac *Rhus spp.*



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# *Aphrodisiac Herbs for Sensual and Sexual Empowerment*

**Kimberly Gallagher**

## **Damiana Chocolate Love Liqueur**

Recipe by: Diana DeLuca

### Ingredients:

- 1 ounce damiana dried leaves (dried)
- 2 cups vodka or brandy
- 1 ½ cups water
- 1 cup honey
- Dash of vanilla extract
- Rose water, to taste
- ½ cup chocolate syrup (See Chocolate Body Drizzle recipe below)
- 2-3 drops almond extract

### Preparation:

1. Soak the damiana leaves in the vodka or brandy for 5 days in a jar on your kitchen counter.
2. Strain, reserving the liquid in a bottle and leaves in a separate jar.
3. Soak the alcohol-drenched leaves in water for three days.
4. Strain and reserve liquid. (Compost the leaves.)
5. Gently warm the water extract over low heat, and dissolve the honey in it.
6. Remove the pan from the heat, then add the alcohol extract and stir well.
7. Pour the liquid into a clean bottle, and add a dash of vanilla and a touch of rose water for flavor.
8. Let it mellow for one month or longer; it gets smoother with age.
9. To each cup of damiana liqueur, add ½ cup of chocolate syrup, 2-3 drops of almond extract and a touch more rose water.

Yield: Approximately 4 1/2 cups Love Liqueur. Store in refrigerator for one month.

Note: You can store the alcohol and water extracts in a cool dark place for multiple years, so you may want to make the liqueur in small batches.

## **Chocolate Body Drizzle**

### Ingredients:

- ½ cup water
- ½ cup cocoa powder
- ½ cup honey
- 1 teaspoon vanilla extract
- Pinch of salt
- 1/4 cup full-fat coconut milk

**Preparation:**

1. Combine ingredients except coconut milk in a saucepan.
2. Bring the mixture to a boil and simmer, whisking constantly for 5 minutes.
3. Remove the saucepan from heat.
4. Stir in the coconut milk.
5. Store in refrigerator for up to 2 weeks.

Yield: approximately 1 ½ cups

**Schisandra Mocha Truffles**

Recipe by: Hanna Nicole

**Ingredients:**

- ¼ cup dried schisandra berries
- 8 ounces plain dark chocolate (60-70%)
- 8 ounces plain dark chocolate (80-90%)
- 1 single serving packet of instant coffee (caffeinated or decaf)
- ⅔ cup full-fat coconut milk
- 2 tablespoons coconut oil
- ½ cup cacao powder
- ¼ cup schisandra berries
- Pinch salt
- ½ teaspoon cinnamon
- Cinnamon, coarse salt, or shaved chocolate for sprinkling (optional)

**Preparation:**

1. Soak the dried schisandra berries for 6 hours or overnight.
2. Strain well and smash the fruit with the back of a spoon to remove as many of the seeds as you have the patience to. (This is an optional step that creates a smoother center)  
Place mashed berries in a strainer and press to remove as much moisture as possible. Set aside.
3. Chop the 8 ounces of dark (60-70%) chocolate into pea-sized pieces and place it in a bowl with the instant coffee.
4. In a heavy bottomed pot, heat the coconut milk until it just begins to boil.
5. Pour coconut milk over the coffee and chocolate. Let the hot milk melt the chocolate, and when the chocolate is silky enough, whisk it all with a fork until smooth.
6. Mix in mashed schisandra berries, cinnamon, and salt with a fork until well combined.
7. Place this mixture in the fridge for an 1-2 hours until creamy and solid.
8. Put cacao powder into a bowl.
9. Pull your creamy chocolate mixture out of the fridge and, using a mini ice cream scoop or spoon, create a small bite-sized ball by rolling it briefly between your palms.
10. Roll each ball in the cacao powder until lightly dusted. Transfer these onto a parchment-covered tray or plate and put it in the freezer.

11. While the truffle centers are firming in the freezer, melt 8 oz of the darker chocolate with the coconut oil in a small pot. Whisk until well combined.
12. When this chocolate is silky and loose, remove it from heat, before it sticks to the bottom. Set this chocolate to the side and let it cool on the counter for 5-10 minutes, stirring occasionally, until thick but runny.
13. Pull your truffle centers from the freezer. Dip the truffle centers into the warm chocolate using 2 small spoons for a thick coating and set them back down on the parchment tray.
14. Sprinkle the top with a little cinnamon, coarse salt, or shaved chocolate, for aesthetics, and transfer into the refrigerator to set.
15. These truffles will take up to 10 minutes in the refrigerator to firmly set. You can test them by lightly touching their outer shell for solidity.
16. Store the truffles in refrigerator (for up to one month) to prevent melting.
17. Enjoy!

### **Schisandra** (*Schisandra chinensis*)

Each bite of schisandra berry is a taste sensation that brings us awake and alive to the present moment. The Chinese name, wu wei zi, means five-flavored fruit. Schisandra has sweet and sour flavors in the peel and pulp, along with acrid, bitter, and salty flavors in the seeds, so each bite of berry has all five tastes! Schisandra strengthens, enlivens and energizes us so that we are ready to relate in powerful ways.

**Aphrodisiac Actions:** adaptogen, cardiogenic, cardioprotective, brain tonic, emotionally uplifting, endocrine system tonic, energy building, energizing, ergogenic, nerve, neuroprotective, reproductive system tonic, restorative, soothing and healing for skin

**Other actions:** antioxidant, astringent, hepatoprotective (protects liver), immune tonic

**Energetics:** warming, drying **Tastes:** sweet, sour, salty, pungent, bitter

**Notable Aphrodisiac Constituents:** Lignans such as Schisandrin A and Gomisin A, Vitamin C

**Dosage Suggestions:** 1/2 cup tea or a dropperful of tincture three times daily.

**Special Considerations:**

- í Avoid schisandra during pregnancy as it may stimulate uterine contractions.
- í Large doses may cause appetite loss.
- í Some people experience GERD or heartburn when taking schisandra; if this happens, reduce dose or stop taking it altogether.
- í Schisandra is metabolized by the liver and may interact with certain pharmaceutical drugs including tacrolimus (immunosuppressant), talinlolol (beta blocker), and warfarin (blood thinner)



## **Cacao** **(*Theobroma Cacao*)**

“Food of the Gods.” This is the translation for cacao’s genus name, *Theobroma*. As thick, rich, creamy chocolate, cacao becomes an absolute delight for our senses. If you are a chocolate lover, like me, just the smell of chocolate can be intoxicating. The dark, creamy smoothness of melted chocolate or seeing it baked into or drizzled on treats is a feast for our eyes. And the taste, so utterly, irresistibly delicious...

**Aphrodisiac Actions:** cardioprotective, energizing, nervine, neuroprotective, nutritive

**Other actions:** antioxidant, inflammatory modulator

**Energetics:** warming, moistening                      **Tastes:** bitter

**Notable Aphrodisiac Constituents:** anandamides, calcium, caffeine, flavonoids, phenylethylamine, phosphorus, potassium, magnesium, theobromine

**Dosage Suggestions:** 2.5 grams of high-flavanoid cacao powder or 10 grams of high-flavanoid dark chocolate per day.

**Special Considerations:** Cacao may lead to insomnia, nervousness, or anxiousness in some people due to its stimulating effects.

## **Rose** **(*Rosa spp., R. canina, R. rugosa, R. multiflora, R. nutkana*)**

I love roses. Their intoxicating scent is one of my absolute favorite things about life on earth. I love their delicate beauty and the softness of their petals.

Roses have been seducing humans for thousands of years, stimulating our senses in powerful ways. We cultivate them for their beauty and gift them to one another to express our love and affection.

In her book *The Sexual Herbal*, Brigitte Mars calls roses the “supreme heart opener” and shares that “the open rose is a symbol for the opening heart and vulva.”

**Aphrodisiac Actions:** aromatic, emotionally uplifting, nervine, nutritive, reproductive system tonic, restorative, soothing and healing for skin

**Hips:** heart and circulatory system tonic, hormone regulator, nutritive

**Other actions:** analgesic, anti-inflammatory, antioxidant, astringent

**Energetics:** cooling, drying                      **Tastes:** sweet, sour

**Notable Aphrodisiac Constituents:** volatile oils, flavonoids, citronellol and geraniol

Hips: Vitamin C

**Dosage Suggestions:** rose is a nourishing herb; both petals and hips are safe to consume as you would any other healthy food.

**Special Considerations:**

- Avoid using roses that have been sprayed with pesticides, including those from florist shops.
- Cheap rose essential oils are likely diluted or adulterated. It takes a huge quantity of roses to make a single ounce of essential oil, and it can cost hundreds of dollars an ounce. Rose Otto which is rose essential oil diluted in good quality jojoba oil can be a reasonably priced, high quality alternative.

**Damiana**

*(Turnera diffusa syn. T. aphrodisiaca)*

I fell in love with damiana the first time I drank a cup of damiana and rose petal tea. Each time I have engaged with damiana, this herb has quickly relaxed my mind and brought me into arousal and sensation. I call on damiana when I am with a partner I love and trust and want to surrender into a place of deep fulfillment.

**Aphrodisiac Actions:** antidepressant, aromatic, hormone balancing, energizing, nervine, restorative

**Other actions:** astringent, diuretic, emmenagogue (stimulates menstrual flow)

**Energetics:** warm, dry      **Tastes:** bitter, pungent

**Notable Aphrodisiac Constituents:** apigenin, flavonoids, volatile oils

**Dosage Suggestions:** For strengthening and anti-anxiety effects try 15 drops of tincture 3 times per day or a cup or two of tea (2 teaspoons leaf per cup of water steeped for 20 minutes) per day for a limited period of time.

**Special Considerations:**

- Avoid during pregnancy or nursing, if you have anemia, a urinary tract infection, or hypertension.
- Use with caution if diabetic as it can drop your blood sugar level.
- Long term use may interfere with body's assimilation of iron.
- Large doses can be laxative and may cause insomnia and headaches.

**Practical Tips for Integrating Herbs into Your Family's Diet**  
**Kimberly Gallagher**

**Infusion Recipe**

1. Pour one quart of boiling water over one ounce of a dried, nourishing herb (i.e., oat straw, nettle, red clover, red raspberry, or linden).
2. Steep for at least 4 hours.
3. Drink within 24 hours. (At room temperature, heated, or over ice.)

## Herbal Vinegar Recipe

1. Fill a jar with a chopped, fresh herb of your choice (or fill ½ full with dried herb). Some herb options: whole dandelion plants, borage flowers, nasturtium flowers, or cherry blossoms.
2. Strain, composting the herbs and reserving the liquid.
3. Pour apple cider vinegar over the herb to fill the jar.
4. Stir, and push the plant material down so vinegar covers it.
5. Cap jar with a plastic lid or metal lid with plastic barrier (vinegar will corrode metal).
6. Let sit for 6 weeks, stirring daily for at least the first week.
7. Strain, composting the herbs and reserving the liquid.
8. Store in capped jar at room temperature for several months.
9. Mix into homemade salad dressings or other recipes calling for vinegar.

## Honey Mustard Salad Dressing

Whisk these ingredients together in a small bowl:

- ¼ cup herbal vinegar
- ½ cup olive oil
- 1 Tablespoon honey
- 1 Tablespoon dijon mustard

Yield: approximately ¾ cup.

Store in refrigerator for a month. Bring to room temperature before serving.

## Kale Chips

Dressing Ingredients:

- ¼ cup olive oil
- 1 Tablespoon apple cider vinegar
- 1 teaspoon lemon juice
- 1 teaspoon salt

Dressing Preparation:

1. Mix these ingredients together in a small jar.
2. You'll need about 1 tablespoon for the chips - see below. Store extra in a capped jar in the fridge.
3. Bring to room temperature before drizzling on kale to make chips.

Chips Preparation:

1. Rinse one bunch of kale and cut into chip-size pieces, removing stems.

2. Dry kale pieces thoroughly (this is the key to getting crispy chips).
3. Drizzle a tablespoon of the dressing over the kale and toss to coat the chips with the dressing.
4. Lay kale pieces out in a single layer on a cookie sheet.
5. Bake in a 300 degree oven for 20 to 30 minutes until the kale edges are just beginning to brown.

## **Basic Broth Recipe**

### Ingredients:

- 1 whole chicken, or the bones from a cooked chicken, or vegetable stems and pieces to fill ½ a large pot. (It's great to add organ meat and even chicken feet as well.)
- ½ cup dried burdock, dandelion, and astragalus roots (Can add hawthorn berries and other herbs also.)
- 5 cloves garlic
- ¾ cup of seaweed
- 1 tablespoon apple cider vinegar

### Preparation:

1. Put ingredients in a large cooking pot, and fill the pot ¾ full with water
2. Bring to boil and then turn down the heat to simmer. Simmer for 8 hours.
3. Strain and store liquid for up to a month in a capped jar in refrigerator.

Yield: approximately 1 ½ gallons broth

## **Seaweed Sprinkle Recipe**

Mix these ingredients together and sprinkle on your morning eggs or other dishes

- 1 ½ cup toasted and ground up sesame seeds
- ½ cup dried, granulated kelp
- ½ cup dried nettle leaves

Yield: Approximately 2 ½ cups. Store in capped jar on your spice rack for up to one year.

## **Basic Pesto Recipe**

Ingredients:

- 2 cups chopped basil (or substitute chickweed, dandelion leaf, nettle, or another favorite green herb)
- ½ cup olive oil
- ½ cup parmesan cheese
- 2 cloves garlic
- 3 Tablespoons sesame seeds
- ¼ teaspoon salt

Preparation:

1. Place ingredients in blender and blend until smooth.

Yield: Approximately 1 ½ cup finished pesto. Store in capped jar in refrigerator up to one month.

## **Elderflower Tea Recipe**

- 1 part elderflower
- 1 part yarrow
- ½ part mint
- ½ part dried rose hips

Preparation:

1. Use dried herbs, mix up a big batch to have on hand especially for hot, restless fevers. Store in a capped jar out of direct sunlight for up to one year.
2. Steep ½ cup of mixture in 1 pint of water for 30 minutes.
3. Strain reserving the liquid, composting the plant matter.

Yield: approximately 1 ½ cups. Drink immediately.

## **What is Healthy Sexuality and How Can Herbs Support It?** **Kimberly Gallagher**

### **Elements of Healthy Sexuality:**

- Healthy libido
- General foundation of health
- Authenticity
- Consent
- Attunement
- Pride in your sensual / sexual nature

### **Aphrodisiac Recipes to Support a General Foundation of Health**

#### **Golden Oat Infusion**

##### Ingredients:

- 1 ounce of oatstraw (or a combination of oatstraw and oat tops)
- 1 quart of water

##### Preparation:

1. Put oatstraw (and tops) into a quart jar.
2. Pour boiling water over the oats to fill the jar and cap with a lid.
3. Let steep for at least 4 hours and not more than 12 hours.
4. Strain, reserving liquid and composting the oats.
5. Drink iced, warmed, or at room temperature, depending on your preference. (I like mine iced!)

Yield: Approximately 1 quart. Store in capped jar in refrigerator for up to one week.

#### **Ashwamacamocha Shake**

##### Root Blend Ingredients:

(makes enough powder for 7 shakes)

- $\frac{3}{4}$  ounce ashwaghandha root powder
- $\frac{3}{4}$  ounce roasted dandelion root powder
- $\frac{3}{4}$  ounce beetroot powder
- 1 ounce maca root powder
- 1 ounce cacao powder

##### Preparation:

1. Put the powdered ingredients in a mason jar with lid and shake it really well. This is your mix for the week.

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### Shake Ingredients:

- 8 ounces crushed ice
- 4 ounces of your favorite creamy beverage (milk, coconut milk, etc.)
- 1 banana
- 3 tablespoons (or one, 3 ounce scoop) Root Blend

### Preparation:

1. Blend shake ingredients with 8 ounces of water in a blender or in a mason jar with a hand blender.
2. Pour the shake into your favorite glass and Enjoy!\

### **Autumn Blush Cordial**

### Ingredients:

- 1 teaspoon minced fresh ginger
- 3 crushed cardamom pods
- 5 cherries (can be fresh or frozen, sweet or tart)
- 2 teaspoons cacao nibs
- 2 tablespoons dried rose petals
- 1 vanilla bean cut in half lengthwise
- 1 cinnamon stick
- Zest from one lemon
- 1 sweet apple, coarsely chopped
- 1/3 cup pomegranate seeds (optional)
- 1/2 cup hawthorn berries (fresh or dried)
- 2 tablespoons dried hibiscus petals
- 1/2 cup honey (or to taste)
- Approximately 4 cups brandy

### Preparation:

1. Place all of the spices and fruit in a quart-sized jar. This cordial is very amenable to substitutions, so enjoy experimenting.
2. Add the honey and then fill the jar with brandy.
3. Stir and be sure all the ingredients are completely covered with liquid.
4. Infuse this for 4 weeks on your kitchen counter, stirring or shaking daily for at least the first week.
5. Strain and enjoy in small, regular quantities (a nightly ounce for a month is nice).

Yield: 1 pint of cordial. Store in capped jar out of direct sunlight for up to one year.

## Love's Touch Massage Oil

### Ingredients:

- 1 cup finely chopped fresh (or ½ cup dried) rose petals
- 1 cup almond oil
- 5-10 drops of Rose Otto (optional — for added scent)

### Preparation:

We will be making this oil in a slow cooker. You will need a pot or jar that will fit inside the crockpot without touching the sides. I like to make mine using the top of my double boiler. It fits perfectly into my crock pot without touching the sides or bottom.

1. Put rose petals and oil in the top of a double boiler or in a jar. If using dried roses, cover with a lid. If using fresh rose petals, leave uncovered or cover with cheesecloth.
2. Place a small folded cloth or towel on the bottom of your crock pot slow cooker.
3. Place the pan with the oil on top of the towel.
4. Put enough water in the crock pot to reach 1/4 way up the side of the pot or jar.
5. Set slow cooker to warm and leave the crock pot lid off.
6. Allow the oil to infuse on warm for 48 hours, refilling water as needed. (Be sure to fill the water up before going to bed and then first thing in the morning.)
7. Using a fine mesh strainer, strain petals from oil, reserving the oil and composting the petals.
8. Store in easy-pour jar, and use the oil within 3 months.

## Rose Honey mask

### Ingredients:

- ¼ cup dried rose petals (1 tablespoon rose petal powder)
- 2 tablespoons honey

### Preparation:

1. Use a coffee grinder to grind rose petals into a fine powder.
2. Add honey to a small pot and heat gently over low heat.
3. Add powdered rose to the warm honey and stir together.
4. Remove from heat and transfer the mixture to a small dish.
5. Use your fingers to apply the mixture to your face. Leave it on for 10-20 minutes.
6. To remove the mask, gently wipe your face with a warm washcloth.



## **Aphrodisiac Recipes to Support Authenticity**

### **Five Springs Tea**

#### Ingredients:

- 1 ounce schisandra berries
- 1 quart of water

#### Preparation:

1. Put berries in a quart jar.
2. Fill jar with cool water.
3. Infuse in the refrigerator for at least 2 hours (more time gives a stronger flavor).
4. Strain and enjoy!

Yield: Approximately one quart of tea. Store in capped jar in refrigerator for up to one week.

### **Kava Coconut Creamer**

Recipe by: Hanna Nicole

#### Ingredients:

- 1/4 cup powdered kava root
- 1 can full-fat coconut milk

#### Preparation:

1. Place 1/4 cup of kava powder into a muslin bag.
2. Place the bag in a large bowl along with 1 can of coconut milk plus 1/2 can of water.
3. Knead the bag for 20 minutes or more, kneading your intention into the milk as it turns cloudy with kava goodness.
4. Compost the kava powder and clean the bag.
5. Pour yourself a cup of tea and stir in 1-2 tablespoons of the kava creamer.
6. Add honey to taste.

Yield: Approximately 2 cups creamer. Store in capped jar in refrigerator for up to 2 weeks.

## **Aphrodisiac Recipes to Support Consent**

### **Love's Touch Massage Oil (see above)**

### **Seda Blanca Bath**

Ingredients:

- 1 cup rolled oats

Preparation:

1. Fill a muslin bag with the oats.
2. Draw a bath (or step into a shower) taking the bag of oats into the water with you.
3. As you soak, squeeze the bag and enjoy the silky smooth, milky texture that the oats add to the water. You can also rub the bag along your skin to feel this silkiness even more directly.

### **Grounding and Moving Tea**

Ingredients:

- 1 Tablespoon dried eleuthero root
- 1 tablespoon fresh ginger root
- 1 teaspoon dried schisandra berries

Preparation:

1. Place the ingredients and 2 cups water in a small saucepan.
2. Bring the water to boil.
3. Turn the heat to low and simmer for 20 minutes.
4. Strain and drink slowly, letting the eleuthero ground you while the ginger and schisandra get your energy moving so you can release it.
5. Run or dance - move your body - to release the energy. Allow yourself to release with sound as well.

## **Aphrodisiac Recipes to Support Attunement**

### **Aphrodi-tea**

Ingredients:

- 1 tablespoon dried tulsi leaf
- 2 tablespoons dried rose petals
- Honey, to taste

Preparation:

1. Pour 1 ½ cups boiling water over tulsi and rose petals (loose or using mesh tea strainer).
2. Cover and steep 10 minutes.
3. Strain herbs from hot tea.
4. Add honey to taste and enjoy!

## **Ceremonial Cacao**

Ingredients:

- 3 ½ tablespoons ceremonial grade cacao
- Honey, cinnamon, and cayenne, to taste (optional)

Preparation:

1. Shave cacao into small pieces with knife or blender.
2. Bring 1 cup of water to near boiling. (Do not overheat because it will cause the oils in the cacao to separate.)
3. Put the cacao in a blender and pour hot water over the cacao. Blend until fully melted and integrated.
4. Add honey, cinnamon, and/or cayenne to taste.
5. Pour into your favorite mug and drink slowly, savoring each mouthful.

## **Aphrodisiac Recipes to Support Pride in Your Sensual /Sexual Nature**

### **Rose Honey**

Ingredients:

- Enough fresh rose petals to loosely fill an 8-ounce jar
- 8 ounces honey

Preparation:

1. Chop fresh rose petals into small pieces.
2. Fill an 8-ounce jar (loosely packed) with fresh rose petals pieces.
3. Pour enough honey over the petals to fill the jar.
4. Stir to release air bubbles (I like to use a wooden chopstick to stir).
5. Add more honey if needed to fill jar. Cap with a lid.
6. Let sit on your kitchen counter for 2 weeks, stirring once or twice a day at least for the first week.
7. Enjoy as you would plain honey (the rose petals are edible, so no need to strain them out).

## **Cardamom Chocolate Mousse Torte**

Recipe by: Rosalee de la Forêt

### Ingredients:

- 8 ounces bittersweet chocolate
- 1/2 cup coconut oil
- 1/2 cup honey
- 1/2 cup cocoa powder
- 1 (13.5oz) can coconut milk
- 2 eggs
- 1 tablespoon cardamom powder
- 2 tablespoons vanilla extract
- sliced almonds and cocoa powder for the topping

### Preparation:

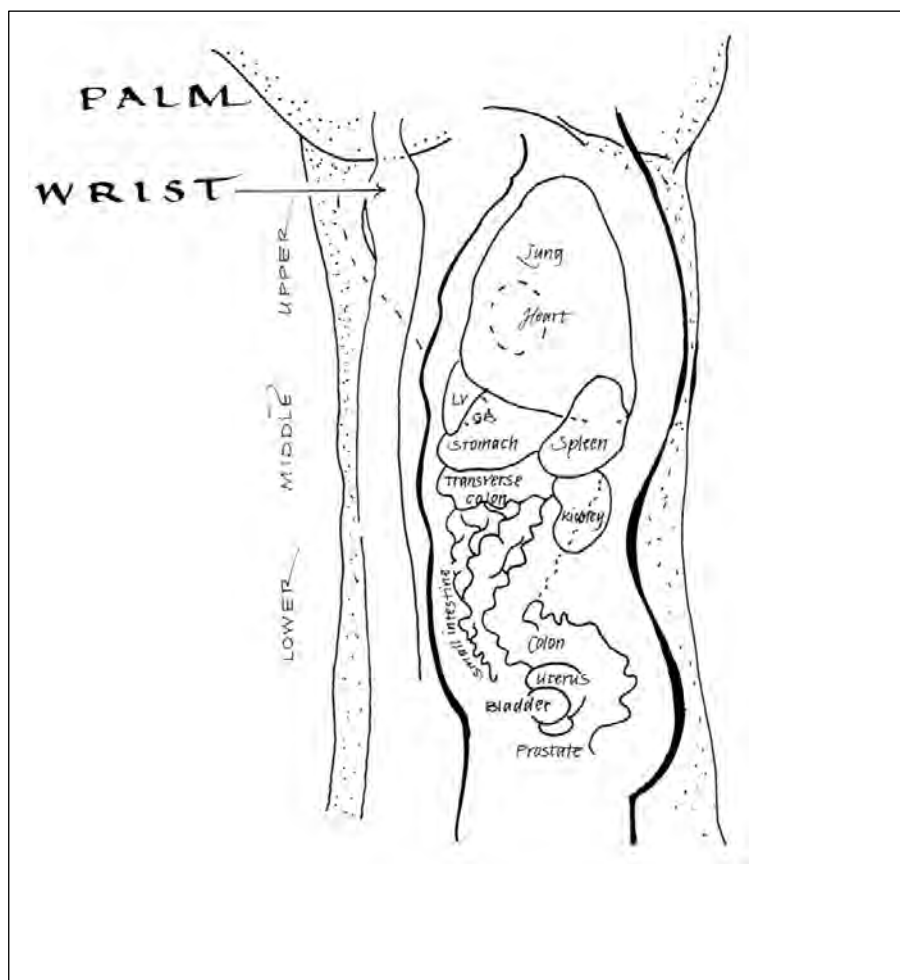
1. Preheat oven to 350 degrees F.
2. Melt chocolate and coconut oil in top of a double boiler.
3. Remove from the heat. Add the honey and cocoa powder. Mix well.
4. Add coconut milk and mix well.
5. Whisk eggs in small bowl.
6. Add whisked eggs, cardamom, and vanilla extract to chocolate mixture. Mix well.
7. Pour mixture into slightly oiled 9" pie pan.
8. Bake for 30 minutes.
9. When the torte is done, the top should be cracked but the middle should still be soft and wiggly.
10. Cool overnight in the refrigerator to allow to set.
11. Sprinkle with slivered almonds and cocoa powder before serving.

## *Drop-Pulse Testing*

**Margi Flint RH**

I have studied pulse with many teachers over these past decades. The information was daunting and unapproachable. When I sat at the knee of Matthew Wood the light dawned. Then William Morris giggled himself into my life. Experiencing the pulse with your teacher present is invaluable. Kay Parent is a great teacher for those of you on the U.S. East Coast. Sit at the knee of which ever teacher you choose. Meet with classmates and practice together.

Drop pulse testing is a great way to narrow down herbal choices and find the ones most suited to the individual. Clients like this testing, as they are directly involved in the process. Your client joins their energies with the herbs, in tincture, dried, or fresh form, to sense a response. The client learns to experience the power of herbs, and the practitioner learns to relax the mind and let this process unfold.



When holding your own wrist up, the body is reflected from the lungs to reproductive organs.

### The Experience of Pulse

First ask permission to touch the body. If you are a beginner, just find a pulse and experience it. Notice what changes when the herbs are applied.

Feel the palm and softly stroke up the inner arm. Compare palm to arm.

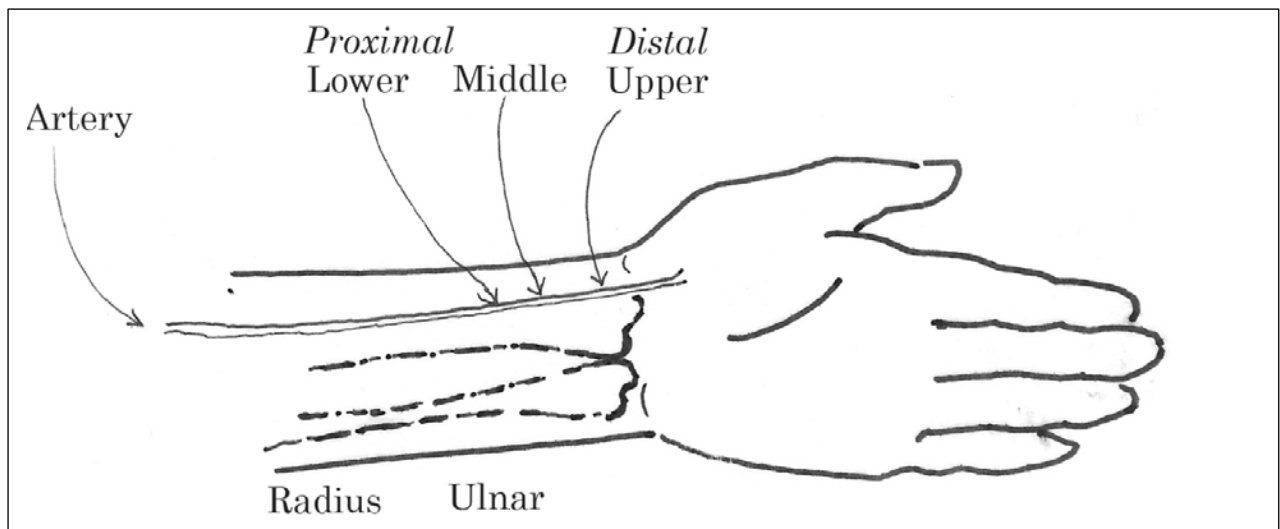
Find the pulse.

There is a gully between the tendons.

The pointer finger is first toward the thumb on the radial side. On the radial, or thumb side, line your pointer, long and heart finger evenly into the gully with “a breath” between each. Sit holding the wrist with fingertips in the gully between tendons on the radial side. Keep the finger tips a breath apart. Some are more comfortable simply laying the pointer, long and ring fingers in the gully. Note pulses on both wrists. Feel with fingertip pads, not tips. Light touch is surface. Pressing harder reveals the deep pulses.



If at a table, sit opposite laying angled fingers into the gully of each wrist.



If you are more advanced, you can look to various pulse positions and note the changes. Another choice is to hold the elbow with your hand, cradling the relaxed arm of the person in the crook of your arm. Others cup the wrist, with fingers curled around it finger pads in the gully.

The ideal pulse has root, runs from side to side beneath fingers deep, has stomach Chi, has Shen: stability of rate, amplitude and is evenly distributed between positions. When the pulse is weak build the essence. When the pulse changes, is weak, feeble, or absent supplement the essence. When forceful eliminate and purge. When the pulse has tension, is wiry and tense like a guitar string, treat the nervous system. When nothing is there, when the interstitial tissue is wet “cotton” between the skin and surface of the vessel, look to hypothyroid, lack of movement, depression. When it is ropey it indicates atherosclerosis.

### Pulse Position Correspondences

Family History			Person Now		
<b>LEFT WRIST</b>			<b>RIGHT WRIST</b>		
<b>SURFACE</b>		<b>DEEP</b>	<b>SURFACE</b>		<b>DEEP</b>
small intestine	pointer	heart	large intestine	pointer	lung
gallbladder	Long finger	liver	stomach	Long finger	spleen
bladder	Ring finger	kidney	kindey yang	Ring finger	pericardium triple burner
		<b>MORE</b>	<b>SIMPLY</b>		
	<b>LEFT WRIST</b>			<b>RIGHT WRIST</b>	
	heart		lungs		
	liver		stomach		
	kidney water		kidney fire		
	Weak = inherited constitution		Weak = acquired constitution, vitality, diet, exercise		

## Observations

Using Matthew Wood's pulse testing for herbs offers client, practitioner and herb an adventurous, collaborative way of working together. It allows the herbs to speak directly with the body and verify or negate what we have intuited or thought. A humbling moment!

Which finger is hit by the pulse first? This is the dominant dosha.

How does the overall rhythm feel?

Like a swan? Vata

Like the tip of your nose? Pitta.

Nonexistent, so deep? Kapha

Is the pulse near the surface? Very deep? Missing at one finger?

Is it pounding? Erratic? Fast? Slow?

Are the pulses even on both wrists?

What organ system or condition is observed? This will determine the herbs to be tested.

Have your tinctures or herbs lined up. Quiet in the room.

Open the bottle a comfortable distance from the client. (The herbs begin working as soon as the scent reaches the olfactory bulb)

Do not allow the dropper to touch the skin.

Apply a drop of tincture and swipe horizontally across the wrist. Each application in a new area. Do not allow the name of the herb to be read or seen.

## Observe the changes in the pulse

Make sure it is quiet, everyone watching, the client being first to share observations of changes.

Look to the tongue for moisture and color

Eyes for more brightness, moisture changes

Beneath eyes for color and edema changes

Skin moisture, temperature, and tone of face, palms, and arms

Does breathing shift

Posture changes

Laughter, tears, and so much more.

You can record your observations and compare the next time they are seen. One herb will speak clearly to you! This is a simple way to choose between herbs. Have fun. Margi.



## Examples of Herbs to Test

Have ready tinctures in half ounce dropper bottles, & some dried herbs. No limits!

Note the visual indications on the subject to determine which issue might be improved, 2 good choices and one irritant just so you can experience a bad choice!

Lack of Intrinsic Factor

Methyl cobalamin B spray, Monarda fistulosa, Gotu Kola.

Liver

Dandelion root, Burdock root, Red clover

Heart

Hawthorn, Holy basil, Motherwort, Black Haw

Mind

Lion's mane, Bacopa, Ginkgo

Immune Health

Reishi, Elder Berry, Echinacea

Kidneys

Marshmallow root, Fenugreek seeds, Schizandra

Depression or Insomnia

Mimosa, Passionflower, Milky Oats (one as a glycerite, one in alcohol)

Menopause

Blue vervain, Black Cohosh, White sage, Vitex

### **Potential irritants:**

Werewolf root

Black Cohosh

Blue Cohosh

Raw white sugar

Ginkgo

Panax Red Ginseng

Books to refer to:

Secrets of the Pulse Vasant Ladd

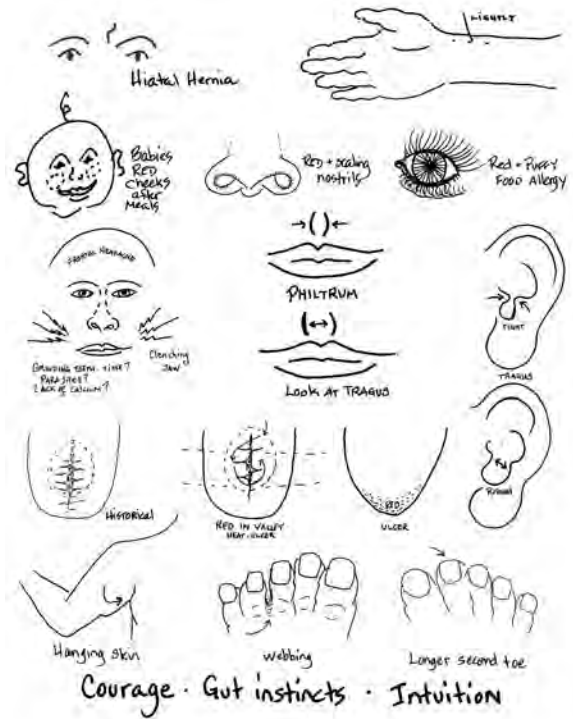
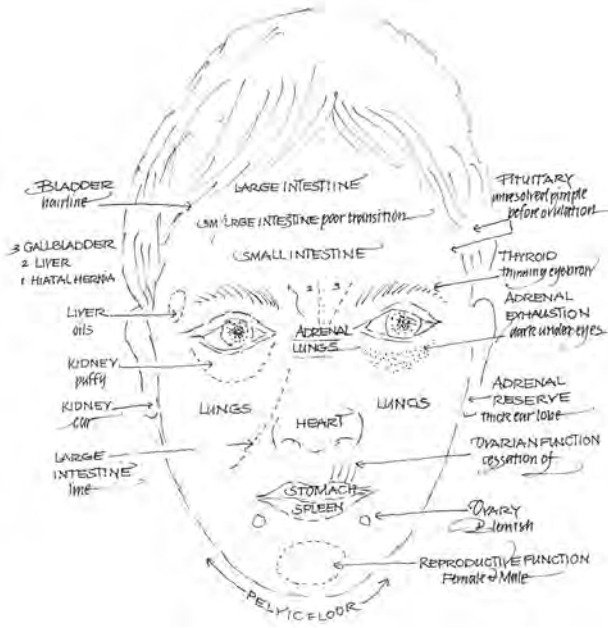
Li Shi-Zhien's Pulse Diagnosis Li-Qinh and William Morris

The Practicing Herbalist IV Margi Flint

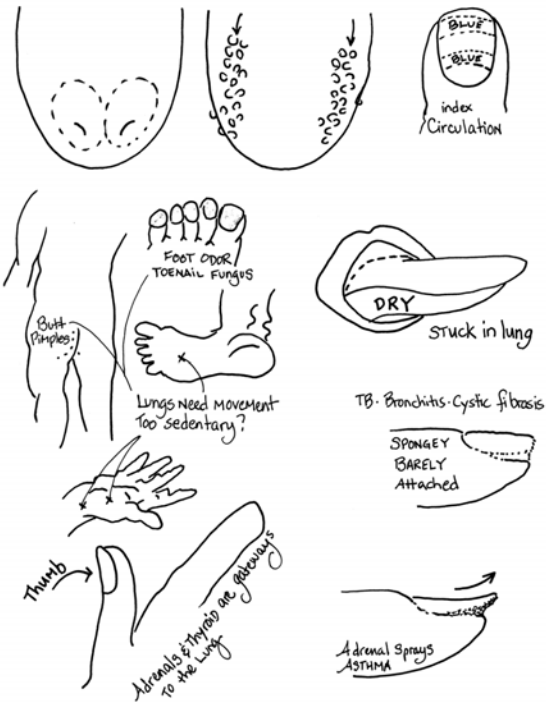
The Complete Textbook of Holistic Self Diagnosis LLaila O. Afrika

“One of the aspects I think is really important is that anybody can do this. You do not need years of TCM training. Anybody can tune in and feel a pulse and feel a pulse change. It is great if people know more, or want to study more, but an absolute neophyte, like me for example, can experience this, without knowing which pulse is which, or what it might point to in medical/TCM/whatever terms. This is the beauty and absolute genius of this method, for client and practitioner. Everybody learns to experience plant magic.”  
Stratton Semmes.

Indication Generalities. Margi Flint



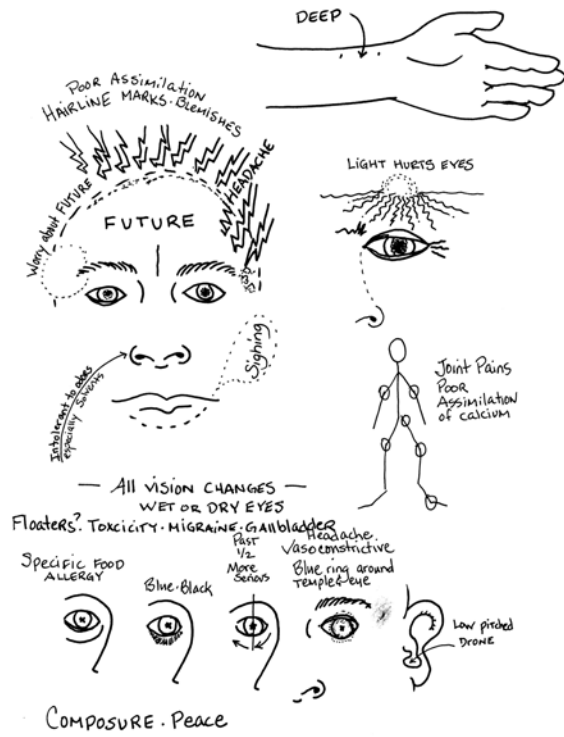
STOMACH 7-11 AM  
Instincts, intuition, n courage



LUNGS 3-5 am



SPLEEN 9-11 am worry about work  
Porosity and membranes  
Sheets of pimples

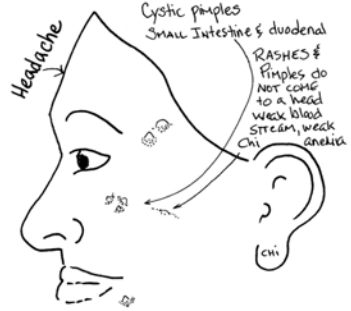


**LIVER.** 1-3 am when the bars close  
Anger Rage

1 1/2 HOURS AFTER  
EATING feel tired  
1-3 P.M. TIRED

SMALL  
SCALING  
RED  
PIMPLES = FOOD REACTION

Avoid: SPICY  
SWEET  
COFFEE  
CITRUS  
GINGER



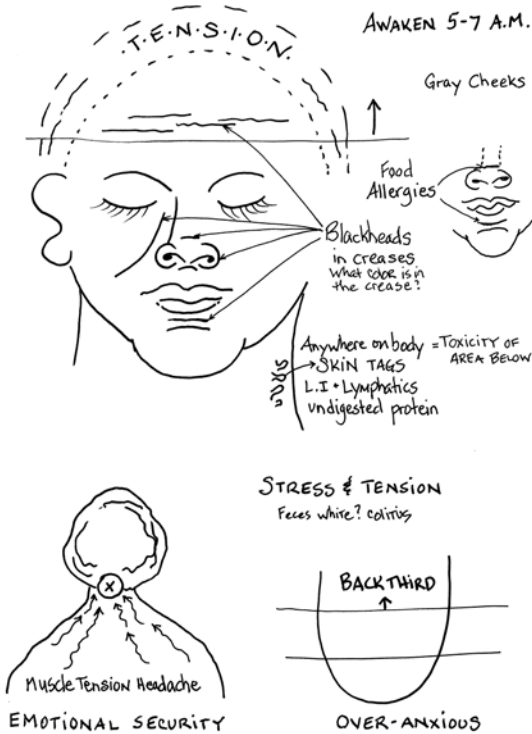
Porosity of Membranes

The effective intake of  
NUTRITION

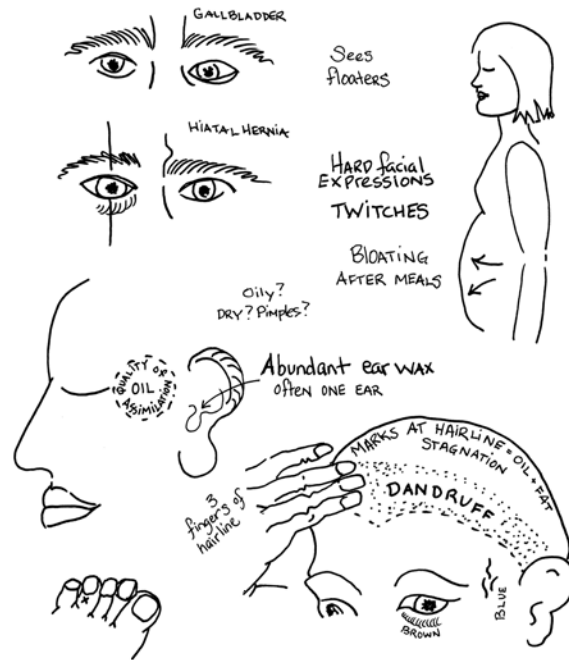


EXCESS EXCITEMENT

**SMALL INTESTINE** 1-3 pm assimilation time  
Overwhelmed, Enthusiasm, too much thinking



**LARGE INTESTINE.** Awaken 5-7 am  
Flat nails, big toe, Anger/Rage



Boundary Issues

FEELING GALLED • Repressed burning anger • Indecision

**GALLBLADDER.**

**KIDNEY · REPRODUCTIVE**  
**RED**  
**ITCHY**

Skin rashes eczema  
 K + LIVER

itchy

Check top for water  
 Retention

Weak WRISTS  
 Ankles  
 Hormonal  
 Letdown

BEHIND EARS  
 HEADACHES  
 KIDNEY

GOOD CHI  
 LONG EVILTY

SPINE

Press  
 What points hurt?

Keep ears &  
 KIDNEYS COVERED

- EAT -  
 BEANS  
 PEAS  
 ARTICHOKE

Left foot

WATER ELEMENT · Will & POWER · WEAPINESS  
 KIDNEYS cocktail hour 5 - 7 pm 3-5 bladder

5-7 P.M.  
 "KIDNEY DOLDRUMS"

Pain  
 Jolts + loud  
 NOISE BOTHER

TRAVELING joint pains

- URINE -  
 Concentrated + Dark color = Dehydration  
 Red = Blood uri. calculi. collagen disease  
 endocarditis look to ureters &  
 Brick RED = URATE crystals  
 Cloudy = puss, infection  
 Frothy = ALBUMIN

chapped lips  
 Dehydration

ANKLES  
 KIDNEY · Bladder  
 REPRODUCTION

Check shirts · tops of hands  
 + skull for edema

KIDNEYS 5 - 7 pm

ENTIRE TONGUE IN GENERAL

STROKE  
 SCAR?

Full? COLOR? STAGNATION

Blue · RED  
 Purple

Withering · Deficient NUTRIENTS  
 Atrophy of HEART

LOW BP or  
 KIDNEY HYPERTEENSION  
 RED CRIST OF EAR

CREASE?  
 DRINK WATER  
 KIDNEYS Regulate  
 BP

MURMUR?

VENOSE VEINS

RED  
 BLUE

cold hands + feet?  
 BPT ULCER · GASTRITIS

INTERFERED BEANS · ELECTRICAL

HEART 9 - 11 when you go to work

DEEP

STORES THE  
 SPIRIT

"Don't go directly to the King"  
 treat other organs first.

STROKE

SCAR RING

BP Red

ROSACEA  
 HEAT in Blood  
 AT

uncomplicated

Sensitivities

LIVER FIRE RISING  
 MORE blood vessels built  
 in LIVER.

Look to quadrant  
 OF HEART  
 LARGER = Valve issue  
 or  
 That quadrant enlarged

ENLARGED HEART

RING FINGER

MITRO VALVE  
 INSUFFICIENCY

Circulation

Circulation  
 Heart congested

LOVE + JOY or lack of. REFLECTION OF LifeStyle.

HEART

# *Rituals of Hope in Ancient Greece*

**Maria Christodoulou**

The concept of hope or ἐλπίς (elpís) in Greek antiquity was a well-practiced ritual related to the desires of individuals and communities for a specific outcome: religious expressions, political expectations, social projections, and erotic desire. Evidence of archaeological remains, historical and medical texts, magical inscriptions, papyri, amulets, and superstitions suggest the prevalence of hope in an ever-changing society consumed with war, plague, politics, and an unknown future; much like life as we experience it today.

This class explores the tools, particularly in relation to the healing power of plants, that the ancient Greeks relied on that helped shape their relationship with the divine and natural worlds.

## **Introduction: Hope**

*Noun:* a feeling of expectation and desire for a particular thing to happen.

*Verb:* to want something to happen, be true, or be the case; to cherish a desire with anticipation.

Rituals were the search for divine benevolence. They were practiced often, in different settings, and for various reasons. Depending on the occasion, these rituals were either performed in community in shared sacred spaces, such as temples, or as a daily ritual among many households.

A major component of rituals was sacrifice, which involved the offering of animals, grains, vegetables, fruits, and honey-cakes - burned on a stone altar. Sacrifice also included libations, a pouring of wine, honey, milk, or olive oil, over the altar or on the ground. The practice of sacrifice was one of the most sacred acts to participate in; “To sacrifice is to perform a sacred act, or to make something sacred, to separate it from the world of men and to give it to the gods” (Pedley 2005, 80). It was believed to have strengthened the link between mortals and immortals. Other sacred acts included dancing, mourning the deceased, the delivery of oracles, divination, and purification.

Hope was inherently woven into these rituals: hope for the future, for abundance, for good health, for fertility, for a good harvest, for dreams to come true. The same desires the ancient Greeks expressed are very much the same we have today.

## **Places & Practices of Rituals in Ancient Greece**

### **1. Temples & Sanctuaries**

*Plants used: Fruits, vegetables, and plant-based libations (olive oil, wine)*

Temples were places of worship and sacrifice to honor and delight the gods and goddesses, to ask for guidance, pray for healing, or give thanks. Temple rituals included animal sacrifices, first-fruit offerings, the singing of hymns and prayers, the preparation of purification, divination or oracle delivery, dream incubation (Asklepion sanctuaries), and votive offerings. Remnants of these marble temples can be visited throughout Greece and other countries in the Mediterranean region and beyond. They serve as a reminder of the power of ritual and prayer to create hope and build strong communities.

Grains, vegetables, fruits, and honey-cakes were burned on the altar as offerings to the gods and goddesses. Each embodied a specific and significant symbolism. A daily ritual was the pouring of wine or olive oil, both highly prized, over the altar or on the ground. Wine was very common, enjoyed regularly with meals (always diluted) and commonly used as medicine infused with herbs. Olive oil was considered “liquid gold” and large jugs of it were the ultimate prize for certain athletic competitions.

- Barley (*Hordeum vulgare*) contained the generative beneficence of Demeter, goddess of agriculture and the harvest. Barley groats were thrown onto the sacrificial flame in her honor.
- Olive (*Olea europaea*), from which olive oil is produced. The tree was sacred to Athena, goddess of wisdom, warfare, and strategy.
- Grape (*Vitis vinifera*), sacred to Dionysus, god of wine and celebration, was made into various wines.
- Frankincense (*Boswellia* spp.), added to the sacrificial flame, used as a purification tool, and used frequently in incense (fumigations) to attract and honor divine powers.

## 2. Sacred Trees & Groves

*Plants used: Valonia oak (Quercus ithaburensis subsp. macrolepis), olive (Olea europaea), palm (Chamaerops humilis), pine (Pinus spp.), cypress (Cupresses sempervirens)*

“The trees won’t teach me anything..” - Socrates in Plato’s *Phaedrus* (370 BCE, 230)

Trees played an important role in Greek religion and medicine. Both the individual tree and groves were charged with the powers of nature and the divine gods and goddesses. Archaeological and literary evidence suggest that sacred groves were used as places of worship, sacrifice, protection, celebration, and as memorial landscapes. These sacred groves, called *alsos*, were often located near temples to complement the holiness of the religious experience. The sacred “simultaneously provokes [in the believer] desire and fear... the fear that is his undoing and the hope that is his vehicle of salvation” (Caillois 1959/2001, 34).

In examples from ancient Greek literary texts, trees and sacred groves were described in various ways, including as places:

- of friendship among people and animals: “... in these groves wild beasts become docile and the deer travel in herds with wolves, and submit to humans’ approach and caressing, and... those animals pursued by dogs, when they seek refuge here, are no longer pursued” (Barnett 2007, 263).
- of honorable settings to worship the deceased: in Homer’s *Iliad*, a hero plants a grove of trees to commemorate a fallen comrade: “a grove of water-loving poplars planted in a circle” (Barnett 2007, 255).
- of holy places deserving of worship: the ancient historian Pausanias describes the story of a myrtle tree that inspired a wandering people to settle where it grew. “They still worship that tree, and gave Artemis the title of Saviour” (*Description of Greece* 3.22.12).

There were many sacred trees and groves with important roles in ancient Greek rituals. Two of the most important trees were the Valonia oak (*Quercus ithaburensis* subsp. *macrolepis*) and olive (*Olea europaea*). Sacred groves were often carefully and deliberately planted and consisted of oak (*Quercus* spp.), palm (*Chamaerops humilis*), pine (*Pinus* spp.), cypress (*Cupresses sempervirens*), plane (*Platanus* spp.), ash (*Fraxinus* spp.), bay (*Laurus nobilis*), olive (*Olea europaea*), or various fruit trees. They were located throughout ancient Greece at rural, suburban, and urban sanctuaries. Although a plethora of references to sacred groves are made in ancient Greek literature, practically no physical evidence survives.

### 3. Private Prayers & Magico-Spiritual Practices

*Plants used: Bay laurel (Laurus nobilis), frankincense (Boswellia spp.), styrax (Styrax officinale), myrrh (Commiphora myrrha), saffron (Crocus sativus), cinquefoil (Potentilla spp.)*

Interwoven into the cultural fabric of society, religion and magic played an important role in daily life, temple rituals, personal practices, and community gatherings. Religion was a guiding communal force and a public centerpiece. Magic, on the other hand, was a private, spiritual experience focusing on personal concerns and needs. Trained in the divine arts, magician practitioners relied upon burnt offerings, incantations, magical items, ingestion of special ingredients, and prayers for divine assistance to perform their craft. Herbalists (*rhizotomoi*) played a role by gathering herbs as an act of worship. They understood that the powers contained in each plant emerged from the divinity within each part collected.

“We have no hope of examining in detail the construction of magical rituals” (Gordon 2008). Magic rituals were complex. Simply, they involved blessings and curses, bestowing upon someone positive energy or negative energy depending on the hoped-for outcome.

Spell for picking a plant:

“I am picking you, such and such plant, with my five-fingered hand. I, NN, and I am bringing you home so that you may work for me for a certain purpose. I adjure you by the undefiled name of the god: if you pay no heed to me, the earth which produced you will no longer be watered as far as you are concerned - ever in life again. Fulfill for me the perfect charm. (*Papyri Graecae Magicae* 4.1716)

Prayer to stay awake for sex:

Write upon the surface of a bay leaf and secretly place it on the head [of the patient], uttering *konkofon brachereon*. (Pseudo-Galen, *Euporista* 2.3)

The Greek and Demotic Magical Papyri are a collection of papyrus scrolls banned or burned starting in late Antiquity, during the rise of Christianity. While the rituals surrounding the magic were lost, the plants remained at the core of medical practice. The papyri were found in Egypt and were written in both ancient Greek and Demotic, a language of ancient Egypt. They include collections of spells and standard magic (binding, divination, and attraction), hymns to the gods, rituals for worship, and temple liturgies. Spells included botanical ingredients and practices on how to harvest these ingredients.

Spells consisted of two main parts:

- *Logos* - names, incantations, figures
- *Praxis* - preparation, ingredients, procedures

The user would enchant certain names and incantations, write down magical symbols and drawings, make a burnt offering, and ingest some of the ingredients, keeping in mind their hoped-for outcome. Every plant, animal, and stone held power (*dynamis*) and this power could be manipulated or relied upon. There was an understanding that natural ingredients, divine forces, and expected outcomes would work in sympathetic correspondence. Types of natural materials used had specific correlations. For example, incenses were used to align with gods and goddesses:

- Kronos, god of time - storax
- Zeus, god of sky - malabathron
- Ares, god of war - kostos
- Helios, sun god - frankincense



- Aphrodite, goddess of love - Indian nard
- Hermes, messenger of the gods - cassia
- Selene, moon goddess - myrrh

The same spell also used 7 flowers to align with 7 stars. The rationale being that nature reflected the powers of the gods and universe.

The practice of magic was an underground practice. Many of these herbal drugs, particularly those with psychoactive properties, were expensive and were considered a luxury and recreational activity. Users needed training to understand the spell and knowledge of dosage was required, as these spell recipes did not include specific amounts of herb or other ingredients. Many of these spells used code names to protect the secrets of magic from the curiosity of the masses. Example include:

- A bone of an ibis: buckthorn
- Tears and hairs of a Hamadryas baboon: dill juice and dill seed
- Blood of Hephaistos (god of fire/metallurgy): wormwood
- Semen of Hermes (messenger of the gods): dill
- Blood of Ares (god of war): purslane
- Semen of Ares: clover
- A Titan's blood: wild lettuce
- From the loins: chamomile

#### 4. Festivals, Competitions, & Ceremonies

*Plants used: Ivy (Hedera helix), olive (Olea europaea), pomegranate (Punica granatum)*

“The thyrsus-bearers are many, but the mystics few” (Plato, *Phaedo* 69c).

The ancient Greeks had a full schedule of public events to attend to. Festivals, religious ceremonies, celebrations, and athletic and literary competitions took place on a fixed schedule. Festivals, for example, were monthly and there were both major and minor festivals, each honoring a god with a distinct schedule of events. While the concept of hope may not have been at the forefront of these events, these gatherings were an opportunity to collectively honor the gods, make sacrifices, sing prayers, and preserve cultural and religious traditions.

In addition to religious festivals, ceremonies for victories, weddings, burials, and other rites of passage and milestones were commonplace. While these practices varied greatly throughout ancient Greece and throughout the thousands of years of the ancient Greek civilization, they were preserved by the steadfast commitment to preserving traditions and to honoring the divine forces around them, with the hope of maintaining such important rituals for prosperity, much like we do today.

Plants embodied divine meaning. There were many plants included in celebratory and ceremonial customs, particularly during processions and woven into wreaths. Wreaths were symbols of glory and triumph, and depending on the occasion, they were made with plants that had specific associations: wreaths of olive at the Panathenaia, of pine at the Isthmia, of laurel at Delphi, of wild olive at Olympia, and of celery at Nemea. Other plants included oak, palm, celery, ivy, lavender, thyme, marjoram, and pomegranate, among others.

In celebrations to honor Dionysus, ivy (*Hedera helix*) was wrapped around wands made from giant fennel stalks, called *thyrsi*. The maenads, the god's female followers ("raving ones"), were known to wave these ivy-wreathed wands during their wild celebrations in the wilderness. The vine was woven into garlands as prizes during festivals honoring Dionysus and on other occasions were worn by his drunk and passionate followers who were celebrants of the god's orgies. As medicine, poets and heavy drinkers wore ivy crowns at parties in the hopes that the god would protect them from hangovers in the morning.

### **Conclusion: Lessons of Hope**

You need to have courage, because tomorrow will be better. While there's life there's hope, and only the dead have none. - Theocritus, 3rd century BCE

These rituals from ancient Greece portray a complex belief system that stretched for thousands of years. Many of the plants in Greek rituals were used in other ancient civilizations, each of which deserve their own in-depth exploration. Today we each have our own seeds of hope nestled in our hearts for the fulfillment of our personal desires. It is my hope that we each carry with us the hope that our ancestors carried - and that pulled them through the difficulties in their own lives.

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## *The Speech of Nature*

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*You can tell I'm a Wolf Medicine because of the leaflet on the end; it's the leader of the pack.*

---Agrimony

Science is considered the source of facts and truth in contemporary culture even though it is based on an editing of human capacities—eliminating imagination, intuition, instinct, and sensation—as it values logic and experiment while denigrating other approaches to knowing. Even reliance on the physical senses is downgraded, as these are prone to faulty observation. The technical name belief in the reality of sensory perception is “naïve realism,” as if one naively believed one’s experience to be true—see French and Phillips, *Naïve Realism, the Slightest Philosophy, and the Slightest Science* (2007). By comparison, science is proudly based on “critical idealism,” i.e., one is critical of experience and “reality” is replaced by an ideal or concept. This is fine as a method for gaining some kind of evidence, but not as the final method for obtaining a well-rounded perspective on reality or life. It cannot possibly lead to the creation of a whole human being, for that would be a person who could with confidence exercise all--or almost all--of these faculties. In order to be truly unbiased participants in the circle of life we need to be able to use the scientific model, but only as one of several tools in our tool box.

The roots of science go back to the invention of logic and the use of the syllogism (“if. . . then. . . .”) Scientific research is based upon this structure: premise, test, conclusion. From this derive the characteristic institutions of the dominant culture: religion (right and wrong), legal and political systems (rational argument), and the scientific experiment. It is also the basis of the paradigm of modern medicine: “evidence-based medicine” (EBM). From these institutions the logical method descends into common speech and---since cognition is formed by language---into the mental fabric of the dominant culture. It is used without self-examination or the realization that any other way of thought and speech could possibly exist.

It is for this reason that I have introduced a chapter where we will use the method of speech and thinking common to ancient, indigenous, and traditional cultures, used in all times and places, before the rise of the rational model. As we will see, this is also how Nature speaks.

There are two layers to this approach. The first is based on direct personal experience. “There’s a rattlesnake by that rock over there.” Instead of a premise and conclusion, the person states their experience, without ornamentation, or judgment. This approach is founded upon the exercise of the physical senses. When one relies on them, one is pretty good with observation and sensation. This is called the “explanatory method” (Stannard, 1967), to the extent that anyone in contemporary culture is even aware of its existence.

Empirical observation and explanation is necessary for survival. Nobody would say, as they walked down a path with a friend: “If rattlesnakes are poisonous, and there is a rattlesnake by that rock over there, then we shouldn’t go over there.”

If we only have observation and explanation, not logical reasoning, then how can we expand our knowledge base? When logical argument is unknown, new ideas and perceptions must be uncovered through a different

approach. The few scholars who have studied this type of speech have identified the major techniques as: inference, analogy, and contrast (Stannard, 1967; Schmidt, 2003). Let's take an example. The ancient Greek philosopher Heraclitus the Obscure was known for this type of speech. He said,

*The road up is the same as the road down.*

This sentence merely states a fact, but it also carries the mind to further associations. It could be a commentary on the rise and fall of a person's life, reputation, relationships, political states, customs, ideas, etc. There is no premise and no conclusion; no right or wrong; no judgement. The sentence merely states a suggestive fact. That means it operates on two levels: as a factual observation and as a metaphor or suggestion of something else the listener will have to puzzle out for themselves.

A word like "road" or "way" is rich in metaphorical applications. We often use them to describe a passage from one place to another: "the road to victory" or "the way to the future." We can even use such words to represent the nature of the traveler: "the way of the peaceful warrior." In ancient tongues a word like this was called a "sign." Later, in herbalism, the word "signature" was used when a plant recalled an organ or disease. Many kidney remedies grow at the edge of the water and the solid land—Horsetail, Gravel Root, Swamp Milkweed.

This second form of thought and speech may be called "analogical," since it is based on comparison. Two different experiences are compared—the kidneys and the environmental niche. As far as I know, there is no name for this form of speech, but "analogical" seems appropriate. When Sir Francis Bacon designed the modern scientific program, he called this way of thinking "analogical" (1960, 1:45, 2: 27). The ancient Greek name for this method was phasis (Stannard, 1967; Schmidt, 2003). I call it the "Speech of Nature," or sometimes, "signatory speech."

The Greeks were there when logic was invented, so they had to have words for both explanatory speech (phasis) and the new approach (logos). Aristotle says that Plato was the first to use the syllogism to extract knowledge and it was from this point on that Western culture became increasingly dominated by logic.<sup>1</sup>

The usual translation for the word phasis is "stuff." Both of these scholars oppose this rendering. The three basic meanings are "appearance," "description," and "phenomena." Schmidt puts these altogether and translates phasis as "allowing the phenomena to speak for itself."

One implication of analogical speech is that it infers the existence of two dimensions: there is an external "reality" of the road and the internal "reality" of the experience of road. This is a very important consideration because logic implies only one level of meaning: the rational outcome. It is linear, starting with the premise and ending with the conclusion, it is materialistic because it does not make one contemplate or wonder. Thus, if we arranged the above observation as a syllogism, we would say:

*If a road goes up, it must also go down*

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1 The book of *Genesis*, which is older than Plato, associates the syllogism with Cain. Because he doesn't give the appropriate offering, which is based on analogical thought, God has to reason with him: "If you do what is right, will you not be accepted?" Several lines later his great-grandson, Lamech, uses the syllogism to excuse himself for murdering a man. The syllogism is consciously understood in *Genesis* as a dangerous tool, several hundred years before it became the foundation of Western culture (Wood, 2021).

Notice how the emphasis has changed. This is not an observation; it is an argument. It forces the listener to agree or disagree. It imposes a right answer and a wrong. Instead of a statement operating on two levels, one merely observational and the other provoking contemplation, we change to a linear cause-and-effect premise/conclusion form of cognition. Instead of encouraging free association, it forces the mind to agree. The perspective is linear, which means that it remains in the same dimension, so to speak—implying a logical and material level only. It encourages a predictable conclusion, instead of opening the imagination. In denying contemplation, there is also a “boring” quality—it is just a fact, not something to ponder on. In the phasic example, the mind was left to wonder what the implications were, or what was intended, or how one could apply the statement.

Instead of encouraging self-determination, freedom of thought, or depth of contemplation, the syllogism forces the listener to accept an outside authority, because one does not arrive at the conclusion through contemplation but through someone else’s argument. This brings the individual into conformity with the authority and the group commanded by the authority. Everyone must “think like everyone else.” This makes us a member of an “us versus them” group; because we have to oppose anyone who disagrees with the conclusion. This is a “colonizing” form of speech, to use the modern term; demanding conformity.

We can characterize the outlines of the kind of culture the syllogism will create. It would tend to have a linear, cause-and-effect, material worldview. It would discourage thought and reflection; indeed, the whole idea of anything other than a rational, material world. Because thought is directed to physicality, exploitation of physical resources will be natural, while independent thinking and the development of internal personal, philosophical, or spiritual life will be seen as a waste of time. Social conformity will be encouraged, and freedom will be based on “correct thinking,” rather than the pursuit of personal, philosophical, or spiritual solutions. Education will pre-suppose a materialist, cause-and-effect, “scientific” basis, outlawing the discussion of spiritual life or “God.” This is what we see in the dominant society of today. Though opposing “colonization,” it is a rigidly conformist culture that demands adherence to logical and material argument.

This colonizing view is so all-encompassing that it becomes impossible for the dominant culture to perceive any other way of thinking or speaking. How do we know this? Because there is no established term for describing the explanatory method; it is not acknowledged as existent—much less legitimate. The tenets of this approach to knowledge are therefore imposed unconsciously on people and cultures, as if it were the rational and right outlook.

I spent the formative cognitive and linguistic years of my life on a remote Indian reservation where English was a second language. To me, the paradigms and assumptions of the dominant culture have never, ever seemed innately true. From this background I also know that the very thought and speech of the dominant society is colonizing and genocidal.

### **Learning from the Plants**

In order to treat the immune system effectively, we have to learn to perceive it and there is really no other way than to learn to see the patterns of immune engagement—and for this there is no other method than analogical thinking. I called the chapter on immune patterns “The Speech of the Immune System” for this very reason. If the reader wants to get anything out of this book they are going to have to learn to think analogically.

Two of the most valuable patterns we need to learn, involve the difference between the innate and adaptive immune systems. We don’t want a whole lot of details cluttering up the discussion, either, like the case

is with so-called “scientific medicine,” where the molecule counts more than a holistic description of an immune response. So, in this chapter we are not only going to feature holistic thinking but two herbs that personify the innate and adaptive immune system.

It is not enough for a person to know about bats and viruses and scientific facts: to be well-rounded one should also be able to think in a comparative, imaginal, and intuitive fashion. Therefore, we are first going to look at Queen Anne’s Lace (*Daucus carota*) because it personifies how the innate immune system operates. Here the “medicine animal” in question is Rabbit. We will then move on to Holly (*Ilex aquifolium*, *I. opaca*), which personifies what the symptoms look like when the innate immune system no longer responds and the pathogen shoots right down into the adaptive immune level. The medicine animal for Holly is none other than Bat.

### **Queen Anne’s Lace, Rabbit Medicine and Innate Immunity**

The innate immune system is the first layer of immunity that a pathogen, toxin, or allergen hits. It is highly sensitive, quick to react, and heavily tied in with the autonomic nervous system (fight or flight, thermoregulatory system). This describes the Rabbit People pretty darn well: highly sensitive, quick to react, nervous (flight—not fight), and warm (the rabbit thermoregulatory system set a bit high). In addition, it is one of the most thin-skinned of all animals, so that its highly tuned innate immune system can react quickly. If a rabbit runs more than fifty yards, it might bleed to death due to the thin skin and capillary walls.

Wild Carrot is one of several Rabbit Medicines, another important one being Rabbit Tobacco (*Pseudognaphalium obtusifolium*)—also its many cousins. And if there is one location Rabbit People, Wild Carrot, and Rabbit Tobacco like to live, it is out in the sunny fields. Larger prey like deer and elk live on the edge of the wooded edges of fields because they don’t like to be exposed out in the middle and they don’t like to be in the woods, where there is good cover but lack of food. They like to hide in the shrubs that grow at the edge of the field, where the forest is pioneering its way back. Their favorites are Staghorn Sumach, Wild Plum, Hawthorn, Honeysuckle, and (in Europe) Blackthorn. Rabbits are not as visible, so they can venture out into the field, where the nibbling is good.

We have testimony from that wonderful herbalist of Waldron Island, Washington, Ryan Drum, about what the rabbits really like. Many years ago he and his family raised rabbits “for meat and fur.” One spring they were short on greens and long on bunnies, so Ryan bought two tons of carrot culls. His daughter delivered carrots to the cages, but “about 10 PM the bunnies started to mutiny and have fits. They raced around their cages, thumped repeatedly for hours on their sitting boards and made weird snorty noises unlike any heard previously.” The family went to sleep. “In the morning the big lumpy carrots were shoved into cage corners and had been barely nibbled.” They only eat the greens (ryandrum.com).

This interesting event could be considered something of a “homeopathic proving.” The homeopaths give a mild toxin to a group of people to elicit a response. The initial response as the toxin disorders the organism is called the “primary reaction,” while the secondary response, as the organism fights against the toxin and re-establishes self-regulation, is called the “secondary response.” Symptoms from both are used to determine the properties of the homeopathic remedy. Modern medicine recognizes this action and reaction as the “rebound effect,” which we will discuss later on, since this is the primary reactive method of the immune system. At any rate, the volatile oils in *Daucus* are first extremely stimulating, then relaxing.

**Queen Anne's Lace, Wild Carrot (*Daucus carota*).** This biennial is native to Europe but now widely spread throughout North America and other temperate regions of the world. It is a member of the Apiaceae family, with the typical lacey leaves, umbel flower tops, and aromatic oil content of that clan. The domestic carrot was selected for a large, sweet root; the wild variety still has a smaller, bitter taproot. Traditionally, the umbels, seeds, flowers, and leaves of the wild variety are used. The domestic carrot root is sometimes used to make a poultice. The mature seeds are a component of Madras curry powder.

The mature umbels spread out to form a beige white round surface about three to four inches in diameter consisting of countless individual flowers. Sometimes there is a faint pink mixed in with them. Just off from the perfect center, one flower will usually be dark red in color—although in 2022 there were hardly any of these. As the flowers are fertilized the tabletop curves in to form a little nest, leading to the name “Bird’s Nest.” The flowers in the middle ripen first so that the bottom of the nest is brownish while the last flowers to pollinate are on the outer edge of the top of the flower. In between is a rich sea of unripened green seeds which are high in volatile oils. Although the leaves and ripened seeds also possess these oils, the green seed has much more and it is this stage and part of the plant that is harvested for manufacture in the kitchen into a nice tincture. The ripened brown seeds are also available in commerce. Before it matures the flower shines in the night, even in starlight.

The name Queen Anne’s Lace is said, first of all, to derive from the wide white collar that Queen Anne and the puritans of her time wore around their necks. “That’s not how I heard it,” said our Muskogee teacher, He Who Must Not Be Named. “That was the collar of Ann Boleyn and the red spot is where they cut off her head.” It is likely the name originally derived from St. Anne, the midwife of John the Baptist; the patron saint of lacemakers. The flower top is the lacework and the red dot is where she pricked her finger. Also, this is an emmenagogue and even an abortifacient which may have been used in childbirth at some point in history. The irritating volatile oils would likely expel the placenta and perhaps induce labor.

**Pharmacology.** Queen Anne’s Lace contains four main groups of phytochemicals: phenolics, carotenoids, polyacetylenes, and vitamin C; also vitamins A, B6, foliate, and vitamin K, calcium, magnesium, phosphorus, potassium, sodium, iron, and zinc. The phenolics include flavonols (quercetin, kaempferol, and rutin), and flavones (apigenin, luteolin and chrysin). There are substantial amounts of several volatile oils. These are variable according to the area of harvest, part of the plant, and the stage of development. The dominant oils of the leaf, stem, and flowers are monoterpenes or sesquiterpenes, while those of the seeds are  $\beta$ -bisabolene and  $\beta$ -asarone.

**Overview.** “If you can only have ten herbs, this would be one,” says Alabama herbalist Phyllis Light. It is an important remedy for preventing and treating acute diseases and also acts deeply on the endocrine system, including the female reproductive tract. The volatile oils are stimulating to the nervous system, then relaxing, also irritating to the mucosa and the urinary tract.

Most of what I am recounting here I learned or heard from Phyllis; I have not used this plant a lot. My guess why this is the case is that I use Pulsatilla, which has very similar properties and even a general resemblance in appearance (feathery leaves, blows in the wind)—though it is in the Buttercup family.

**Innate Immune System.** Phyllis considers Queen Anne’s Lace to be a “normalizer or balancer” in autoimmune disease and frequently employs it in acute conditions. She often combines Queen Anne’s Lace flowers or seed heads with Elder flowers for produce a sweat in viruses, flus, colds, etc. Comparing Queen Anne’s Lace with Elder flower gives some idea of its character. Both plants are preventative, and therapeutic after the onset.

The umbel flower heads of Queen Anne’s Lace resemble the flower tops of Elder and the composite heads of Yarrow. All of these plants are very strong agents in acute disease. This table-like structure of the terminal end of the plant, the flower top, seems to signify an affinity to “the surface” and self-defense. Yarrow, of course, is a great peripheral defensive plant, useful in fevers, flus, viruses, sore throats, and also in cuts, bruises, and wounds. A common formula for acute conditions deriving from Juliette de Bairacli Levy, is Elder, Yarrow, and Peppermint. Phyllis uses Queen Anne’s Lace and Elder, or Queen Anne’s Lace and Mountain Mint, which is a close analogue of Peppermint. She also uses Queen Anne’s Lace as a salve for insect bites, which we may also see as a peripheral defensive action. (I would think it would combine here with White Snake Root, *Eupatorium rugosum*, notes your author).

Years ago herbalist Hart Brent, of the “Northeast Kingdom” in Vermont, told me that Queen Anne’s Lace strengthens the wei qi, that’s the peripheral resistance of the organism to stress and disease—the first level of immune response in Chinese herbalism and the equivalent of the innate immune system. It also acts strongly on the autonomic nervous system, closely linked to the innate immune system.

While Queen Anne’s Lace does grow all over the field, it particularly likes to grow where the sod is thick; I think of it as forming a thick protective layer in the body. It is also highly flexible and reactive to the wind, like Pulsatilla. This pictures the sensitivity and reactivity of the innate immune system to environmental influence. Both are head cold remedies. Wild Carrot is both anchored and flexible.

**Nervous System.** Queen Anne’s Lace is a calming, sedative nervine. We have already seen how the root drove Ryan’s rabbits crazy. Most herbs cause what they cure. It causes stimulation followed by relaxation. A correspondent of the late Barbara Hall, Dave Owen, wrote: “One herbalist recommended taking Queen Anne’s Lace to deal with night anxiety and sound sensitivity. I made a tincture with nearby flowers and began taking it and immediately; felt those symptoms subside. In fact, for one reason or another, I have even experienced a blissful state for several hours at a time.”

The sensitivity to sound is very important because the innate immune system has been found to be highly sensitive to sound. See the study by Zhang et al., “The Immune system can hear noise” (2021), quoted by Robert in the next chapter. It was this factoid about Queen Anne’s Lace, on top of all the other evidence, that finally pushed me to see it as the medicinal plant illustrating the innate immune system. It was only after I started writing this account that I realized Pulsatilla—which I know and use a lot more—could probably serve the same purpose.

Phyllis says that the nervousness of Queen Anne’s Lace is like “running in circles.” Rabbits do this when they are nervous, overexcited, or being chased by a predator. Dogs will be driven to distraction by this, but I don’t know if it will fool smarter predators. This is the overstimulated phase; Queen Anne’s Lace is beneficial for the acute exhaustion or prolonged adrenal insufficiency that follows.

**Mind.** “Queen Anne’s Lace is for people that need to change their attitude,” says Phyllis. “It sways in the wind, so it shows flexibility.” On the other hand, it is also for those who are too easily swayed. “She has to know herself in order to work with the plant,” explains herbalist Robin Rose Bennet. The plant spirit “shows up with women. . . the virgin archetype: ‘I belong to myself.’ It helps you make decisions yourself” and not depend overly much on others.



In this, Queen Anne's Lace resembles the mental portrait for Pulsatilla. In homeopathic literature this plant is described as a remedy especially for girls and young women who are too suggestible and haven't yet developed a core sense of self so that they are too easily influenced, first by competitive female peers and then by men who may not have their best interests at heart. The fad nowadays—and it is a good one—is for women to be independent and strong, but some women will always be more dependent on partners and family and we have to not only accept them for this but try to help strengthen them without judging them or attempting to change their innate nature. We live in a viciously judgmental society, as bad as the Puritans or any other religious fanaticism of the past. This is, as I pointed out, built into the thought and speech of the culture, dominated by the syllogism, therefore by right and wrong, good and evil, “my way or the highway.” With one breath this culture will criticize colonization and with the other it will enforce conformity and colonize other cultures by spreading its gospel of rationality and materialism as if it were the absolute truth. This is not my culture—I take orders from the Galactic Federation at the center of the Milky Way.

Medicinal plants always balance between two opposite—the primary and secondary effects. Queen Anne's Lace is like the judgmental Puritan, on the one hand, and the young woman prone to be criticized by the Puritan. It is like the flower head when we want to harvest it: there are already dried out old seeds at the bottom along with beautiful beige flowers at the perimeter, ready for fertilization. The grandmas should be helping the young girls with their transition into womanhood, not judging them, and the young women (and men) should respect, support, and hear their aging elders.

Endocrine System. There is no question that Wild Carrot is hormonally active, although the exact parameters of this activity are not fully determined. Part of the problem is that the irritative effect of the volatile oils on the mucosa by themselves cause shedding of the endometrium, so that it is difficult to tell when the effect is hormonal and when it is physical.

The herbalists of the late twentieth century, like Dr. Christopher and Tommie Bass, felt that Queen Anne's Lace acted on the hypothalamic/pituitary system. It acts much like a pituitary regulator—much like Pulsatilla, in fact. When given on a regular schedule, timed for example with the moon, it will cause the menses to become regular, if they were irregular or too short beforehand. This will usually be maintained. It is also a mucolytic, thinning mucus in the lungs and uterus—so when it clears endometriosis with mucus, says Phyllis. Look for the mucus mixed with the menstrual blood—usually brown. “It is like an herbal DNC.” For bleeding uterine polyps (“fibroid”). Mucus can occlude all the way up to the ovaries, through the fallopian tubes, to the uterus. The hairy stems may be a signature pointing to the hairs of the fallopian tubes, which facilitate downward movement of the egg.

But there are also actions elsewhere in the endocrine system. It comes down from Tommie Bass and others as a remedy for pre-diabetes, syndrome X, and Type II diabetes. Phyllis uses it for low thyroid, probably when the pituitary signals are the problem, not the thyroid itself. She and Tommie Bass used it for abdominal weight, beer gut and cortisol dominance.

**Stomach, Bowels, Gallbladder.** As a nervine stimulant and relaxant, Queen Anne's Lace acts strongly on the innervation overseeing the digestive tract and the gallbladder. Carrot irritates the mucosa of the tract, increases secretion, stimulates the appetite, relaxes the smooth muscles, tones the stomach and bowels, and stops diarrhea. It has been recommended for hiccough.

Phyllis uses it to release the gallbladder, with lack of bile movement, with constipation from lack of bile—light colored, dry stool. There is tension in the liver, gallbladder, diaphragm, down into the hip. NIMH herbalist Bernadette Dowling, of Crane's Farm, Berkshire, said: “I use Queen Anne's Lace for

complicated digestive problems where one problem seems to be piled on top of another. Often as part of a formula.” They double up from the stomach problems, which are often chronic. In Chinese medicine this is called “liver attacking the stomach,” or “spleen.” A good adjunct remedy here would probably be Agrimony, which has the same kind of tension.

**Kidneys and Bladder.** There is no question that the volatile oils in Queen Anne’s Lace stimulate the kidneys to increase the discharge of both water and solids—it is a remedy for gout (protein retention), and high blood pressure (often due to essential hypertension in the kidneys. It is considered to be “nephroprotective.” It also acts on the bladder and female and male reproductive tracts.

The volatile oils stimulate the mucosa of the ureters, bladder, and urethra. Ryan Drum learned from an older herbalist to use Queen Anne’s Lace seeds for cystitis, including “most uncomfortable bladder and lower urinary tract discomfort presentations.” The remedy was a strong decoction of the dried umbels, 1 ounce to one pint of water, boiled for 20 minutes and steeped for 4-12 hours. (That’s a long time!—evidently the ) Consume 4 ounces 4-6 times a day. Also take 4 quarts of plain water a day with no other beverages.

Ryan’s first case, now fifty years ago, was an attractive woman in her mid-30s who had just started an exciting new relationship after several years celibacy—a good example of “honeymoon cystitis.” “She continually had an urge to urinate but usually could squeeze out only a few dark yellowish-brown drops of burning urine,” no matter how hard she tried. There was great pain, but no blood, cloudiness, or casts in the scanty use. “I gave her 1 pound of the dried green Queen Anne’s Lace umbels and instructions and urged abstinence from copulation . . . coffee and alcoholic beverages.” She was able to share the unused seeds with friends in the following years.

“It is a principle herb to help the strangury,” writes John Parkinson in his *Theatrum Botanicum* (1640, 901).

**Gout. Ryan Drum.** “I regularly prescribe wild and/or domestic carrot greens for my gout patients (men are 20 times more likely to develop gout than women). This treatment is long-term (lifetime) to tolerance, especially for high-protein diet-induced gout. The best results are from finely chopped leaves in salads or soups, or leaves juiced in a wheatgrass juicer.”

**Female Reproductive System.** Because the volatile oils irritate the mucosa, Wild Carrot seed induces the period, even if it has occurred recently. Ryan points out that female apprentices and workers should not pick and garble the seeds unless they are expecting their period. However, we can put this to use for regulating the period. If the seeds are given at the same time of the month they will establish a regular time and expel the endometrium if there is difficulty from mucus in the tract (which can cause infertility) or some other cause. After several months the woman is usually much more fertile. Conversely, the seeds are a traditional remedy in the South for preventing pregnancy—taken as a “morning after” tea and are seriously abortifacient.

**Male Reproductive System.** After his positive experiences with the decoction of Queen’s Anne’s Lace seeds, Marshmallow and Irish Moss, Ryan found a “curious side effect.” Some men experienced improvement in cases of both benign prostatic hypertrophy, non-infectious prostatitis, and persistent prostatitis. “Correspondingly, medical anthropologist Farid Alakbarov describes recorded ancient medical and modern folk medicinal usage of carrot seeds to treat impotence and loss of libido in men (*Herbalgram* 49:76-7.2000).”

**Additional Uses.** As an irritant to the mucosa, Queen Anne’s Lace expectorates phlegm and is used inflammation of the respiratory tract, bronchitis, and asthma. Since it reduces high blood pressure it is good for the heart. It also has been known to decrease intraocular pressure—glaucoma is like ‘high blood pressure of the eyeball.’ It is classified by some as antidepressant and as a memory-enhancing aide. The stimulating property makes it a local wound healing application. “The Leavs being applied with Honey to running Sores or Ulcers, doth clense them,” writes Nicholas Culpeper (1652).

The wide scop of the plant, from a modern experimental prerspective is given by SP Deshmukh et al., “A Review: Pharmacological Actions of *Daucus carota*,” Human Journals, 2021; Vol. 21 (2): 302-314 ([ijppr.humanjournals.com/wp-content/uploads/2021/06/20.Jagdish-Arun-B-Shrivastava-SP-Deshmukh-NS-Bhajipale.pdf](http://ijppr.humanjournals.com/wp-content/uploads/2021/06/20.Jagdish-Arun-B-Shrivastava-SP-Deshmukh-NS-Bhajipale.pdf))—but the descriptions of the animal studies are very disturbing.

**Preparation.** The flower tops can be harvested when the flowers are ripe in their “gorgenous green and pink,” as Ryan Drum writes. Or later, when the seeds are green and only the tips of the heads remain immature. There may be a difference in the volatile oil profiles here. The green seeds are more irritative than the pale/pink flowers. The decoction can be made by “putting the seeds in an automatic steam percolator coffee maker, processing the same water three times through the seeds. The resulting dark aromatic drink is very tasty.”

Phyllis records a little bit of social history learned from an older mentor, Tommie Bass, of Shinbone Ridge, in Georgia. “In the 1970s people got lazy, wouldn’t cook up their herbs, so Tommie went to capsules.”

**Dosage.** The doses are different, depending on the purpose. “Massive doses of the tea in birth control,” says Phyllis. Decoct the dried seeds for 20 minutes, a handful to a gallon of water. Drink over two days. For the tonic effect, to strengthen the periphery, much less. As little as 5-6 drops of the tincture. For the therapeutic effect, infusion of one flower head or umbel for 5-6 minutes. “It will make you sweat,” says Phyllis.

**Formulation.** Here is an ingenious combination for sciatica: Queen Anne’s Lace, Skullcap, St. John’s Wort, and Rabbit Tobacco. That covers just about all the plants we would associate with that condition. Dorothy Hall had a similar formula for muscular and skeletal problems: Queen Anne’s Lace, St. John ‘s Wort, and Walnut.

### **Holly, Bat Medicine, and the Adaptive Immune System**

Holly thrives in the shady darkness of old forests. It is so dark in the interior of the tree that bats will roost there. The hooks on the side of the leaf make the leaves look like the wings of bats. The leaves grow spikes when they are attacked: otherwise, they are relatively smooth (Greve, 1931). This suggests a powerful adaptive response to stress, i.e., an increase in immune response. More specifically, it would suggest a response in the adaptive or acquired immune system—that would be when the pathogen bypasses the initial or innate immune system. This makes it a valuable remedy in Lyme disease, coronavirus, and vaccine side-effects, where the innate immune system is bypassed and the attack goes directly into the deeper immune system. These are the “diseases of our times.”

**Holly (*Ilex opaca*, *I. aquifolium*, *I. vomitoria*, *I. verticillata*).** The *Ilex* genus is the only member of the Aquifoliaceae family and consists of over 570 different species.

All the major Hollies found in North America are touched upon here, including the native (*Ilex opaca*), the commonly transplanted English (*aquifolium*), the Black Drink (*yaupon*) of the Southern Indians, and the northern Winterberry (*verticillata*). I believe that they all have similar properties, although the Black

Drink is moderately hallucinogenic and the Winterberry is leafless in the cold northern winter. In addition, I include the Chinese (*Ilex pubescentis*). All have something to contribute to our medicinal knowledge. The only one I have used consistently is what we call the opaca, which is native to Western Europe and widely planted in the sub-temperate parts of North America. It is also the only one that is universally available since it is one of the Bach Flower Essences. I have also tasted and self-used the leaves of the American species, but don't have a lot of experience with the *acquistifolium*.

Except for Winterberry, all these trees keep their leaves through the winter. The English and American Hollies are small trees, up to forty feet in height, but usually smaller. The American is found in dense woods, seldom reaching such a full height. Both are sources for the Christmas Holly leaf and berry decorations. The berries are toxic; the leaves are not. The evergreen leaves allow these slow-growing trees to compete with the shade cast by the over story.

**Pharmacology.** The leaves are slightly diffusive, astringent, sometimes soapy (this component is found much more in the berries), and overall reminds one of tea. Another cousin, Yerba Mate (*Ilex paraguayensis*) is in fact a widely used beverage.

The nineteenth century sources emphasize the presence of tannins in Yerba Mate and the Hollies, but this is often overlooked in the modern assays. Tannins were a medicinal agent a hundred years ago but are ignored today—except by herbalists. We use them to tone or tighten tissue. The old sources, such as John King and Maude Grieve, attribute the properties to a bitter alkaloid named ilicin, which may be identical to what is now designated theobromine.

Active principles identified in *Ilex aquifolium* include flavonoids (quercetin, rutin), a terpenoid, ursolic acid, ergosterol, theobromine (alkaloid similar to caffeine), fatty acids, palmitic acid, stearic acid, arachidic acid, oleic acid, oleanolic acid, linolenic acid; alkanes and cyanogenic glucosides (Alkaridis, 1987; Budzikiewicz, 1979; Willems, 1988; quoted by [inchem.org/documents/pims/plant/ilexaqui](http://inchem.org/documents/pims/plant/ilexaqui)).

There are some pretty interesting compounds on this list. Theobromine (a bitter alkaloid) catches the eye of the organic chemist: it is present in cocoa and similar to caffeine, but where caffeine stimulates the central nervous system theobromine stimulates involuntary smooth muscles. (This compound and caffeine are both found in the berries.)

A large number of the ingredients are essential fatty acids and allies that act on the arachidonic acid cascade responsible for the inflammatory response in the organism. In addition, there are some cooling compounds (cyanogens, flavonoids) and warming (the terpenoids).

It would seem from this analysis that Holly is a smooth muscle relaxant, an immune tonic, astringent, and thermoregulatory.

There are not many studies on the medicinal properties of *Ilex*. However, an ethanol extract of *Ilex aquifolium* applied to tissue in the laboratory was found to inhibit synthesis of leukotrienes, a part of the arachidonic acid cascade. This activity probably would be associated with the essential fatty acid profile. The flavonoids or “phenolic constituents” inhibit oxidation of lipids and degradation of deoxyribose (a sugar involved in the mitochondrial generation of energy) (K. Muller, K. Zierys, D. H. Paper, 1998).

There would have to be antioxidants like this to account for the preservation of the leaves throughout the winter.

**Toxicology.** The berries contain toxic saponins but the leaves are not poisonous. As little as two berries can cause symptoms in children, 20–30 are required for drastic upset in adults, though fatal outcomes have not been recorded. In an article entitled “Holiday Plants with Toxic Misconceptions,” medical doctors Z. N. Evans and S. J. Stellflug (2012) comment in regard to the berries of the Holly:

The primary potential biological effect of saponin is a negative interaction with cellular membranes. Saponins can cause hemolysis in erythrocytes and alterations in permeability of small intestinal mucosal cells. Most ingestions cause little or no toxicity. The primary clinical effects observed, which occur exclusively with large ingestions, include nausea, vomiting, abdominal cramping, and occasionally dermatitis. There can be allergic sensitization and worsening dermatitis with repeat exposures. Rarely, mydriasis (dilation of the pupil), hyperthermia (fever), and drowsiness have also been reported.

The dilation of the pupil shows that the berry stimulates the sympathetic branch of the autonomic, which brings on the fight-or-flight symptoms, fever, abdominal cramping, and nausea. This will be followed by vomiting and drowsiness, representing a secondary parasympathetic response.

In the case of Holly, the sympathetic action is the “primary response” (to use the homeopathic terminology), while the parasympathetic represents the “rebound effect” (pharmacological vocabulary) or “secondary reaction” (homeopathy). The latter is caused by the attempt of the body to overcome the toxin and return the system to normal. This certainly explains the purgative effect of the berries, which were long ago used in medicine but abandoned due to the rough character of the event. The Black Drink is an emetic and emesis is very often used to enhance hallucinogenic properties, as in Ayahuasca and Peyote. The leaves do not possess the saponins but they may still operate on the sympathetic/parasympathetic axis.

**History and Folklore.** The bright red berries and green leaves, both prominent in the winter, made this an important reference point in European culture. The custom of bringing in boughs of holly at midwinter goes back to the Romans, at least, was maintained by the medieval peasants, and continues down to the present as a part of Christmas celebrations.

Interesting legends and associations occur as part of what we may call “medieval Catholic folk medicine.” It was said that Holly sprang up in the footsteps of Christ as a symbol of his suffering. The name Holly gives it holy or sacred associations. Christmas carols abound with references to the tree.

The midwinter festivals were associated with both the dying and reborn God and his mother, the Great Goddess; with his blood and the blood she shed in giving birth to him. Holly water was sprinkled on newborn babies to protect them.

In Southern Appalachia, the old graveyards located up high in the hollows are marked by Holly trees, planted long ago but often overgrown by modern timber. The people were too poor to mark the graves with anything but rocks. This use of Holly in graveyards probably represents a folk tradition from the British Isles which associated the tree with death and rebirth. Holly is also associated with suffering and sacrifice. One of Sulamith Wulfing’s most touching paintings shows Mary holding the baby Jesus, looking intently at the thorns of the Holly leaf.

Pliny the Elder, who died in the eruption of Mount Vesuvius, states that Holly, planted near the house, would repel poison, defend against lightning and witchcraft. I guess he was not carrying it with him when the volcano erupted. This idea may be related to the practice of planting a Rowan near the house for the same purposes.

**Chinese Holly.** Acupuncturist and herbalist Elle Geary has an excellent account of the Chinese Holly (as well as the Western) on her website ([whiterabbi-tinstituteofhealing.com](http://whiterabbi-tinstituteofhealing.com); consulted July 1, 2020).

*Ilex pubescentis* is not a commonly used herb in Chinese medicine but it is present in the anti-infective remedy Gan Mao Ling. Elle wondered why this formula worked so well, especially in “complex viral cases,” so she took out the ingredients and found that it was the Holly. She writes: “Once heat gets to the heart level ... danger zone.” This refers to the descent of a pathogen to the fourth or Greater Yin stage of disease, where the surface (innate immune system) is bypassed and the pathogen goes directly into the organs, which is accompanied by a response in the adaptive immune level. “So that formula, while often used for acute and preventative care, actually penetrates very deeply.” She therefore uses Gan Mao Ling in an additional, new capacity because of the presence of the Holly.

The Chinese name of Holly is Mao Dong Qing. The root is the part used and is classified as bitter, astringent, and cold. It is said to enter the heart and lung meridians, move qi and remove stagnation, clear heat and remove toxicity. It is used in acute tonsillitis, cough, asthma, swelling of the gums, hemiplegia, headaches, dizziness, sores, boils, high blood pressure, angina pectoris, and chest congestion. Externally it is used to promote the healing of burns, boils, scrapes, wounds, and abscesses.

The root is grayish-brown with small fibrous roots that branch off it. When harvested, the roots are stripped of their fibrous material and then dried and sliced into thin pieces. Typical dosage for the root is 30–60 grams; typically taken as a decoction in water.

**Contraindications and indications for Chinese Holly root.** The contraindications are not based on anything so crude as the poisoning systems of the berries, but rather on clinical observations. They give rise to some pretty good additional insights into the use of the medicine.

The root may interact with blood thinners such as coumadin or heparin. This may be true of other members of the clan. This indicates a blood-thinning capacity that may help the Hollies in their curative effects. Thinning the blood allows penetration of blood with immune cells into the deepest corners of the organism, bringing healing and removing debris. In addition, of course, blood clotting—a feature of both SARS-Covid 2 and the pathology of the mRNA “vaccines”—is not a healthy condition.

**Winterberry.** This northern representative of the Holly family does not keep its leaves over the winter, thereby exposing the bright red berries to view and resulting in the name “Winterberry.”

Under the names *Prinos verticillatus* and Black Alder, the bark was a not uncommon medicine in nineteenth century American practice. It’s almost certainly an old Native American medicine. It has been reclassified as *Ilex verticillata*, and completely forgotten in herbal medicine.

John King (1898, 1582) condenses the accounts of his era: “It strengthens the circulation, improves nutrition, and aids in the removal of waste material, thus effectually aiding the vegetative processes,” that is to say, the cellular rather than nervous functions. It is indicated in “all diseases attended with great weakness.” This includes jaundice, diarrhea, and gangrene.

Maude Grieves (1931) says Winterberry is used “when the body is devitalized by discharges.” (This would be called “yin deficiency” in Chinese medicine—a condition that often occurs from exposure to the spike proteins). For the discharges and “indolent sores,” the decoction is applied locally. A formula of two parts Winterberry and one part Goldenseal is used for dyspepsia. The bark is dried before use—usually a precaution against “too active” ingredients. In short, the uses are similar to other members of the *Ilex* clan.

The Black Drink. In moderate doses, Yaupon Holly is an enjoyable beverage containing caffeine and tasting similar to Yerba Mate. In fact, there is a theory that it is a South American relative of Yerba Mate that was brought long before 1492 to the coastal regions of the what would now be the southeastern corner of the United States, later spreading as far west as Texas. In fact, it may be that this is the reason the Creek Indian people were present in this area since their genome shows evidence of South American connections.

The importance of Yaupon for the Southern Indian people was increased by the fact that this plant is hallucinogenic in large doses. Like many hallucinogens, it is an emetic, an effect that intensifies the experience. One thing that is peculiar about the experience is that it can intensify feelings of hatred—reminding us of the use of Dr. Bach’s Holly Flower Essence to cure hatred.

The name of the great Seminole war chief, Osceola, comes from the Creek Ah-see-see-ho-lar, meaning “the Black Drink Singer”; he was renowned for his loud singing under the influence of the drink. And he certainly had reason to hate white people. His half black wife and their two daughters were taken prisoner under a flag by truce and sold into slavery.

**Traditional European Uses.** English Holly leaf has not been used a great deal in herbal medicine in Europe, either in ancient or in modern times. It did establish a reputation as a diaphoretic, releasing perspiration, and as a febrifuge. It was used in malaria and other types of intermittent fevers (chill/fever) and also to open the skin in smallpox. Jaundice was often a complication of malaria; it was used for this. (So is exhaustion, though I only found this symptom under its cousin *Ilex verticillatus*.) English Holly also acts upon the lungs in the common cold, bronchitis, cough, mucus accumulations, pulmonary congestion, and pleurisy. The leaf is mildly laxative (rather than cathartic and irritating, like the berries) and diuretic, removing edema and water retention. This may be why it is beneficial in “rheumatism” (muscular and skeletal pain of some kind). Culpeper lists the bark and leaves for fomentations for broken bones and joints that are out of joint. It is usually given as a hot infusion of the leaves.

**The Bach Flower Essence.** It is to Dr. Edward Bach that we owe the modern usage of English Holly. Holly is the essence for feeling irrational hatred or feeling hated. He wrote that it is “for those who sometimes are attacked by thoughts of such kind as jealousy, envy, revenge, suspicion. For the different forms of vexation. Within themselves they may suffer much, often when there is no real cause for their unhappiness.” It is frequently used for hatred and anger, especially associated with injustice and impersonal issues. Dr. Bach simmered the buds of the trees in his remedy kit, rather than making a flower essence.

**Immune System.** The late Dorothy Hall had much to say about this remedy in her lectures for students, which have not been published. She used the Bach flower essence, stretching Dr. Bach’s definition to the boundaries. It is the remedy for “self-inflicted injuries.” This is quite an insight into hatred and jealousy. Dorothy expanded “self-infliction” to include excessive immune reactions. She used Holly flower essence for leukemia, which often results from an initial immune reaction that doesn’t stop, resulting in over production of white cells. Dorothy had positive experiences with over forty cases of children’s leukemia, working with doctors, until the jealousy of the medical profession overcame generosity and her associations with the hospital were ended. Because of the association with the immune system Dorothy also used Holly for swelling of the spleen.

These usages fit well with the picture of Holly as a remedy for conditions that penetrate to a deep level, also for the immune exhaustion and fatigue one feels after a viral or bacterial lodgment in the system, and finally for damage to the immune system.

**Experience with Holly.** The hate indications came to me when I first contracted Bartonella (I didn't have a good diagnosis then, but a tick-borne illness set in right after the bite). I felt like the disease hated me. For a while I kept it in check with various herbs; finally, however, after six months it was causing congestion in the back brain, ears, and mastoids (bones behind the ears) and I was having fits of exhaustion which were very worrisome. I was in North Carolina, near a lot of good Holly. I picked and ate the leaves of the English Holly and occasionally the American. Four out of five of the next days/nights I "detoxed" with various types of fatigue. On the third day I felt wonderful, but the fourth and fifth nights were necessary to complete the cure. Sometimes slept, sometimes awakened, sometimes insomnia. I munched on them for four more months. Then I stopped and about four months went by before I felt a bit of fatigue again. I took it again and the fatigue went away. I also benefited from Cleavers and *Monarda fistulosa* for decongesting the back brain and ear area, but they did not handle the fatigue.

A few days after I learned about Holly and fatigue, I called Sondra and told her about it. "Whoa," she said. "That's a dangerous plant. We don't use that very often; only when people are really sick. Don't give that to anyone. I don't want you to get in trouble." "What do you call it, Sondra?" "Last Chance Cherokee Medicine."

Two days later, I went to visit a new friend I'd made in town, Raymond, a Chinook very competent in herbs and healing. I told him about the Holly. He said, "Whoa. You be careful with that. That's a dangerous herb." "Yeah, well, it's helping me. What do you use it for?" "The Indians use it for tick-borne illnesses."

Actually, it is only the berries that are dangerous—causing heroic purging. The plant has been studied quite a bit and the leaves have not been found to be dangerous.

There was a case in Texas. I gave her my standard remedies for Bartonella-like symptoms: pain, congestion, in the lower brain, neck, jaws, etc.) plus the Holly. The pain was "a little better," but she had about five days of intense fatigue and then it cleared. She didn't care if she was still in pain; she could function and feel hope again.

Another case back home: Lyme and maybe unknown con-infections of many years' standing. When I first treated him he was not capable of work. We used *Lycopodium* tincture for some kind of atrophic weakness of parts of the intestines—a bit hard to pinpoint. Next time he showed up in a big pickup belonging to the power company he worked for. But he had fatigue—Holly and Cleavers (more trouble in the glands around the ears) took care of the fatigue quickly. Five years later he came by to pick up some more *Lycopodium*.

The fatigue symptoms look similar to *Phytolacca* (Poke) which also has intense fatigue and is in some Bart formulas. The intense fatigue seems to be an encumbrance on the immune/lymph system. Then there is the hatred. Bart is famous for high levels of anger. If you feel hated and attacked, anger would follow if you are unable to do anything.

When coronavirus hit, I immediately thought of Holly. The virus attacked the "heart level" almost immediately, as it would be said in Chinese herbalism, causing intense fatigue. I had it myself. I used Black Seed (*Nigella sativa*) to keep the sore throat at bay—I think it acts on the autonomic outlet in the back of the throat. I used *Lomatium* on the first night (heart beat 150) and it worked perfectly in five minutes and I went back to bed. But it didn't work for me again. However, I would feel tension in my upper chest, would take the Holly leaf tincture and the circulation to the upper chest (heart? thymus? lungs? all three) would dramatically open up. I felt it blasted my heart open and fulfilled a message I was getting that the heart needed to be open as we enter a new era. I feel that these three remedies saved my life. I also used the *Monarda* and Cleavers to decongest the back brain and Parsley and Wild Cherry to rebuild the weakened heart muscle. After three and a half months the virus cleared.



I found out that herbalist Amanda Dilday was also using Holly for coronavirus, and before that, for other viruses. She had several interesting case histories as well and she taught me about Holly and the heart. She uses American Holly (*Ilex opaca*); it grows where she lives in South Carolina.

From our analogical excursion, we will now re-enter the world of rational, scientific thinking and analysis. However, we will start sneaking in some analogical associations, so that the reader does not forget the lesson.

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## *Twenty Two Basic Herbs ~ Home Apothecary; Herbalists' Toolbox*

**Matthew Wood MSc (Herbal Medicine)**

After a lifetime of herbal practice, what would I want in my herb cupboard? I like esoteric numbers, so we will limit the list to twenty-two—except for one more: “when in doubt give Nettles” (David Hoffman).

### **Cuts and Wounds**

Yarrow, Plantain, St. John's Wort, Calendula

### **Bruises**

Yarrow, Angelica, Elder, Solomon's Seal

### **Fevers, Chills, Colds, Flus**

Yarrow, Elder, Angelica, Boneset, Blue Vervain, Wild Cherry, Nigella, Schizandra

### **Lymphatics, Throat, Immune**

Cleavers, Red Root, Calendula, Vervain, Nigella

### **Respiratory Tract, Lungs**

Elder, Angelica, Mullein, Marshmallow Root, Plantain, Elecampane, Nigella, Nettles

### **“Liver,” Blood Cleansers, Metabolic Cleansing**

Dandelion Root, Burdock Root, Chickweed, St. John's Wort, Nettles

### **Nerves**

Wood Betony, St. John's Wort, Mullein, Plantain, Rosemary, Cleavers, Nigella

### **Intestines**

Yellow Dock Root, Marshmallow Root, Yarrow, Red Root

### **Bones**

Boneset, Mullein, Solomon's Seal, Marshmallow Root

### **General Astringents**

Schizandra, Yellow Dock Root

### **Mucilages**

Marshmallow Root, Solomon's Seal, Mullein, Plantain

### **Urinary Tract**

Yarrow, Cleavers, Schizandra, Plantain, Marshmallow Root

## **Circulation**

All good for the brain too

Yarrow, Wild Cherry, Rosemary, Wood Betony, Schizandra.

## **Skin**

Burdock Root, Plantain, Chickweed

## **“When in doubt, give Nettles” —David Hoffman**

Nettles

Yarrow

Plantain

St. John’s Wort

Calendula

Elder

Angelica

Boneset

Vervain

Cleavers

Red Root

Nettles

Mullein

Marshmallow Root

Elecampane

Dandelion Root,

Burdock Root

Chickweed

Nigella

Yellow Dock Root

Schizandra

Wild Cherry or Cherry

Rosemary

Wood Betony

And if I could add seven more: Violet, Queen Anne’s Lace, Poke Root, Linden Flowers, Yerba Mansa, Agrimony, Red Clover.

## *The Botanical Path to Radiant Skin*

**Mindy Green**

Since before hieroglyphs showed us how the Egyptians used various plants in their society, herbs were utilized by numerous cultures for food, medicine, spiritual connection, and beauty application. Often there was no difference between what might be utilized as medical preparation or cosmetic aid in days gone by. For instance, an herbal throat gargle might well be used as a facial toner prior to commercially prepared cosmetics of the 18<sup>th</sup> and 19<sup>th</sup> centuries. Although the number of useful herbs that address various skin problems can be a bit overwhelming, it also expands your options of finding the right ones for your specific skin type. Herbs have a bonus to the wonderful array of chemical constituents they provide (antioxidants, anti-inflammatories, nutrients, and natural colors) that help the skin in countless ways; many are wonderfully fragrant, adding beautiful aromas and functional values. We will explore the skin benefits of commonly available botanicals in the form of herbs and essential oils to keep your skin radiant, supple and healthy.

### **Herbs and Graceful Aging**

If you are a member of the Baby Boom generation and among those who once proclaimed that “30 is old”, you may be looking in the mirror and considering the youthful skin appearance that “old” 30 once held. In many cultures aging is revered for the wisdom that is gained only through time, as well as the acknowledgement that aging is a privilege not bestowed to everyone. Still, who doesn’t want to be 50 looking as though you could pass for 40? Though we all grow thankfully wiser with the years, chronological time brings the inevitable changes to our once youthful, plump and smooth skin. Aging is largely a process of genetics, and those blessed with youthful genes have much to be grateful for, as they age more gracefully than others. The rest of us not so sanctified with youthful DNA can mercifully rely on the help of the rejuvenating power of herbs and aromatic plants to stave off the aging process, just as the beauties of the past did. So even if 40 is the new 30, we all want to look our best for the years we’ve lived; and remember, today is as young as you will ever be, so enjoy it.

### **How Skin Changes with Age**

The genetic code of intrinsic aging is out of our control. But no matter the timing of our maturation clocks, eventually we all begin to go through the process that brings about collagen degradation, decline in blood flow, a weakened barrier repair, and inflammation that leads to wrinkles and the inability of skin DNA to repair itself; these are all things that contribute to aging skin. Extrinsic aging factors are things within our control and taking care of our overall health reflects in the appearance of our skin. To keep our skin as youthful as possible one must create a healthy lifestyle and diet, get proper exercise and sleep, reduce stress, develop a calm demeanor, limit alcohol, and avoid cigarettes and other toxic substances. Most of all, there is universal agreement that limiting sun exposure is paramount to keeping skin youthful.

During our thirties our skin gradually loses its barrier function with its reduced production of ceramides. These essential skin fats hold the stratum corneum layer together and protect the skin’s barrier defense mechanism and moisture levels, both key to youthful skin. During our forties a decline in DNA repair paves the way for the creation of wrinkles. Excess sun exposure begins to show itself in the form

of pigmentation problems, and a reduction of estrogen plays a large part in diminishing skin strength and compromising the foundation of underlying elastin and collagen. By our fifties we are well on our way to deeper lines, thin, dry, sagging skin and reduced elasticity. But don't despair! There are things that can be done to regenerate healthy skin and provide it with the nutrients it needs to repair itself, no matter your current age.

To begin with, the obvious healthy lifestyle practices should be in place, including a diet rich in phytonutrients found in fruits, vegetables, whole grains, beans and unprocessed foods, herbs and spices. The conditions that contribute to aging include oxidative damage, inflammation and irritation including the results of poor diet, air and water pollution, and excess sun. All contribute to poor skin hydration and the breeching of barrier integrity, permitting important nutrients to escape and allowing pollutants in. Advanced glycating end products (AGEs) cause cross linking of collagen that leads to skin sagging and wrinkles; these are accelerated by excess sugars and refined carbohydrates in the diet. Poor circulation through a sedentary lifestyle and excessive exfoliation which may lead to inflammation, also contributes to aging skin. Luckily, remedies lie in a variety of plants that help counter these problems by providing the body with antioxidants and antiinflammatory competence, both internally and externally. Some of these botanicals have the capacity to normalize pigmentation and improve cell renewal; others provide lipid barrier repair, free radical scavenging capability, nutrients and moisturization. Amazingly, plants can lend their magnificent assets to all of these issues.

### **Botanicals for skin care**

Herbs have been relied on for centuries to keep us youthful both inside and out, and there are scores to choose from. The best-known herbs from days gone by happen to include many that have current research for proven efficacy in keeping skin youthful. Often the extracted form of these botanicals that are incorporated into the expensive creams sold at high-end stores are not what we would find available for retail sale, but they still offer benefits when using them as beverage teas, skin rinses, masks, compresses and tinctures. They include chamomile, frankincense, green tea, rosemary, lavender, ginger, turmeric, grape, olive, burdock, plantain, gotu kola, ginseng, sage and many more to follow below.

### **Plants to the Rescue**

Plants have been evolving on our planet for millions of years, converting sunlight into useful chemicals in the form of sugars, amino acids, fats, essential oils and much more. Humans have relied on them for food, medicine and spiritual guidance for as long as we have inhabited the planet. Their guidance in prayer and meditation is noted throughout history, but more importantly we share a biological familiarity with their chemical compounds. We have specifically depended on herbs and their fragrant oils to keep us healthy and beautiful, and evidence of that is found in numerous hieroglyphic depictions of 5,000 years past. Whether we ingest them as part of our diet or apply them to the skin in a cosmetic routine, it is well known that many plants contain restorative, healing, hydrating and soothing compounds – all of which can contribute to slowing the aging process and keeping us youthful. Active compounds in plants can reduce free radicals; rejuvenate healthy cell turnover; and heal and soothe stressed, mature or sun-damaged skin from within.

The use of supplements to complement a healthy skincare regime begins with anti-inflammatories. All of the herbs listed below fit that category. Inflammation may lead to redness, pain or swelling, but sub-clinical inflammation — the kind we don't notice — is now recognized as the first step in many diseases and is part of the breakdown of healthy cellular regeneration. Inflammation is potentiated by stress, poor lifestyle choices as well as excess sun exposure.

Antioxidants counteract the oxidative damage that assaults us on numerous fronts — air pollution, ozone, sun exposure, smoking and poor diet.

Other ingredients provide important nutrients and vitamins to the skin or improve the production of connective tissue components such as elastin and collagen. This is sometimes known as the extracellular matrix of the skin, which provides contour, plumpness and bounce to young-looking skin. The enzymes that break down this matrix increase as we age, but research shows that certain botanicals will counteract these enzymes and reduce the destruction of these youthful structures.

**Resveratrol:** This isolated compound found in several plants is usually derived from Japanese knotweed (*Polygonum cuspidatum*), though there are other sources including grapes, berries and chocolate. This polyphenolic compound is a premier anti-inflammatory and is considered a leading ingredient to slow the ageing process. It can extend life at a genetic level by producing Sirtuin 1, an enzyme involved in cellular regulation.<sup>1</sup> It also acts as an antioxidant.

**Goji:** The nutrition-packed wolf berry (*Lyceum barbata*) is available as an extract or juice, and an oil pressed from the seed can be used both internally and externally. Many forms are being used for a variety of anti-ageing benefits. Goji berries are rich in antioxidants, particularly the carotenoids beta-carotene and zeaxanthin, offering the added benefit of contributing to eye health.<sup>2</sup> A study with hairless mice demonstrated antioxidant activity in the skin with five per cent goji juice against lipid peroxidation induced by UVA radiation.<sup>3</sup> This protein and mineral-rich fruit contains polysaccharides that fortify overall immunity and support healthy skin from the inside out. A concentrated extract will be most potent for skin health, but the mildly sweet flavour of these superfruits makes them an easy addition to beverages.

**Eleuthero:** Formerly known as Siberian ginseng, this well-known adaptogenic herb (*Eleutherococcus senticosus*) has multiple effects that benefit skin health, but in a less direct way. It is best known for athletic recovery and stamina, working through a variety of mechanisms. It is used to boost immune function, detoxify the liver and protect against radiation exposure. Its antioxidant properties prevent cellular damage due to oxidative stress, such as excess sun exposure and physical exertion. Its adaptogenic effects are the subject of most studies. Stress, fatigue, and mental and physical endurance have been shown to improve with the use of this herb. An important role in cell survival and apoptosis is the up-regulating and stress-mimetic effects on the “stress-sensor” protein Hsp70, which inhibits the expression of NO synthase II gene and interacts with glucocorticoid receptors directly and via the JNK pathway, affecting levels of circulating cortisol. This regulates the resistance to stress and enhances mental and physical performance and, possibly, increases longevity.<sup>4</sup>

**Gotu kola:** Indian pennywort, as it is sometimes known, is an edible plant native to India, southeast Asia and Africa, and once thought of only as an herb to improve memory and detoxify the body. Anti-ageing claims for this herb are not new; *Centella asiatica* has been used for centuries. Anecdotally, it is also said to be useful in the treatment of psoriasis, varicosities, stress, arthritis, wound healing and weight loss. Research on asiaticoside, a saponin from *Centella*, shows it to be of great support in speeding the healing of burns through the promotion of angiogenesis.<sup>5</sup> This same compound induces type I collagen synthesis in human dermal fibroblast cells.<sup>6</sup> Sun-damaged skin also was helped by another compound from *Centella*. Madecassoside, also known to induce collagen expression and/or modulate inflammatory mediators, was used in 20 women; after six months of treatment, two thirds of the women showed improvements in superficial skin suppleness, firmness, wrinkles, elasticity and hydration.<sup>7</sup>

**Frankincense:** This resinous plant extract (*Boswellia serrata*) is an anti-inflammatory through several mechanisms. It reduces the enzyme 5-lipoxygenase and decreases the activity of human leukocyte elastase (HLE). Blocking these two inflammatory enzymes makes this herb an active compound to consider in formulation with other synergistic botanicals. It limits degradation of the extracellular matrix of skin and reduces elastase, the enzyme that breaks down the production of elastin in the skin.<sup>8</sup> Elastin and collagen give skin the plump, full look of youth; these break down with age and lead to visible wrinkles, sagging and skin laxity.

**Grape:** This most ancient of food/herbs is high in proanthocyanidins — oligomeric flavonoids found mostly in the seed and skins of grapes (*Vitis vinifera*). Research has been done on everything from wine to skin and seeds. It is backed by research on skin-cancer protection in a mouse model.<sup>9</sup> One of the most widely known causes of ageing is from advanced glycation end products (AGEs), mainly from excess sugars and carbohydrates. These cause cross linking of elastin and collagen fibres. Gallic acid, catechin and epicatechin, the three major polyphenols in the seeds, all can significantly decrease AGEs.<sup>10</sup>

#### **External ingredients**

Look for the following herbs in your topical cosmetic products. Most contain antioxidants that facilitate free-radical scavenging — the first line of defense for ageing cells.

**Aloe** (*Aloe vera*) has been used to soothe burns and irritated skin for centuries. This ancient desert plant's emollient effects are useful for all skin types.

**Calendula** (*Calendula officinalis*) is an antiseptic, burn- and wound-healer.

**Echinacea** (*Echinacea angustifolia*) may protect the skin against ultraviolet light-induced damage. It is also an excellent healer for wounded skin.

**German chamomile** (*Matricaria recutita*) has anti-inflammatory properties useful for skin creams. Its broad content of flavonoid constituents supports elasticity in small capillaries, for couperose skin (tiny broken blood vessels in the face). Topical is generally safe, with few reports of allergic reactions.

**Ginkgo** (*Ginkgo biloba*) is a circulatory stimulant and free radical scavenger applied preventively to reduce cellular and tissue damage provoked by UV radiation. It increases microcirculation to the skin for the management of ageing skin and is added to many products for treating cellulite and varicose veins. It also inhibits the formation of scar tissue.

**Ginseng** (*Panax ginseng*) increases skin's elasticity and is an effective moisturiser that increases hydration.

**Licorice** (*Glycyrrhiza glabra*) is an effective topical anti-inflammatory for atopic dermatitis and psoriasis. Some studies show it is more effective when used in conjunction with hydrocortisone than cortisone alone.

**St. John's wort** (*Hypericum perforatum*) is an anti-inflammatory for bruising, nerve damage and pain.

## Essential Oils

These fragrant compounds offer their own unique help as cell rejuvenators and communicators, antiinflammatory, antioxidant and antifungal agents. Following is a list of essential oils for various skin types, no matter what your age or skin condition. You can use them as single oils or blend a few together to create a more complex formula. Use a total of 2-5 drops of essential oil (single or blended) to one ounce of carrier oil or face lotion. If using your blend or single note for only one application, one drop is plenty. Depending on the specific oil used, it may need to be diluted further before adding to a single dose. This is accomplished by adding one drop to 4 drops of carrier oil; use 1 drop of that blend to provide approximately ¼ of a drop for sensitive skin.

We all tend to have a ‘constitutional’ skin type, any of which can accompany aging skin, and many of the noted essential oils have multiple uses and benefits. Pick your favorite aromas within your category and blend together or use one single note. Many of these botanicals sourced as essential oils are also utilized as whole herbs in many skin care formulas, and some are suitable to consume as teas. Simply slowing down long enough to make and sip a cup of tea is de-stressing, and your skin will benefit on many levels.

### Mature skin

- Myrrh (*Commiphora myrrha*)
- Frankincense (*Boswellia carteri*)
- Neroli (*Citrus aurantium*)
- Carrot seed (*Daucus carota*)
- Rose (*Rosa damascena*)
- Clary sage (*Salvia sclarea*)
- Rock rose (*Cistus ladaniferus*)
- Carrier oil: Red Raspberry (*Rubus idaeus*), Argan (*Argania spinosa*)

### Dry skin

- Rose (*Rosa damascena*)
- Sandalwood (*Santalum spicatum*)
- Geranium (*Pelargonium graveolens*)
- Ylang (*Cananga odorata*)
- Atlas cedar (*Cedrus atlantica*)
- Vetiver (*Vetiveria zizanioides*)
- Carrier oil: Carrot seed (*Daucus carota*)



### Couperose skin

- Neroli (*Citrus aurantium*)
- Rose (*Rosa damascena*)
- Carrot (*Daucus carota*)
- Helichrysum (*Helichrysum italicum*)
- Carrier oil: Sea buckthorn (*Hippophae rhamnoides*)

### Sensitive skin

- Chamomile (*Matricaria recutita*)
- Lavender (*Lavandula angustifolia*)
- Rose (*Rosa damascena*)
- Neroli (*Citrus aurantium*)
- Jasmine (*Jasminum officinale*)
- Helichrysum (*Helichrysum italicum*)
- Carrier oil: Jojoba

### Oily or acne skin

- Niaouli (*Melaleuca quinquenervia*)
- Lemon tea tree (*Leptospermum petersonii*)
- Honey myrtle (*Melaleuca teretifolia*)
- Kunzea (*Kunzea ambigua*)
- Rosemary (*Rosmarinus officinalis*)
- Cypress (*Cupressus sempervirens*)
- Citrus (*Citrus* spp.)
- Juniper (*Juniperus communis*)
- Spike lavender (*Lavandula spica*; *L. latifolia*)
- Carrier oil: Tamanu oil (*Calophyllum inophyllum*)

### Scars & stretch marks

- Helichrysum (*Helichrysum italicum*)
- Lavender (*Lavandula angustifolia*)
- Frankincense (*Boswellia carteri*)
- Mandarin (*Citrus reticulata*)
- Patchouli (*Pogostemon cablin*)
- Carrier oil: Kukui (*Aleurites mollucana*) / Tamanu oil (*Calophyllum inophyllum*)

## Specialty carrier oils

There are suggestions above on specific carrier oils for the different skin types, but you can really mix and match many of them. Essential oils require dilution and there are many new and botanically active carrier oils available from plants that were once thought of as useful only for their fruits, such as raspberry (*Rubus idaeus*) and pomegranate (*Punicum granatum*) oils. These seeds are cold pressed, and some are available from organic sources. Some of my favorite carrier oils from nut, fruit, herb and vegetable seeds are new on the market, including nigella (*Nigella sativa*), borage (*Borago officinalis*), chia (*Salvia hispanica*), cranberry (*Vaccinium macrocarpon*), carrot (*Daucus carota*), tamanu (*Calophyllum inophyllum*), argan (*Argania spinosa*), blueberry (*Vaccinium angustifolium*), broccoli (*Brassica oleraceae*), sea buckthorn (*Hippophae rhamnoides*) and more. The common and familiar carriers of almond, jojoba, rosehip, coconut, apricot, pumpkin, avocado and hazelnut are still wonderful and readily available. Often the strong odor, intense activity, or high price of some of these oils will encourage their blending with the less expensive and more common carrier oils. Customizing the essential oil with the attributes of the carrier oils will make your formulas efficacious and distinctive.

## Basic skin care regime

Having healthy skin doesn't necessarily require spending hours each week primping. A simple routine of cleansing with a pH balanced liquid soap or cream cleanser (depending on your skin type), toning with an aromatic hydrosol (rose and neroli are easily found), and moisturizing with a botanically rich cream or customized essential oil formulation constitutes the basics of good skin care. Weekly exfoliation with a mild blend of powdered oatmeal and lavender flowers, and the use of hydrating or nutrient rich botanical masks can be customized according to skin type.

Whatever your favorites are, including botanicals in your daily health care, both internally and externally, will contribute to your longevity and radiant skin

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Mindy is an herbalist, aromatherapist, esthetician and the co-author of *Aromatherapy, a Complete Guide to the Healing Art* (2009) which has a large chapter on skin care.

# *Rose, The Empress of Flowers*

Mindy Green

“When love came first to earth, the Spring spread rose-beds to receive him.” Thomas Campbell

## **Intro and History**

Throughout the world Rose has been the symbol of love, purity, devotion, inspiration, beauty, elegance, compassion, spirituality and sensuality for many cultures from ancient times to the present. Though many of these connotations are based on folklore, religious beliefs, traditional, empirical and anecdotal observation, rose has attributes with proven benefits for the physical body. Its connotations for the emotional and spiritual body must be left to those who feel its benefits.

Rose is an all but forgotten and overlooked herb in today’s herbal apothecary. The benevolence of this historically valued plant provides healing in its many forms of leaf, blossom, fruit and essential oil, especially in our challenging times that call for stability, resiliency, authenticity and an open heart. It has the ability to strengthen the physical heart and open the spiritual heart that can often block the path to deeper healing.

The non-toxic Rosaceae family provides many common edible fruits and nuts including apricot, almond, apple, plum, pear, cherry, hawthorn, and numerous berries. The two main species of commercial production of rose oil today is *Rosa centifolia* (hybridized with *R. gallica* to produce Rose de Mai) and *Rosa damascena*, selected by the majority of perfumers to be the standard for floral odors.<sup>1</sup>

Cultivated for over 4,000 years, rose is perhaps the most celebrated of all flowers. It has been called “Queen of the Flowers” and has a tradition of use before recorded history in many cultures as both perfume and medicine. The significance of rose is both religious and mythological. It was prized as the flower of Aphrodite to the ancient Greeks; to the early Christians it was the flower of the Virgin Mary; and to the Arabs represented the highest spiritual achievement. Rose was also a symbol of secrets held in confidence. Webster’s Dictionary lists the term “Subrosa” as meaning “under the rose”, or “under the influence of rose”. It was an ancient practice to hang a rose over a council table, letting all who attended know that the information shared was sworn to secrecy; all attendees had faith in their fidelity.

Before the discovery of its modern day extraction methods, rose was used in its whole form; the flowers were prized for their beauty and fragrance, and the petals, leaves, and fruits were used as food and medicine. These were made into infusions and jams, and oils, salves and cosmetic preparations for body care. It is believed that Bulgarian rose distillation began in the 17th century, though extraction by maceration is reported in ancient Sanskrit literature, and ancient drawings from 10,000 BC depict primitive stills.

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<sup>1</sup> Brud, W. S. , *Perfumer and Flavorist*. 1986. 1 1, 4:27.

The art of distilling rose may have had its origins in Persia where guests were sprinkled with rose water as a sign of welcome. Princess Nour Gikhan ordered fountains filled with the fragrant waters; the foam that collected on top of the fountain water was wonderfully fragrant. She named it “Attar” after her husband.<sup>2</sup> Today Attar of Rose refers to Bulgarian rose oil produced by distillation, though attar has also come to mean a blend of oils.

The ancient Egyptians considered rose a cure-all and Hippocrates recommended its use for a range of gynecological and obstetric conditions. Dioscorides used it for eye and ear diseases, headache and gastrointestinal disorders, and Galen prescribed it for hangover, eye inflammation and brain injuries. It was popular with Avicenna and other alchemical physicians of ancient times in a variety of medicaments used internally and externally for a host of ailments including wounds, liver disorders, burns, heat stroke, dental caries, and opium intoxication. The Romans regarded rose as a hangover remedy and went so far as to infuse it in wine. This may also account for their practice of showering guests with rose petals at the end of a feast. One poor unfortunate reveler was reportedly smothered to death in rose petals. Physicians of the middle ages believed that rose oil had cardio-tonic effects, and today rose has therapeutic indications for all problems of the vascular system. The pharmacopoeias of the sixteenth, seventeenth and eighteenth centuries contain a large number of medicaments flavored with rose water, powdered roses, or essence of rose.<sup>3</sup> It is long associated with matters of the heart, physically, emotionally and spiritually, and is said to soothe feelings of anger, jealousy, envy, fear and sorrow.

### **Therapeutic Uses of Essential Oil**

Though many of the early medicinal uses of rose were based on empirical observation, tradition, and folklore, the modern-day use of rose among medical practitioners and aromatherapists bear out the historical uses through a number of studies.

Bulgarian scientists have demonstrated that rose oil can reduce high blood pressure and heart arrhythmia.<sup>4</sup> They have shown that rose oil is spasmolytic and protects against gastrointestinal ulceration. Rose oil and rose hydrolat both show antibacterial action against streptococci, staphylococci, diphtheria bacteria, anthrax bacillus and E coli.<sup>5</sup>

Gall stones were successfully treated in clinical tests with a drug (Girostal) manufactured in Bulgaria by Pharmachim, containing rose oil and vitamin A. The study reports a hypolipidemic effect, especially in cholelithiasis and liver steatosis, and showed no allergic reaction.<sup>6</sup>

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2 Brud, W. & Syzydłowska, I. “Bulgarian Rose Otto, Priceless Perfume, Precious Medicine.” *International Journal of Aromatherapy*. Vol 3 No3. Pg 17-19. Autumn 1991.

3 Parry, E. Op. Cit. Pg. 632.

4 Kirov, M. and Vankov, S. “Rose oil and Girostal”. *Medico-Biologic Information*. 3: Pg. 3. 1988.

5 Maleev, A. et al. “Pharmacological and Clinical Studies.” *Rosanol - Bulgarian Rose Oil*. Sofia. 1973.

6 Kirov, M. Op. Cit. Pg 23-35.

Rose is used in a number of vaginal disorders including leucorrhea, excessive menstrual flow, and cases of infertility. In fact, though it is the consummate “feminine” remedy it is reported to increase sperm count in men.<sup>7</sup> Rose not only has indications for digestive, liver, vascular, nervous, and reproductive disorders, but studies reported in *Folia Medica* show it increases mental concentration.<sup>8</sup> Medico-Biologic Information reported on the safety and low oral toxicity of rose oil. It has no cumulative effect and does not appear to have any embryonic or teratogenic effects.<sup>9</sup>

A preparation of rose ointment was found useful in cancer patients with radiation burns, radiodermatitis and radionecrosis. It was also useful in 154 cases where antibiotics were ineffective in treating skin ulcers.<sup>10</sup>

Rose hydrosol has medicinal value almost equal to rose oil. It makes a tasty beverage, even when highly diluted, and has prophylactic and therapeutic properties in stomach and liver disorders. It is a quick remedy for hangover. Rose water is characterized by a pleasant and refreshing aroma, is non irritating, and has softening and hydrating effects on the skin.<sup>11</sup>18a It has pH balancing properties, and contains unique compounds that make it an excellent disinfecting and anti-inflammatory remedy for skin care. It is hydrating and soothing for dry, delicate and mature complexions.

Traditional Chinese Medicine (TCM) uses rose oil both internally and externally. Since their system has no basis in allopathic medicine as practiced in the West, it is hard to compare disorders based on a TCM diagnosis. However, it may have some application based on symptoms. For instance, it is indicated in TCM for “liver fire” (constipation and irritability), “heart fire” (insomnia and palpitations), “stomach fire” (mouth sores and thirst for cold drinks), and “blood heat” (spontaneous bleeding). Rose is astringent, decongestant, and cooling, and is indicated wherever there is “damp heat”.<sup>12</sup> The psychological actions of rose oil for depression and anxiety seem wholly anecdotal, but upon closer investigation there may be a more tangible basis for this action. It is speculated that these states are often the result of an over stressed kidney/adrenal system, which may be corrected through the nourishing effect of rose on the hypothalamus area of the limbic system.<sup>13</sup> While this seems plausible scientific evidence is scarce in supporting the theory.

Rose oil is much more than a pleasing perfume ingredient. Through traditional use and modern research it has proven wide ranging effects including sedative, antiseptic, anti-inflammatory, digestive, spasmolytic, restorative, cardio tonic and hypolipidemic actions, to name a few.

## Healing the Heart

Rose offers much in the way of clearing the emotion challenges that keep us stuck in sorrow. This sacred plant has been used in varying spiritual and religious traditions to heal grief and care for a vulnerable heart. Whether the issue is the loss of a romantic relationship, excessive self-criticism, the passing of a loved one or any other issue that causes grief, rose is a wonderful antidote to sadness.

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7 Holmes, P. Op. Cit. Pg. 10.

8 Tachev, T. et al. *Folia Medica*. 11, Pg 307. 1969.

9 Kirov, M. Op. Cit. Pg. 15.

10 Christov, G. *Medico Biologic Information*. 3: Pg. 8. 1969.

11 <sup>18a</sup> Portarska, F.; Apostolova, B.; Nenov, N.; Dragostinov, P; Vidinova, Yu. “Bulgarian Rose Water”. *Medico Biologic Information*. Sofia, Bulgaria. 1989, 6, 3-7.

12 Holmes, P. *Western Energetics of Herbs*. Pg 512. Artemis. Boulder, C O. 1991.

13 Holmes, P. *International Journal of Aromatherapy*. Op. Cit. Pg 11.

## Food Use

Incorporating roses into your diet is an easy and pleasant way to enjoy their health benefits. Food preparations of rose, whether as flower petals or rose hips, has been popular in various cultures. Rose petal jams and cordials are still commonly found in Europe, and roses remain a traditional food in Middle Eastern cooking, mostly for desserts. Rose water continues to be prevalent for flavoring drinks, rice pudding and yogurt dishes. Diluted rose oil is delicious in a variety of beverages or to flavor ice cream, fruit salad, puddings, and numerous other sweets. Unsprayed rose petals can be used fresh in salads, jams, honey, and cakes. Here are a few more ideas for incorporating rose into distinctive culinary delights.

## Rose Hips

The fruit of rose, known as the “hip” is a fleshy pod containing the fruits and seeds of the rose. They were widely used by the American Indian and prevented scurvy due to their high content of vitamin C. Rose hips can be made into jams, syrups and jellies with either the fresh or the dried hip. The “official” hips are from the wild Dog Rose (*Rosa canina*), but many species are useful.

## Fresh Rose Petal Infusion

Harvest fresh, unsprayed fragrant roses in the morning and pack a quart sized wide-mouth jar with petals (no sepals). Fill with water and refrigerate for a minimum of two hours before enjoying this delicious beverage. One refill will result in a slightly less flavorful second batch. It will keep for several days, refrigerated.

## Rose Leaf Tea

The leaves of roses can be used much the way raspberry leaves are utilized, as a medicinal tea and uterine tonic. They are slightly astringent and useful for mild cases of diarrhea or menstrual cramps. If you don't have access to fresh or dried leaves this tea can also be made with organic dried flowers.

Add one cup of boiling water to 2 teaspoons of dried plant material (or 2 tablespoons of fresh). Steep 10 minutes and enjoy.

## Rose Hip Jam or Syrup

1/2 cup dried hips (pericarp only, seeds and fuzz removed)  
3 cups apple juice  
1/2 cup honey  
juice of 1/2 lemon

Soak the hips in the juice overnight and bring to a boil. Remove from heat, puree in a blender and strain. Return to the pot, add honey and lemon juice. Reduce over low heat to the desired consistency for syrup or jam.

## Vanilla Rose Cordial

2 oz dried Rose Petals  
2 Vanilla beans  
1 oz Vitex berries  
1/2 oz Damiana  
2 cups Brandy  
1/2 cup rose water

Slit the vanilla beans lengthwise and cut into one inch pieces. Add all the other ingredients and let soak together for two weeks. Strain, bottle and sip in special cordial glasses. This is a great nightcap for a romantic evening.

### **Rose Lemonade**

1 cup prepared lemonade

1/4 cup rose hydrosol

Combine, serve with flower petal ice cubes.

HYDROSOL NOTE: check the label to assure a true distillate of roses, not rose essence (often synthetic) added to water.

### **Rose Ointment**

1/2 cup rose water (room temperature)

1/4 cup coconut oil

1/4 -1/2 oz beeswax chips (depending on how firm you desire)

6 drops rose essential oil

Melt coconut oil and beeswax together over low heat. Whip in the rose water until emulsified and add the essential oil. Apply to dry skin, lips, hands or feet.

### **Essential Oil Recipes**

NOTE: Pure rose oil solidifies in cold temperatures; warm before dispensing. Use only distilled rose oil (AKA rose otto), not rose absolute (extracted with solvents).

### **Rose Honey**

1/2 cup liquid honey

1 drop rose essential oil

Mix well, store in an airtight container. This lends a beautiful flavor and fragrance to tea or toast. A milder version can be made with fresh flower petals instead of essential oil, but won't be as flavorful.

### **Rose extract**

1 ounce vodka or everclear

2-3 drops rose essential oil

Dash of vegetable glycerine

Use 1/2 -1 teaspoon in a recipe for flavoring

### **Rose Cream**

2 cups whipped cream, canned coconut milk or yogurt

1 tablespoon sugar/honey/agave 1 drop rose essential oil

Mix and serve as dessert or beverage topping.

### **Conclusion**

Rose has influenced cultures economically, religiously, spiritually, medically, and esthetically since humankind could smell and appreciate its fragrance. It is esteemed for its odor, subtle flavor, and connotations of love unequalled among flowers. Life is more lavish and enjoyable for the fragrant and extravagant gifts it offers.

# Intestinal Gardening

Mindy Green

## Intestinal Gardening

Mindy Green RH, RA

"Our bodies are our gardens" W. Shakespeare



1

## It all begins in the Gut

- Our microbiome begins to form at birth
- Prevalent with SAD diet
- Promoted with bad carbs and sweets
- Food allergies
- Chronic stress
- Toxic overload
- Chronic constipation



2

## Bacterial balance

- The bacteria in the body outnumber human cells 10 to 1; many found in the gastrointestinal tract.
- Gut bacteria plays a prominent role in our health and wellbeing, having evolved with us.
- Millions of bacteria protect and nourish the body.
- **Symptoms of imbalance: acne, digestive upset, elimination issues, cradle cap, eczema, auto immune / behavioral disorders, bacterial vaginosis, candida, brain fog, depression, diabetes, etc.**

3



4

## SIBO

- Small intestinal bacterial overgrowth
  - Oregano oil and berberine (70% effective)
    - Monique Class, MS, APRN, FNP-BC, Family Nurse Practitioner, Center for Functional Medicine, getting 98-100% results
  - 2 caps each for 2 months
    - Better results than w/antibiotic Xifaxan\* (IBS drug)
    - <https://www.metagenicsinstitute.com/podcasts/leaky-gut-syndrome-presented-robert-martindale-md-nhd/>

Good gut health can change your gene expression!

<http://americangut.org>

5

## PCOS and Gut Health

- Less Gut Microbial Diversity in Polycystic Ovarian Syndrome; may be linked to other hormonal imbalances including increased levels of testosterone and hirsutism.
  - Torres PJ, et al. Gut microbial diversity in women with polycystic ovary syndrome correlates with hyperandrogenism. *J Clin Endocrinol Metabol.* 2018;Jan 23.



6



## Eating disorders related to gut health?

- “the microbial environment of the gastrointestinal (GI) system may represent a key causative factor triggering production of certain neuropeptide-reactives resulting in modification of eating-related behaviors and eventually eating disorders.”
  - Dr. Fetissov and Dr. Dechelotte (French researchers and practitioners)

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## Leaky Gut As a Danger Signal for Autoimmune Diseases

Qinghui Mu,<sup>1</sup> Jay Kirby,<sup>1</sup> Christopher M. Reilly,<sup>2</sup> and Xin M. Luo<sup>1\*</sup>

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### Abstract

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The intestinal epithelial lining, together with factors secreted from it, forms a barrier that separates the host from the environment. In pathologic conditions, the permeability of the epithelial lining may be compromised allowing the passage of toxins, antigens, and bacteria in the lumen to enter the blood stream creating a “leaky gut.” In individuals with a genetic predisposition, a leaky gut may allow environmental factors to enter the body and trigger the initiation and development of autoimmune disease. Growing evidence shows that the gut microbiota is important in supporting the epithelial barrier and therefore plays a key role in the regulation of environmental factors that enter the body. Several recent reports have shown that probiotics can reverse the leaky gut by enhancing the production of tight junction proteins, however, additional and longer term studies are still required. Conversely, pathogenic bacteria that can facilitate a leaky gut and induce autoimmune symptoms can be ameliorated with the use of antibiotic treatment. Therefore, it is hypothesized that modulating the gut microbiota can serve as a potential method for regulating intestinal permeability and may help to alter the course of autoimmune diseases in susceptible individuals.

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## Skin/Gut Axis

- The digestive tract and the skin have a cross-directional relationship that allows one to affect the other, via the immune system.
- our skin contains microbes that keep our pH in balance, providing the necessary “natural moisturizing factor” so important for healthy skin.
- These bacteria are as valuable to our immune system as those in our gut and play an important role in inflammatory signaling.
- Rosacea is associated with what gut bacteria?

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## Heal the Gut, Heal the Skin

### Symptoms

- Leaky gut syndrome
- Recurrent yeast/fungus
- Anxiety behaviors/ADHD
- IBS
- Constipation
- Diarrhea
- Bloating
- Food allergies

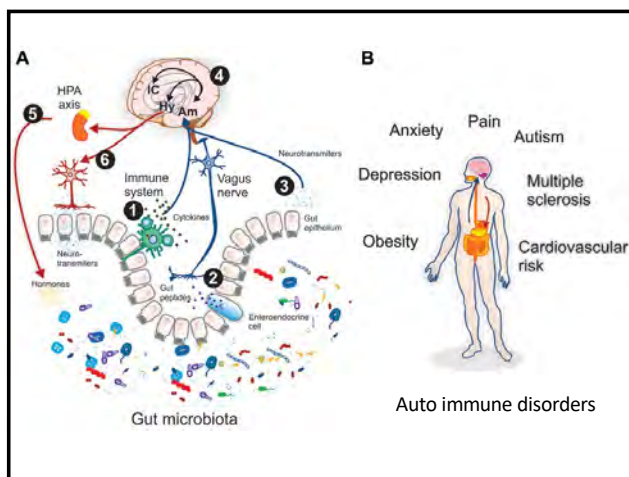
### Remedies

- Pro and prebiotics
- Fermented foods
- Omega 3 fats
- Eliminate gluten/dairy?



70% of serotonin / immunity is in the gut

10



11

## PubMed – 50+ studies on probiotics / mood

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- 4: Misra S, Mohanty D. **Psychobiotics: A new approach for treating mental illness?** *Crit Rev Food Sci Nutr.* 2017 Nov 30:1-7.
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- 8: Wallace CJK, Milev R. **The effects of probiotics on depressive symptoms in humans: a systematic review.** *Ann Gen Psychiatry.* 2017 Feb 20;16:14.
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12

## Sprouting for Better Digestion

- Sprouting and fermenting grains/beans reduces phytates and lectins = easier to digest
- Lectins are found in grains, beans
  - Problematic: wheat, spelt, rice, soy
- GMO and hybridized foods are highest in lectins (modified to fight off bugs)



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## Steps to Repairing LGS

1. REMOVE foods and factors that damage the gut
2. REPLACE with healing foods
3. REPAIR with specific supplements
4. REBALANCE with probiotics

top foods to remove that cause leaky gut:

- sugar
- grains
- conventional meat and dairy
- GMO foods

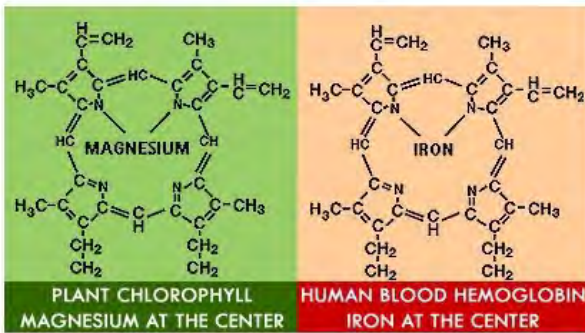
top toxic exposures to eliminate:

- tap water
- pesticides
- NSAIDS
- antibiotics



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## Plant Nutrition



GREENS: best food to oxygenate the blood

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### Fermented Foods

- Coconut water kefir
- Sauerkraut
- Yogurt
- Kimchi
- Kombucha
- Miso
- Tempeh
- \*\* bone broth

### Nutrient Wild Greens

- Nettles, Mallow
- Watercress
- Dandelion
- Lambs quarters
- Purslane
- Chickweed
- Miner's lettuce
- Dock, mustard

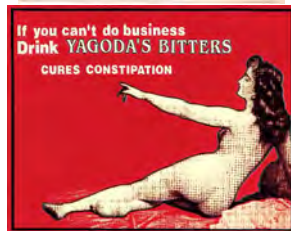
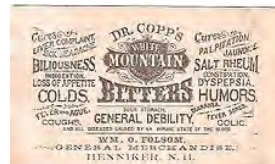
Water Kefir grains: <http://www.keysands.com/water-kefir/>

[http://www.amazon.com/Lifetime-Kefir-Grains-Active-Culture/dp/B002HP9H70/ref=sr\\_1\\_2?ie=UTF8&qid=1408379815&sr=8-2&keywords=organic+water+kefir+grains](http://www.amazon.com/Lifetime-Kefir-Grains-Active-Culture/dp/B002HP9H70/ref=sr_1_2?ie=UTF8&qid=1408379815&sr=8-2&keywords=organic+water+kefir+grains)

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## The Importance of Bitters

- Digestive aid
- Increases salivation and gastric acids
- Stimulates liver / bile
- Reduces sugar cravings
- Liver tonics



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### Bitter tonics tonify nerve supply to digestive organs and increase secretions and enzymes (apertifs)

- Gentian, goldenseal
- Artichoke, rue
- Angelica, horehound
- Yarrow, Oregon grape
- Mugwort, chamomile
- Wormwood, cascara
- Dandelion, chicory

### Aromatics help relieve gas and bloating, relax sphincters, increase peristalsis (cordials)

- Fennel
- Ginger
- Cardamom
- Cinnamon
- Anise
- Orange peel
- Peppermint

Mucilage herbs soothe mucous membranes, calm allergic responses, and cools overheated tissue: slippery elm, aloe, okra, marshmallow, comfrey, flax, chia, chickweed, plantain, psyllium.  
Antispasmodics: chamomile, yarrow, wild yam, passion fl, poppy.

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## Candida remedies

- Berberine – herb sources
  - Oregon grape, coptis, golden seal
- Caprylic acid (coconut oil, fractionated)
- Antifungals
  - Herbs: Black walnut, garlic, wormwood, epazote, bitters
  - EOs: Thyme, oregano, cinnamon, clove (caution)
  - Gum resins: myrrh, mastic



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## Digestive Enzymes

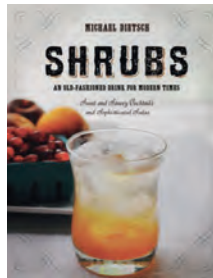
- 1-2 capsules w meals decreases the chance that partially digested foods particles and proteins from damaging your gut wall.

Digestive Enzymes		
Organ	Enzyme	Effect on Nutrient
Mouth	Salivary Amylase	Breaks down starch into maltose
Stomach	Pepsin	Breaks down proteins into dipeptides
Pancreas	Amylase	Breaks down starch
	Trypsin	Breaks down proteins into dipeptides
	Lipase	Breaks down lipids
Small Intestine	Maltase	Breaks maltose into glucose
	Sucrase	Breaks sucrose into glucose
	Lactase	Breaks lactose into glucose
	Peptidase	Breaks down dipeptides into amino acids.

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## Boosting Digestive Fire

- Drink a glass of water 20 minutes before a meal to pre-hydrate the stomach's bicarbonate acid buffer, which is 80% water.
- Drink 1 tablespoon of apple cider vinegar with a cup of water 20 min before meals.
- Chew 2 dime-sized slices of ginger sprinkled with lemon juice and salt before a meal.



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## L-Glutamine

- Essential anti-inflammatory amino acid; critical for repair of intestinal lining, coating cell walls and repelling irritants
- Supports cells throughout the body and brain
- Supports digestive, immune and muscular systems
- Protects and coats cell walls
- Repels irritants
- Dose: 2-5 grams twice daily
- ALSO: Zinc, Licorice, Aloe juice, mucilaginous herbs



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## Rhodiola rosea

This study investigates the ameliorative effect of salidroside (SAL) from *Rhodiola Rosea* L. on the intestinal microbiota subject to furan-induced liver injury in a mouse model. The authors found that SAL supplement restrained intestinal microbial dysbiosis and systemic low-grade inflammation induced by furan. The study concludes that SAL is a potential therapeutical and prophylactic compound in medication for hepatic diseases.

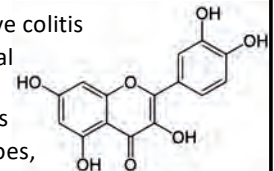
March 2019  
Food and Chemical Toxicology  
DOI: <https://doi.org/10.1016/j.fct.2019.01.007>

[Ameliorative effect of salidroside from \*Rhodiola Rosea\* L. on the gut microbiota subject to furan-induced liver injury in a mouse model](#)

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## Quercetin

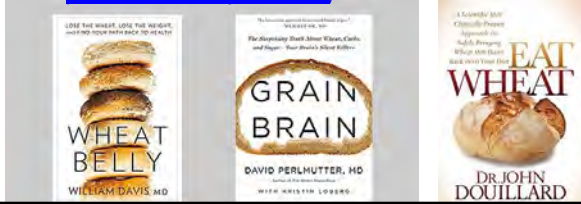
- improves gut barrier function by supporting tight junctions
- stabilizes mast cells and reduces the release of histamine, common in food intolerance
- effective in healing ulcerative colitis
- Dose: 500mg with each meal
- Commonly used to treat hay fever and other allergies
- Foods: onions, kale, tomatoes, blueberries, broccoli, apples



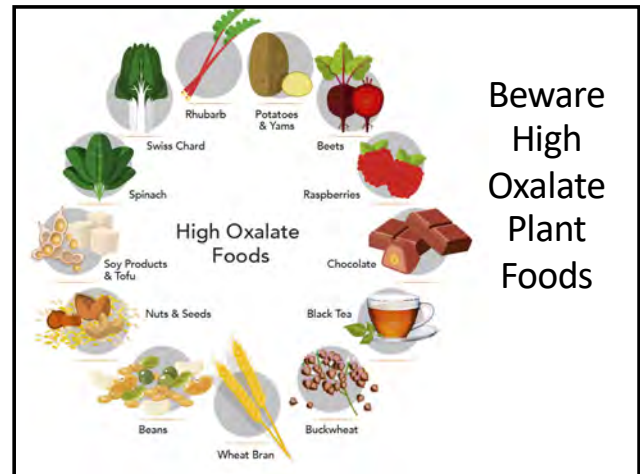
24

## Food Allergens / Autoimmunity?

- Wheat - Modern wheat, essentially created in a laboratory, possesses an array of proteins that are changed from that in original wheat: alpha amylase inhibitors, trypsin inhibitors, serpins, thioreductases, etc.
  - The altered sequence of amino acids in these proteins are responsible for allergic reactions such as asthma, eczema and other skin rashes, and gastrointestinal distress.
  - <https://www.drmerlmutter.com/the-empowering-neurologist-david-perlmutter-md-and-dr-john-douillard/>



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## Give up Dairy?! allergies vs sensitivities

- Lactose intolerance - symptoms may include abdominal bloating and cramps, flatulence, diarrhea, nausea, reflux
- Casein sensitivity - Apha-s1 is the major casein protein present in cow milk and has been identified as one of the major cow milk allergens.
- Other common food allergens: gluten, dairy, soy, nuts, eggs, shellfish, corn, some meats



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## Probiotic options

over 1,000 microbes inhabit our gut

Product	Food type	Probiotic microorganisms
Bio-K+® (BioKplus)	Fermented soy	Lactobacillus acidophilus Lb. casei
Dang Quai (Body Ecology)	Fermented beverage	Lb. acidophilus Lb. delbreuckii
InnergyBiotic (Body Ecology)	Energy drink	Lb. acidophilus Lb. delbreuckii
CocoBiotic (Body Ecology)	Combination of cultured vegetables and young coconut kefir	Lb. acidophilus Lb. delbreuckii
HAPPYBELLIES cereals	Brown rice	Lb. acidophilus Lb. salivarius Lb. plantarum B. lactis

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## Effects of *Lactobacillus acidophilus*

- main source: breast milk; increases lactose tolerance
- Reduces coliform bacterial count (reducing intestinal putrefaction) Increases acid resistance;
- Protective against Staph, Salmonellae, etc.
- Reduces fecal enzymes involved in procarcinogenesis
- Degrades toxic nitrates/nitrites which provoke genetic mutations
- Protects against radiation
- Helps lower cholesterol
- Also, use *L. rhamnosus*; boosts immune response
- Take with meals

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## Bifidobacteria



- There are approximately 30 species of bifidobacteria, making up approximately 90% of the healthy bacteria in the colon.
- appear in the gut within days of birth, especially in breastfed infants.
  - Some of the bifidobacteria used as probiotics are *Bifidobacterium bifidum*, *Bifidobacterium lactis*, *Bifidobacterium longum*, *Bifidobacterium breve*, *Bifidobacterium infantis*, *Bifidobacterium thermophilum*, and *Bifidobacterium pseudolongum*.
- bifidobacteria can help with IBS, dental caries, improved blood lipids, and glucose tolerance.
- Bifidobacterium infantis* 35624 was given to 362 patients with irritable bowel syndrome in a four-week study; showed improvement in the symptoms of abdominal pain, bloating, bowel dysfunction, incomplete evacuation, straining, and the passage of gas.
- Bifidobacterium lactis* Bb12 is reported to have beneficial effects on metabolism, including lowered serum LDL cholesterol in people with type 2 diabetes, increased HDL in adult women, and improved glucose tolerance during pregnancy.

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## Saccharomyces boulardii

- *S. boulardii* is the only yeast probiotic. Some studies have shown that it is effective in preventing and treating diarrhea associated with the use of antibiotics and traveler's diarrhea.
- prevents the reoccurrence of *Clostridium difficile*, treats acne, and reduces side effects of treatment for *Helicobacter pylori* (rosacea).
- Needs no refrigeration
- Can take during antibiotics



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## Streptococcus thermophilus

- produces large quantities of the enzyme lactase, making it effective in the prevention of lactose intolerance.



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## Choosing a Probiotic

- 5 billion to 200 billion bacteria
- look for Lactobacillus: acidophilus, planataris, rhamnosus, reuterii (wide variety)
- different types of Bifidobacterium
  - Longum (Align); helps digest carbs, beans, cruciferous veggies. Antiinflammatory, constipation, diarrhea, gas, cholesterol excretion,
- [Primadophilus Probiopia Pearls by Nature's Way](#). contains 1 billion CFU per capsule of *B. longum* BB536, *B. bifidum*, *B. breve* and *B. infantis*

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## Prebiotics

- Cal-mag butyrate, 200 to 300 mg, one to two times a day.
- Arabinogalactans, 500 to 1000 mg, two times a day.
- Inulin powder: 4 to 6 grams a day, divided into two doses.
  - Inulin (oligosaccharides): a non digestible dietary fiber that ferments in the large intestine, becoming healthy intestinal bifidobacterium
- Fermented foods!

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## Peppermint Oil

Most of the human research on peppermint performed thus far indicates this plant has great value in treating gastrointestinal disorders, including:

**Irritable Bowel Syndrome** – Since the late 90's it was discovered that enteric-coated peppermint oil capsules are safe and effective in the treatment of this increasingly prevalent disorder. **Colonic spasm** – Peppermint oil has been studied as a safe and effective alternative to the drug Buscopan for its ability to reduce spasms during barium enemas.

**Gastric Emptying Disorders** – Peppermint has been found to enhance gastric emptying, suggesting its potential use in a clinical setting for patients with functional gastrointestinal disorders.

**Functional dyspepsia** – A 2000 study published in the journal *Ailment Pharmacology and Therapy* found that 90 mg of peppermint oil and 50 mg of caraway oil resulted in 67% of patients reporting "much or very much improved" in their symptoms of functional dyspepsia.

**Infantile Colic**: A 2013 study found that peppermint is at least as effective as the chemical simethicone in the treatment of infantile colic.



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## Resources

- *The Science of Leaky Gut Syndrome: Intestinal Permeability and Digestive Health* by Case Adams, ND
- *Wheat Belly* by William Davis, MD
- *Probiotics for Dummies* by Challah Shekhar, MD
- *The Probiotics Revolution* by Mairi C. Noverr, et al.
- <https://todayspractitioner.com/mood-microbiome-resource-centre-page/#.W1CVXC2ZOLg>
- <http://bodyecology.com>
- <http://elenaspantry.com>
- <http://glutenfreegoddess.blogspot.com>
- <http://www.womentowomen.com/digestive-health/healing-leaky-gut-syndrome-open-the-door-to-good-health-2/>

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## *Faronika the Fish: The Liminal Realms and Plants for States of Being*

Taught by Rachel Budde, Herbalist and founder of Fat and the Moon

*This class is in dedication and honoring of my Slovenian heritage and lineage, and to the herbal lineage within us all.*

*May Faronika assist in our expansive awakening to ourselves, our history and our belonging.*



France Mihelič, Riba Faronika (1990) Silkscreen

### **Faronika the Fish, and at times, half woman, half fish from Slovenian folklore.**

She is enormous in her power to make and unmake the world. She represents the ambient and liminal realms which hold up the universe. Faronika is often misunderstood or ignored because her domain is the ancient water of the unconscious. Yet, to swim alongside her, in the depths, is to connect to one's own potency and wholeness.

Herbal medicine is so much more than cures for illnesses. Plants are beings, with their unique personalities and energies and these aspects are parts of their medicine. Our energetic state, and the condition of our minds, hearts and spirits are foundational to our health. We can work simultaneously with the chemical constituents of botanicals while collaborating with the energetics of plants as we explore expanded states, dream space and psychic boundaries.

With Faronika as our guide, we delve into the magic of plants, and employ their aid as we reclaim our inner worlds.

### From **Supernatural beings from Slovenian myth and folktales**

By Monika Kropelj:

“Slovenes still have a tradition that says that a huge fish carries the earth on its back. When the fish moves, an earthquake occurs. When it dives into the water, this will cause the end of the world. The same happens in the folk song about Faronika the fish in which Jesus asks the fish not to swing its tail or turn onto its back lest the world be sunk or doomed:”

*A fish swims in the sea,  
A fish named Faronika.  
Jesus swims after it  
From the great sea depths.  
“Wait for me,  
Faronika the fish!  
We want to ask you  
What goes on around the world.”  
If I wag my tail  
The whole world will be sunk.  
If I turn onto my back  
The whole world will be doomed.  
“Oh do not do this,  
Faronika the fish.  
For the sake of innocent babes  
And women in labour”*

**Faronika the Fish** is our guide into the watery realm of the unconscious, which is the place we often act from without awareness. She is the ‘something greater’ we need to feel connected to for a sense of our own purpose and belonging.

**Bringing the unconscious** into conscious awareness is key to healing from trauma, destructive patterns, and for leading a more intentional life.

**Past, and current trauma**, environmental degradation, the unrelenting pace of our world, and the insidious distraction of technology and media, makes the unconscious, liminal realm harder and harder to access. Yet it is in the unformed, fluid spaces that we have the most possibility to grow and evolve. We

need to dream, wonder and be in awe to be well.

**Psychedelic therapies** are on the rise to access the fertile, unconscious and liminal realms for both healing and a sense of connection to something bigger (Faronika). Supportive and protective plants have always been employed in traditions working psychoactive plants and fungi, for both practitioner and patient.

**On the biological level**, letting our minds be open, wander and imagine literally helps to create new pathways of thinking.

**The human ability** to tell different stories about ourselves and others is what shapes our perception and our reality. What could be possible when we tell ourselves life affirming, and inclusive stories?

### **Faronika and the Plants: Inspired by Slovene Folk Herbalism**

#### **Nervines for emotional resilience and wellness:**

- Linden *Tilia*
- Rosemary *Rosmarinus officinalis*
- Hawthorn *Crataegus*
- Rose Geranium Rasp-leaf Pelargonium *Pelargonium graveolens*
- Chamomile *Matricaria chamomilla*

#### **Nootropics to create and sustain new pathways of connection:**

- Rosemary *Rosmarinus officinalis*
- Linden *Tilia*
- Hawthorn *Crataegus*
- Sage *Salvia officinalis*

#### **Energetics of plants and to support liminal states:**

- Juniper *Juniperus communis*
- Wormwood, Mugwort *Artemisia absinthum, Artemisia vulgaris*
- Rosemary *Rosmarinus officinalis*
- Rose Geranium / Rasp-leaf Pelargonium *Pelargonium graveolens*
- California Poppy *Eschscholzia californica*
- Bracken *Pteridium aquilinum*
- St. John's Wort *Hypericum perforatum*
- Snapdragon *Antirrhinum majus*

#### **Resources:**

[www.rachelbudde.com](http://www.rachelbudde.com)

<https://etnobotanika.si/>

<https://ojs.zrc-sazu.si/sms/index>

[www.fatandthemoon.com](http://www.fatandthemoon.com)

@ zlatababababa

@ fatandthemoon



## *Kvatrna Baba: The Fierce Deity of Rest*

**Taught by Rachel Budde, Herbalist and founder of Fat and the Moon**

*This class is in dedication and honoring of my Slovenian heritage and lineage, and to the herbal lineage within us all.*

*May Kvatrna Baba remind us to rest, reflect and repair so we can be the balance we seek.*



*By Slovenian Artist, Maja Polanski*

**Kvatrna Baba or Quarter day woman, is the fearsome crone who oversees the cycles of work and rest from Slovenian folk tradition.** During her quarterly sacred days, people must abstain from household chores and work or they suffer the consequences. If a woman is caught spinning or sewing by Kvatrna Baba, she runs the risk of being chopped up into pieces and boiled in Kvatrna Baba's soup, bursting into flames or being frightened literally to death! Kvatrna Baba is a fierce protector of rest: to remain active is to experience her wrath. Kvatrna Baba epitomizes the need for balance between rest and work, external and internal, expansion and contraction. This is the rhythm of Life itself.

### **Quarter Days or 'Ember Days' 2023**

The word *ember* originates from the Latin *quatuor tempora* 'four times'

March 1-3

May 31- June 2

September 20-23

December 20-23

**Our own capacity to find equilibrium** is dictated by the proper functioning of our nervous system, specifically our autonomic nervous system. The autonomic nervous system contains two aspects, one which speeds up the functioning of the body to be active and alert- the sympathetic system, the other, parasympathetic system, which slows us down so we can rest and rebuild. When the autonomic nervous system is out of balance, a domino effect of dysregulation and dysfunction occurs.

**Repatterning the body around sympathetic nervous system dominance** with the assistance of botanicals, lifestyle changes and other emotional and psychotherapeutic modalities is foundational to the balance of the two aspects of the nervous system, and overall health.

**The efficacy of plant medicine** lies in the ability to support the deep, internal places of wellness rather than simply treating superficial symptoms.

**Sleep, digestion, and the systems of reproduction** and creation are under the domain of the parasympathetic nervous system.

**Plants in the categories of adaptogens and nervines** promote nervous system balance. Plants that promote better digestive function, hormone balance, support immune health and cellular repair also make us more resilient to the negative effects of stress.

### **Kvatrna Baba: Plants for Parasympathetic Support for each Quarter**

#### **Spring**

Dandelion *Taraxacum officinale*

Lemon Balm *Melissa officialnis*

Spruce *Picea*

## **Summer**

Elderflower *Sambucus nigra*

Sour Cherry *Prunus cerasus*

Linden *Tilia*

## **Fall**

Wood Ear Mushroom *Auricularia auricula*

Tinder Mushroom *Fomes fomentarius*

Birch Mushroom *Piptoporus betulinus*

## **Winter**

Valerian *Valeriana officinalis*

Horseradish *Armoracia rusticana*

Walnut *Juglans regia*

## **Resources:**

[www.rachelbudde.com](http://www.rachelbudde.com)

<https://etnobotanika.si/>

<https://ojs.zrc-sazu.si/sms/index>

[www.fatandthemoon.com](http://www.fatandthemoon.com)

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@ fatandthemoon

# ***Biodiversity and conservation of Rare, Endangered and Threatened medicinal plants of Western Ghats of India***

**Dr. Raviraja Shetty G**

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**Associate Professor & Head**  
**Agricultural & Horticultural Research Station, Ullal, Mangalore**  
**(Keladi Shivappa Nayaka University of Agricultural & Horticultural Sciences, Shivamogga, India)**

## **Introduction**

India is one of the few countries in the world which has a rich wealth of medicinal plants. Of the 32 bio-diversity hot spots identified in the world, India houses four of them *viz.*, Western Ghats, Himalayan region, Indo-Burman region (including north eastern states) and Nicobar Islands. Over the centuries, people in India have had a fascination and respect for the natural heritage, traditional plant ethics and tried to conserve it in varied ways possible. The sacred grooves (considering certain flora or biotic elements as divine) is an unique tradition which has been responsible for preserving pockets of biodiversity in various parts of the country (Khan T.I, 2001). India, while following the path of development, has been sensitive to the needs of conservation. India's strategies for conservation and sustainable utilization of biodiversity in the past have comprised of providing special status and protection to biodiversity rich areas by declaring them as national parks, biosphere reserves, ecological fragile and sensitive areas. One such area is the Western Ghats which runs majestically parallel to the west coast of India. Conservation of the rich biological wealth of Western Ghats turns out to be a priority. And, the richness of the Western Ghats is further increased by the exclusive varieties of medicinal plants that the Ghats has to its credit.

## **Species Diversity: Spatial Distribution**

The plant species known to be from the Western Ghats is about 4500 species out of which 35 percent are endemic. Levels of endemism in this area are high – nearly 2000 species of higher plants, 84 species of fishes, 87 species of amphibians, 89 species of reptiles, 15 species of birds and 12 species of mammals are endemic to the Western Ghats (Daniel, 1997). Three major gradients in the distribution of this diversity, especially for flowering plants, have been recognized (Gadgil, 1996b). The first and major one occurs along the north-south direction, species diversity increases as one travels from north to south direction along the Ghats. Southward increase of number of rainy days can be related to this phenomenon. The decrease in rainfall, relates to the decrease in diversity from west to east. The third known gradient is an increase in number of plant species found with the increase in temperature, as one goes from higher elevation hills to lower coastal plains. This heterogeneous condition, which is affluent all along the ranges and regions of the Western Ghats makes it an ideal ground for the luxurious growth of plants with therapeutic value. But since the region is being uncontrollably invaded by urban

development and human settlements, life of such valuable medicinal wealth is at stake. And with the patronage of herbal medicines and their products increasing, there is an urgent need to conserve the endemic diversity in the medicinal plants before it is wiped out from nature. Therefore, collection and cultivation of such species and the conservation of their genetic traits by genetic engineering and tissue culture techniques is the present day call for conservationists.

### **Medicinal Plants**

Plants have been used as healers and health rejuvenators since time immemorial. Even now, WHO recognizes that medicinal plants play an important role in the health care of about 80 percent of World population in developing countries and depend largely on traditional medicines, of which herbal medicines constitute the most prominent part (Farnsworth et al. 1988). The rest of the 20 percent also depend substantially on the plant-based medicines. Among the rich and varied plants of Indian forests the medicinal plants constitute an important source, the use of which for human and veterinary health care has probably continued, in an unbroken tradition for well over 2 millennium. Medicinal plant species of Western Ghats represent a variety of life form ranging from lichen, algae, herbs, shrubs, climber and trees, which are annuals to perennials. Moreover these species are distributed from canopy to understorey and are characterized seasonally. The auto-ecology and syn-ecology of medicinal plant species is complex and their proper understanding requires a sound knowledge of the ecology, taxonomy and ethno-botany for these species. Western Ghats with its species diversity is a treasure house of different kinds medicinal plants. Most of the medicinal plants are found to occupy forest types like deciduous forests, evergreen forests and they are found in fallow lands and wayside. It can be noted that the plants that were very common in the area when they were first studied have got into the IUCN Red List over the years. *Rauvolfia serpentina*, *Saraca asoca*, *Gymnema sylvestre*, *Gloriosa superba*, *Strychnos nux-vomica* are included in the list which are very rich in their medicinal strength but are in the verge of extinction. The Western Ghats also hosts many medicinal plants that are endemic to the area. Appropriate conservation strategies have to be implemented immediately to protect the fragile habitats of many such medicinal plants.

### **RET medicinal plants**

Out of thousands of plants used medicinally, some of them are recognised and classified as Rare, Endangered and Threatened (RET) medicinal plants depending on their threat status. The term RET derived from three different words,

**Rare species:** It is the group of organisms they are very uncommon, scarce or infrequently encountered.

**Endangered species:** A species of animal or plant that is seriously in risk of extinction.

**Threatened species:** These are any species which are vulnerable to endangerment in the near future.

In brief RET medicinal plants are rare, endangered and threatened forest species, that are grown and multiplied naturally in restricted areas. These RET medicinal plant species play a very important role as folk remedies against many diseases. Globally, about 10 per cent of the known flowering plants are threatened with extinction. Similar estimates have been made for India also. Only preliminary work on identifying threatened medicinal plant species has been initiated in India. A study made on Peninsular India, has assigned various threat levels for about 108 species of plants. Since the rapid multiplication methods in these species are not perfect, they do provide the first indications of threat. To focus on threat assessment for medicinal plants, the Foundation for Revitalization of Local Health Traditions (FRLHT), Bangalore is working since 15 years. The massive conversion of forest land into human environments has threatened the existence of many species. International Union for Conservation of Nature and Natural Resources (IUCN) headquartered at Gland, Switzerland categorizes different species depending on the amount of threat they are facing.

### **Reasons for extinction**

1. **Natural disasters:** Forest fire, flood, Drought etc which affects the plants natural habitat.
2. **Human invasions:** For timber and drug extraction purposes.
3. **Over grazing** by animals also play a important role by destroying medicinal shrubs and herbs by over grazing.
4. **Urbanization:** Conversion of massive forest land into agricultural land.
5. **Pollution, Global warming** and uneven **climate change**.
6. **Overexploitation** by Research workers, scientists and other pharmaceutical industries
7. **Plant characters:** Hard seed coat, seed dormancy and underdeveloped embryo etc

### **Why to conserve RET medicinal plants?**

In India, medicinal plants constitutes three different values,

1. **Ecological value:** Medicinal Plants occur in all bio-geographical zones of India and constitutes 50% of the flowering plants
2. **Cultural value:** India has rich medicinal heri tage that is all the folk systems of medicines including Ayurveda, Siddha, Unani are born and brought up in India.
3. **Economic value:** Around Rs. 8500 crores turnover/year.

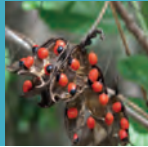
RET Medicinal Plants of High Value

**TREE GULGANJI**

(*Abrus precatorius*)

Fabaceae

Dysentery, Aphrodisiac



(*Rubia cordifolia*)

Rubiaceae

Rheumatism, Antiseptic



(*Asparagus racemosa*)

Asparagaceae

Diuretic, Anticancer



(*Bixa orellena*)

Bixaceae

Antiseptic, Hypertension

**DANII**

(*Baliospermum montanum*)

Euphorbiaceae

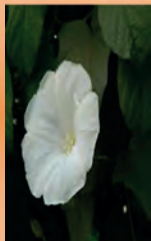
Purgative, Diaphoretic



(*Embelia ribes*)

Myrsinaceae

Anthelmintic, antibacterial



**TERPETHI**

(*Operculana turpethi*)

Convolvulaceae

Liver disorders, purgative



**SALACIA**

(*Salacia oblonga*)

Celastraceae

Obesity, Diabetes

**INDIAN COPAL TREE**

(*Vateria indica*)

Dipterocarpaceae

Carminative, expectorant



**BONE SETTER**

(*Cissus quadrangularis*)

Vitaceae

Bone fracture, dysentery



## **Importance of medicinal plants**

1. Medicinal plants are used at the household women to improve the health of of the family members
2. At the village level by medicine men or tribals
3. By the practitioners of the classical traditional systems of medicine such as Ayurveda, Chinese medicine or the Japanese medicine system.
4. Medicinal plants are gaining importance in the fields of research, especially in the field of genetics and biotechnology.

These plants are the major source of natural drugs for many pharmaceutical preparations which have made them to become extinct in the nature. Some of the reasons for their extinction are natural disasters like forest fire, flood, drought etc which affects the plants natural habitat, human invasions for timber and drug extraction purposes, over grazing by animals , conversion of massive forest land into agricultural land, pollution, global warming and uneven climate change, over exploitation by research workers, scientists and other pharmaceutical industries and also some of the plant characters which include hard seed coat, seed dormancy and underdeveloped embryo etc. These medicinal plants are having the traditional, ecological and economical importance in India. In order to protect these plants from being extinct in the nature there is need of conservation through propagation, exploration and collection. There is a immediate need of protection of these endangered medicinal plants so that we can protect them in the future, multiply them and also utilize them for further need so that we can conserve the biodiversity wealth of Western Ghats of India.

## **Conclusion**

Despite a great heritage of medicinal plants in India, major concern has been accelerated anthropogenic pressure inducing loss of biodiversity of medicinal plants. Further, though commercial production of medicinal plants gained momentum in the past few years, but diversification of land for developmental projects and lack institutional support and infrastructure has constrained the expansion for utilising medicinal plants for sustaining the people's livelihood. Once economic potential and value chain improved, medicinal plants have enormous potential of generating income opportunities and thereby reduce poverty. Better management and conservation of medicinal plants imply addressing shortcoming and threats



of depletion, exploitation and impoverishment of natural resources. There must be effective regulation of medicinal plant cultivation against commercialisation and unsustainable practices. Also institutional coordination to promote in-situ and ex-situ conservation would go a long way in addressing depletion of medicinal resources. Besides, research to understand the relationship between household income and market potential of medicinal plants will help to promote sustainable conservation practices and enhance their contribution to the local people's livelihood.

## *Ex-situ conservation and education towards conservation of endangered medicinal plants*

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India has more than 3000 years of medicinal heritage based on medicinal plants. Medicinal plants are widely used by all sections of the population either directly as folk remedies or indirectly in the preparation of modern pharmaceuticals. Out of nearly 17,000 higher plants recorded in India, 7500 are reported to be in medicinal use by the rural and tribal communities (Sheetal Sharma and S.P. Singh, 2008). These include many rare endemics known only from the wild. The human population explosion coupled with the improved standard of living has led to unmanaged exploitation of these plants resulting in imminent danger of extinction for some of them. 256 medicinal plants in India have been listed in the Indian Red Data Book as endangered (Gupta R, 2004). Most of these wild medicinal plants are confined to certain habitats with a restricted geographic range. Their rarity coupled with large scale destructive collection from the wild has resulted in conservation efforts being initiated by governmental and non-governmental agencies (NGO's) focused on their conservation and sustainable use. There is an urgent need to educate all towards conservation of endangered medicinal plants.

In developing countries, approximately 80% of people rely on traditional medicine to meet their basic health care needs, and about 85% of this medicine uses plant extracts. There is a rapid increase in the use of medicinal plants around the world due to the increasing demand for herbal drugs, natural health products, and secondary metabolites of medicinal plants. And, now it has become difficult to obtain plant-based compounds because of the rapid population growth and intense competition for cultivable lands. According to an IUCN report around 50-80 thousand flowering plant species are used for medicinal purposes, and among these around 15 thousand are on the verge of extinction. The reason is the increasing population, increasing market demands, overexploitation, overharvesting, and habitat destruction. Also, 20% of the population is already exhausted from human consumption and population growth. The distribution of medicinal plants is not uniform worldwide. China and India have the maximum diversity of medicinal plants followed by Colombia, South Africa, and the United States. And, the risk of extinction of these medicinal plants is mostly supposed to be in countries like China, India, Kenya, Uganda, Tanzania, and Nepal. Hence education towards conservation and cultivation of endangered medicinal plants is the need of the hour.

In fact, our generation is the first one that has really become aware of the fact that we are causing irreparable damage to the planet - to the air, water and soil of the planet and to its biological resources. Ours is not the first generation to do damage to the planet, but we are the first to realize the extent of the problem. Ours is the only generation that can prevent a massive loss of biological diversity by learning to live on the planet without destroying it: learning to live, work, grow food, trade, and develop a sustainable way of life that serves the continuing needs of our descendants, and the other species present on earth, as well as ourselves.

A few things which individuals and the community may contemplate are:

- Increasing bio-capacity by protecting, conserving, and restoring ecosystems and biodiversity and maintain biological productivity and ecological services. Individuals can start by planting a medicinal plants and caring for it
- Implementing and establishing comprehensive herbal gardens at the individual and community level which should include conservation and management
- Establishment of community seed banks for medicinal plants and start a small nursery for medicinal plants
- Supporting public information and education campaigns on sustainable use of medicinal plants

Education towards conservation is being done through training programmes, workshops & exhibitions for public, students and school children, publication of books and literatures about conservation and use of medicinal plants. In the training programmes and workshops we need to focused on how to make both students and the general public aware of that they are using a lot of different plant species every day, and different parts of the plants, without giving it a thought. They have to made made aware of traditional uses of medicinal plants, how to harvest, how to use it and how to propagate them for multiplication and commercial cultivation. Through this we need to motivate and promote schools and rural communities to develop herbal garden in their respective places.

Strategies to conserve medicinal plants include: Ex-situ conservation and in-situconservation.

- **Ex-situ conservation:** In this process, endangered species are protected outside their natural habitat. Examples include botanical gardens and seeds banks.
- **In-situ conservation:** It's protecting the endangered species in their natural habitat by the conservation of their ecosystem and natural habitats. Its examples are natural reserves and wild nurseries.

It is very much important for the future generations to be responsible in conservation and cultivation of the endangered medicinal plants.

## **Conservation of Medicinal Plants**

In India, 7,000 species of plants found in various ecosystems are used for medicine. During the Buddhist period, plants, vegetables and fruits were in use for treating different ailments. The great works of *Ayurveda* - *Charaka Samhita*, *Sushruta Samhita* and *Ashtanga Hridaya* - mention about 600 species of plants that were in use. The traditional system of medicine in India dates back to the age of the *Rigveda*. In 1978, the World Health Organisation (WHO) drew up a list of 240 absolutely essential medications. All these medications can be obtained only from plants. Every year, nearly two hundred Indian medicinal plants are being tested in the research laboratories of several prestigious drug companies the world over.

Apart from the practitioners of *Ayurveda*, most women are aware of the medicinal properties of certain plants which they come across in their daily life. In the past people generally collected medicinal plants from forest areas because a variety of medicinal plants were found there. Due to urbanization and also for cultivation, these forests have dwindled. The present immediate need is to conserve the medicinal plants. Over-exploitation of several herbs is endangering the species. In order to retrieve the situation, these important herbs must be conserved either in the nurseries, gardens or cultured laboratories. Apart from propagating medicinal plants, villagers can be encouraged to set up kitchen gardens where medicinal plants can be grown for their domestic use. Organic farming using medicinal plants as botanical pesticides can be encouraged to replace chemical pesticides. A gene pool of herbal and medicinal plants can be established. Conservation strategies based on present demands and immediate future needs need to be prioritized.

## **Role of Communities in Biodiversity conservation**

Protecting the environment is everyone's responsibility. There is an increased awareness among the people towards the conservation of ecologically sensitive areas. There are many conservation movements and initiative in India, which have saved the precious natural resources. Despite all threats, diversity of the species and diversity within the species still continue to survive. Their continued existence is due to farmers and other communities living within the forest. Their cultural practices and knowledge systems have helped nurture biodiversity. Nature worship is a tribal belief based on the premise that all creations of nature have to be protected. Such beliefs have helped preserve several virgin forests in pristine form called **Sacred Groves** (the forests of God and Goddesses). These patches of forest or parts of large forests have been left untouched by the local people and any interference with them is banned. The practice dates back to about

3000 to 5000 B.C. Indian society comprises of several cultures, each with its own set of traditional methods of conserving nature and its creations.

### **Biodiversity Register**

Students can inventory and maintain records of all living beings in their locality. A biodiversity register is a compilation of day-to-day observations of the immediate environment. It is a documentation of knowledge of diversity of life known to local people. It is a means of recording the wealth of biodiversity of a region. The register may include minute details about plants and animals, both wild and domesticated. The record may include traditional knowledge regarding use of the various species. A biodiversity register has many uses. It helps make the complete inventory of all organisms of an area. It makes us familiar with the biodiversity of an area. It helps understand the inter-linkages between plants and animals and the direct and indirect benefits they offer to humans. It allows us to analyze the reasons for depletion of biodiversity and plan conservation measures. Human is only one more of natural creatures and should not be alien to the other life-forms. We have no moral right to destroy nature and other beings that dwell on earth. We should treat all animals and plants with compassion. Every individual can make a small and yet significant effort in the race to save our planet and conserve biodiversity.

### **Intervention by government and its assistances**

- **Support Cultivation of Medicinal Plants** - Subsidy is made available for various medicinal plants towards cultivation of the species required by AYUSH systems and those of conservation concern.
- **Establishment of Seed / germplasm Centers and nurseries for Supply of Quality Planting Material** - Seed Centres with Research Wing of State Forest Departments / Research Organisations / State Agriculture Universities to stock and supply certified germplasm of priority medicinal plant species for cultivation.
- **Model Nurseries** - To meet the requirement of quality planting material for cultivation, assistance is provided for new nurseries under the public as well as private sector. The model nurseries established under the Public sector / SHGs will be eligible for 100% assistance of a maximum of Rs. 25.00 lakhs per unit. For model nurseries in the private sector, the assistance will be 50% of the cost subject to a maximum of Rs. 12.50 lakhs per unit through public sector banks.
- **Support for Medicinal Plant Processing and Post Harvest Management including Marketing** - Support for infrastructure such as drying yards, storage godowns, processing units, quality testing, marketing, etc are supported.

Other methods include educating the rural farmers about the vulnerability of the endangered species and the outcomes of the extinct world.

This can be done by many ways that include –

1. Organizing field days that reflects the importance of the threatened medicinal plants in the ecosystem and also their uses to the mankind.
2. Participatory rural appraisal- **Participatory rural appraisal (PRA)** is an approach used by non-governmental organizations (NGOs) and other agencies involved in international development. The approach aims to incorporate the knowledge and opinions of rural people in the planning and management of development projects and programmes.
3. Training programmes by the forest and horticultural departments- to educate the farmers on cultivation of medicinal plants.
4. Result demonstration of cultivation of medicinal plants in kitchen gardens.
5. The AYUSH has been determined in promoting the cultivation of medicinal plants.
  - a. This body support cultivation of medicinal plants which is the key to integrity, quality, efficacy and safety of the AYUSH systems of medicines by integrating medicinal plants in the farming systems, offer an option of crop diversification and enhance incomes of farmers.
  - b. Cultivation following the Good Agricultural and Collection Practices (GACPs) to promote standardization and quality assurance and thereby enhance acceptability of the AYUSH systems globally and increase exports of value added items like herbal extracts, phytochemicals, dietary supplements, cosmeceuticals and AYUSH products.
  - c. Support setting up processing clusters through convergence of cultivation, warehousing, value addition and marketing and development of infrastructure for entrepreneurs to set up units in such clusters.
  - d. Implement and support certification mechanism for quality standards, Good Agriculture Practices (GAP), Good Collection Practices (GCP), and Good Storage Practices (GSP).
  - e. Promote partnership, convergence and synergy among stake holders involved in R&D, processing and marketing in the public as well as private sector at national, regional, state and sub state level.

## **Conclusion**

The Western Ghats is very rich in its medicinal wealth. The uncontrolled collection and sale of large quantities of plant material from the forest leads to destruction of many medicinal plants. Due to fast

depletion of forest cover and over use, many species of medicinal plants are facing the threat of extinction. It is apprehended that the modern allopathic system of medicine will suffer a serious setback if certain medicinal plant species go extinct. Development of an appropriate strategy for conservation of these RET (Rare, Endangered and Threatened) medicinal plant genetic resources is absolutely essential. Education towards conservation and ecological responsibility plays very important role. Building awareness of endangered medicinal plants and their traditional uses helps people of all generations reconnect with their local environment, understand its inherent value and gain an ecological sense of place

***Preservation, propagation and promotion of cultivation of medicinal plants:  
Participatory approach  
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Rich biodiversity of medicinal plants in India constitute invaluable economic potential as well as livelihood for various local communities in terms of generating income opportunities. Harnessing medicinal plant cultivation for improved food security in India is the area which has been largely underexplored. Medicinal plants particularly, herbal plants have been contributing significantly to the livelihood of Indian tribes who rely on benefits from traditional practices for both monetary and non-monetary benefits. Therefore, the correlation between cultivation of medicinal plants for improved food security especially in India cannot be overruled. Despite a great heritage of medicinal plants in India, major concern has been accelerated anthropogenic pressure inducing loss of biodiversity of medicinal plants. Further, though commercial production of medicinal plants gained momentum in the past few years, but diversification of land for developmental projects and lack institutional support and infrastructure has constrained the expansion for utilising medicinal plants for sustaining the people's livelihood. Once economic potential and value chain improved, medicinal plants have enormous potential of generating income opportunities and thereby reduce poverty.

Better management and conservation of medicinal plants imply addressing shortcoming and threats of depletion, exploitation and impoverishment of natural resources. There must be effective regulation of medicinal plant cultivation against commercialisation and unsustainable practices. Also institutional coordination to promote in-situ and ex-situ conservation would go a long way in addressing depletion of medicinal resources. Besides, research to understand the relationship between household income and market potential of medicinal plants will help to promote sustainable conservation practices and enhance their contribution to the local people's livelihood.



India has 15 Agro-Climatic zones and medicinal plants are distributed across all biogeographic regions, diverse habitats and landscapes. Around 70% of India's medicinal plants are found in the tropical areas and around 30% in the temperate and alpine areas. World Health Organization (WHO) has estimated that approximately 80% of the world population still relies on traditional medicines, which are mostly plant-based drugs. About 6198 species of plants are estimated to be used for human and veterinary health care in the country, out of which about 2,700 plants species are reported to be used in the codified Indian Systems of Medicine viz. Ayurveda (1800 species), Siddha (500 species), Unani (400 species) and Amchi (300 species). In addition to their use in preparation of traditional medicines, the medicinal plants are being used in preparation of various pharmaceuticals and health products under the modern system of medicine. The global resurgence of interest in complementary and alternative systems in general and in Indian Systems of Medicine in particular is increasing the demand of Ayurvedic, Siddha and Unani (ASU) drugs, which use mostly medicinal plants as raw materials. Medicinal plants have so far largely been collected from wild resources. Moreover, the plant material collected from these sources is replete with the problems of adulteration and mis-identification. Therefore, cultivation of genuine, authentic variety of plants may be the only way to have raw material of required quality. The non-availability of proper techniques and authentic planting material are the main constraints in cultivation of these plants.

### **Need for Agro-techniques**

Medicinal plants have so far been collected from wild resources. However, the plant material collected from these sources is replete with the problems of adulteration and mis-identification. Further, the plant material collected from the wild may also be contaminated by other species or parts thereof. The wild varieties also differ with respect to the presence of the active constituents from area to area. All such conditions may have adverse consequences on the quality and efficacy of the ASU drugs. In view of this, cultivation of genuine, authentic variety of plants may be the only way to have raw material of required quality. However, cultivation of these plants has never been easy and commercially viable. This is the basic reason for their exploitation from wild sources. Non-availability of proper techniques and authentic planting material are also some of the main constraints.

### **Need of propagation:**

There is need of propagation because natural mode of regeneration of almost all these medicinal plants is very slow.

### Advantages of propagation studies:

1. Easy multiplication
2. Higher multiplication
3. Faster multiplication

### Propagation of Rare Endangered and Threatened medicinal plants

#### Sexual method

**Seeds:** *Plumbago zeylanica*, *Rauvolfia serpentina*, *Abrus precatorius*, *Celastrus paniculatus*, *Madhuca indica*, *Decalepis hamiltonii*, *Embelia ribes*, *Gloriosa superba*, *Holostemma ada-kodien*, *Aegle marmelos*, *Ceiba pentandra*, *Bixa orellena*

### Asexual methods

#### Rhizomes

*Acorus calamus*,  
*Alpinia galangal*,  
*Costus speciosus*

#### Layering:

*Ficus racemosa*,  
*Ficus microcarpa*,  
*Ficus religiosa*,  
*Ficus bengalensis*

**Tillers:** *Rubia cordifolia*,  
*Asparagus racemosus*

**Tubers:** *Gloriosa superba*

**Root Suckers:** *Decalpis hamiltonii*,  
*Aegle marmelos*

#### Micro Propagation

*Bacopa monnieri*, *Celastrus paniculatus*,  
*Clitoria ternatea*, *Oroxylum indicum*,  
*Saussurea lappa*, *Picrorhiza kurroa*,  
*Swertia chirata*, *Holostemma ada-kodien*

### Cuttings

#### Stem cuttings

*Celastrus paniculatus*, *Rauvolfia serpentina*  
*Decalepis hamiltonii*, *Gymnema sylvestre*  
*Pterocarpus santalinus*, *Holostemma ada-kodien*  
*Lawsonia inermis*, *Plumbago zeylanica*,  
*Baliospermum montanum*

#### Root cuttings

*Celastrus paniculatus*,  
*Rauvolfia serpentina*,  
*Terminalia chebula*, *Embelia tsjeram-cottam*,

### Economic Viability of cultivation of medicinal plants in India

Numerous studies have documented on the cultivation, conservation and constraints faced in harnessing medicinal plants in India. But only few studies have in fact shows the successful cases of medicinal plants cultivation and economic viability for India farmers. Less than 20 medicinal plant species out of more than 400 major plant species are used for the production

of medicine by the Indian herbal industry (CUTS 2004). In India unfortunately, only 36 species are under commercial cultivation (Ved and Goraya 2008 in Majeed 2015)

### **Resource Base and Utilisation**

Most of the medicinal plants are distributed across diverse habitats and landscape. At present, growth of medicinal plants are concentrated in very few states prominently being Jammu & Kashmir, New Delhi, Andhra Pradesh, Gujarat & Daman, few places in Haryana, Himachal Pradesh, Jharkand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Mehalaya, Orissa, Punjab and Chandigarh, Rajasthan, Pondicherry, Tamilnadu, Uttarpradesh and Uttaranchal. Majority of medicinal plant growers are from Kerala and Maharashtra. Besides, Western and Easternghats, the Vindhya, Chotta Nagpur plateau, Aravalis and Himalayas produce 70 percent of India's medicinal plants. While less than 30 percent of medicinal plants are found in the temperate and alpine areas .

### **Constraints in the Cultivation of Medicinal Plants**

At present, cultivation of medicinal plants is completely scattered and unprioritised for various reasons. Only 20 percent of the 178 major medicinal plant species are traded as raw drugs (Planning Commission 2013). In India less than 10 percent of medicinal plant species are cultivated and 90 percent are collected from wild(Uniyal 2015). . For most part, cultivation is done as nurseries or as secondary income among the tribal communities of Himalaya region particularly in Uttaranchal (Nautiyal, Rajan and Shibasaki 2005)without forward linkages for post-harvest management, processing or marketing infrastructure. For instance, though North-eastern region is endowed with rich medicinal biodiversity in flora, vegetation, culture and climate yet medicinal plant cultivation is restricted to traditional application and most often the produce is undervalued for poor quality. Lack of awareness on harnessing for sustainable use and market needs adds to the constraints. Many medicinal plant species are under threat due to over exploitation for modern industries. According to the studies, about 112 species in Southern India, 74 species in Northern and Central India and 42 species in the high altitude of Himalayas are seriously threatened in the wild.

### **Participatory approach**

#### **Participatory Approach or community based conservation:**

This can be defined as conservation of biological diversity based on the involvement of local people in decision making.(Neema Pathak, 2013)

**This excludes:** Conservation attempts by official or private agencies which either have no Participation of local people or participation only in the form of labour.

**This includes:** A whole range of situation from one extreme in which official or private agencies predominantly retain control but consult with local communities in planning or implementation to other extreme in which communities are completely in control

### **Why local people or local community?**

It is abundantly clear from the experience of all govt agencies that on their own they cannot efficiently conserve the biodiversity because of following reasons.

- Govt agencies tend to be rigid in application of rules
- Always lack in human, financial and technological resources
- Corruption among employes undermines conservation efforts

### **Involvement of local people:**

- **Reduces the cost involved in conservation:** The cost involved may go down once community involved is in place, as community shares in responsibilities like patrolling, fire fighting and protective measures.
- **Long tradition of resource use :** Local communities have long tradition of resource use i particular area, hold in depth knowledge and experience of wild life which can be invaluable for conservation efforts.
- **Protest against degradation :** All over the world it is being realized that, govt agencies simply not able to carry out the task of conservation being under staffed, under equipped and underfunded to handle the threats that habitat and species face.

### **Strategies adopted to encourage cultivation of endangered medicinal plants.**

- To adopt an end- to-end approach covering production, post harvest management, processing and marketing. This will be achieved by promoting cultivation of medicinal plants in identified clusters within selected districts of states having potential for medicinal plants cultivation and to promote such cultivation following Good Agricultural and Collection Practices (GACPs) through synergistic linkage with production and supply of quality planting material, processing, quality testing, certification, warehousing and marketing for meeting the demands of the AYUSH industry and for exports of value added items.

- To promote medicinal plants as a crop alternative to the farmers and through increased coverage of medicinal plants and with linkages for processing, marketing and testing, offer remunerative prices to the growers/farmers. This will also reduce pressure on forests on account of wild collection.
- To adopt communication through print and electronic media as a strong component of its strategy to promote integration of medicinal plants farming in the agriculture/horticulture systems with emphasis on quality and standardization through appropriate pre and post-harvest linkages.
- To promote and support collective efforts at cultivation and processing in clusters through Self Help Groups, growers cooperatives/associations, producer companies and such other organizations with strong linkages to manufacturers/traders and R&D institutions.

## **Conclusion**

The expanding domestic and global demand for herbal products has put the native medicinal plant resources under significant stress and it is pity that no management protocols are in existence for conservation of these RET medicinal plants inside and outside forests. To overcome the extinction of these species studies on plant propagation is essential to fulfil the commercial supply of drugs and there by conserving these medicinal plants from being rare, endangered and threatened so that we can restore them for future generation.

# *The Folk Magic of Hildegard von Bingen's Herbs*

By Rebecca Beyer of Blood and Spicebush

It is difficult to draw clear boundaries between folk medicine and folk magic. The two are often interchangeable. Today in most modern herbalist circles one argues that an herb heals a wound with its phytochemistry, yet another system of healing existed long before where moon phases, astrological signs, and spoken charms were as important as the plant species used. Hildegard von Bingen, a German Benedictine abbess, composer, healer, mystic and author, left behind an invaluable treasure with her written works on the herbal remedies she practiced around 1100 C.E. in the High Middle Ages.

Her records are not just useful for historical preservation, but also for examining the ways in which folk magic had seeped its ways into even the most pious minds. Though the time of the witch burnings were a few hundred years in the future, Hildegard herself could have stood in their flames for she committed many of the “crimes” of the Medieval witch. She was a healer, she received visions from God, and she was independent, and she invented her own language for mystical purposes. She also healed people through herbal folk magic. Through examining her uses of spoken charms in herbal magical healing, one can peer through the window of time to see the way folk magical practices persisted in what is now Germany during the High Middle Ages.

Hildegard was born in 1098 in Rheinhessen. She was the tenth and last child of Hildebert von Bermersheim, a knight in the service of Meginhard, Count of Spanheim, and his wife, Mechthild. It was often customary to promise young children in large families to the Church as a tithe, and so Hildegard's destiny was forged for her by her noble Frankish family<sup>1</sup>. Hildegard had her first vision at the age of three. She described as a brilliant white light which she would go on to call it the *umbra viventis lucis* (shadow of the living light). She continued to experience visions for the rest of her life which included accurate premonitions about the future. Her real work as a mystic began at eight. Her parents handed her over to the learned anchoress Jutta of Spanheim, a holy woman living in seclusion with the Benedictine abbey of Mount Saint Disibode.

At first Hildegard did not realize these visions were not shared by her teacher or companions. Eventually she grew ashamed of them and confided only in her elder teacher, Jutta. She experienced poor health throughout her early adolescence, yet she still learned to write, read, and sing Latin during a time when girls seldom had inky fingers. Jutta eventually passed on the responsibility for her education to the monk Volmar of Saint Disibode, who would become her lifelong friend, confidant, and secretary. Hildegard officially took her vows at fourteen and received the veil from Bishop Otto von Bamberg<sup>2</sup>.

She spent the next two decades learning everything she could on a staggering array of subjects while continuing to experience her visions. Her wisdom was held in high regard, which was easily displayed when she was unanimously elected abbess by the nuns of her community in 1136 at 38 years old following Jutta's death.

It is difficult today in the Western world to understand what Hildegard battled after that. Shortly after her leadership position began, she received one of her most important visions. she received a commandment from God: “Write, what you see and hear! Tell people how to enter the kingdom of salvation!” She doubted herself and her value as a spokesperson for God, due to her gender in this time of institutional misogyny and repression of women. However, she did not dismiss it, but gained permission to begin sharing her visions by speaking with her confessor, the monk Godfrey. He then took the quandy

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<sup>1</sup> Marcia, Ramos-e-Silva. "Saint Hildegard von Bingen (1098-1179): "the light of her people and of her time." International Journal Of Dermatology no. 4 (1999): 315.

<sup>2</sup> Strandness, Jean T. "Hildegard von Bingen." Dictionary Of World Biography: The Middle Ages (January 1998): 1-3.

to his abbot, Kuno, who in turn ordered Hildegard to write down some of her visions, which he then sent to the archbishop of Mainz for review. The archbishop determined that Hildegard's visions were indeed divinely inspired. This was the real beginning of her life as a visionary and mystic who was sanctioned by the Church itself to share her divine inspiration and live up to the name she would later come to be known by: The Sybil of the Rhine.

### **Hildegard's Works**

Hildegard produced many works in her lifetime. As a composer, writer, and preacher she was prolific. Her works which survive today allow us to witness the ways in which folk magic touched her healing system. She wrote and dictated many works, but sometime after 1150, she published her two medical works *Physica* ("Book of Medicinal Simples") and another about the development and treatment of various illnesses entitled *Causae et Curae* (Causes and Cures). She wrote much more on many topics, yet her other work which displays much of her magical practice dealt with principles of natural history and is entitled *Liber subtilitatum diversarum naturarum creaturarum*, translated as: "Book about the internal nature (property and healing power) of various creatures and plants". This book is largely what gave some people license to call her the first German physician.

It is interesting to note she was the first woman to create works specifically about plants and their uses<sup>3</sup>. It is largely from these three works that her magical cures are drawn from. Her *Physica* was very influential. *Physica* also gives modern researchers a view into the way in which clerical medicine was being practiced at the time.

### **Traditional European Medicine**

To understand the healing and magical systems that Hildegard was operating within, it is important to understand the basics of Traditional European Medicine during the High Middle Ages. Traditional European Medicine (TEM) is defined as, "various approaches of traditional medical healing systems in Europe, beginning with Hippocrates (approx. 460 B.C. to approx. 370 B.C.) in ancient Greece and ending in the present time".<sup>4</sup> These different systems looked quite unique from region to region, but what united them all was the underlying thread of Western Christianity. Humoralism and humoral pathology are also both key elements not just of TEM, but also of many other folk medical systems worldwide. These beliefs date back to the teachings of Hippocrates, who was convinced that Europeans were created in the face of God.

Understanding humoral theory is essential to understanding most folk medicine modalities. Humoral theory has been in use for about 2,000 years and was generally accepted until the 19th century in a variety of medical systems. It is taken to be the most influential belief system in the world when compared with other scientific and even political systems which is more than apparent due to its long history of use<sup>5</sup>. This theory refers to "humors", which in this case mean "fluids". The human body was thought to contain a mix of four humors: black bile, yellow or red bile, blood, and phlegm<sup>6</sup>. The balance between these four substances in the body was what determined disease or health in an individual.

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<sup>3</sup> Marcia, Ramos-e-Silva. "Saint Hildegard von Bingen (1098-1179): "the light of her people and of her time", 315.

<sup>4</sup> Micke, O., et al. "Traditional European Medicine - Hildegard von Bingen and beyond", 150.

<sup>5</sup> Anderson, E.N. "Why is humoral medicine so popular?" *Social Science & Medicine* 25, no. 4 (1987): 331.

<sup>6</sup> "Humoral Theory." *Open Collections Program: Contagion - Historical Views of Diseases and Epidemics*. Open Collections Program. Web.

Each person was also seen to have an individualized “constitution”, or personal balance of these humors, which dictated the types of treatments they should receive, foods they should eat and avoid, as well as other cultural beliefs and taboos about their lifestyle choices. These humors were also associated with states of being and even the four seasons. They were each considered to have the descriptive qualities of hotness, coldness, dryness, and wetness much like the seasons they aligned with; summer, winter, fall and spring. These states then were taken into consideration when designing a specific health regimen for a patient and explained away the mishaps when a treatment yielded no cure.

Folk medicine systems, especially those that align with the humoral theory, often see medicine as not just treating a disease, but treating the whole patient who exists as a physical and spiritual being. It is sometimes further split into mind, body and soul. The buzz word ‘holistic’ today often refers to treating the entirety of a patient, rather than the common reductionist medicaments that neglect the root of a health issue.<sup>7</sup> Hildegard saw the treatment of the soul with religion as important as using the correct herbs or rituals. She drew heavily from the classics in her treatment of the causes of disease, but also blended into it her practice of folk and magical traditions which can be seen in her uses of charms and spoken incantations<sup>8</sup>.

Women healers in 1100’s Germany were not yet strangled by the iron fist of the male physician. Between the 4th and 16th centuries, Europe was mostly composed of small feifdoms which were rapidly turning into larger, increasingly centralized ruling zones. Whereas much medical knowledge was passed down through oral tradition in largely illiterate circles, in the early 13th century, the medical university began to emerge as an institution. As early as 1140 medical licensure systems were starting to take effect. Barred from entry into medical universities and therefore from taking licensure tests, women were effectively removed from their once revered place of healer<sup>9</sup>.

Those who continued to practice their trade in the shadows were often tinder for the witch burning fires of the 14th century onward. Frederick II set standards for premedical and medical training as well as for licensure, imposing severe penalties on any violators. His laws make clear the place of the woman healer and minority healers in the Middle Ages in Europe. He asked all applicants for licensure to, "swear never to consult with a Jew or with illiterate women". This also implies that there were, in fact, some literate women available for students to consult with. But as they often say, well behaved women rarely make history. Had she lived in the 1300’s or beyond, it is most likely Hildegard would have been branded a witch at a young age. She most likely would not have been allowed to become the sole female preacher of the High Middle Ages<sup>10</sup>.

### ***Viriditas***

The way in which Hildegard defined and thought of magic was not only unique for an abbess, but also directly affected how she interwove it into her cures and remedies to being with. In this era, magic was often seen as an act against God, for even if the goal was goodly, the fact that magic circumvented

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<sup>7</sup> O’Connor, Bonnie B., and David J. Hufford. "Understanding Folk Medicine." *Healing Logics*, 2001, 13-36.

<sup>8</sup> Malpezzi, Frances M. "Evergreen: The Enduring Voice of a Nine-Hundred-Year-Old Healer." In *Healing Logics: Culture and Medicine in Modern Health Belief Systems*, 163-179. Logan, UT: Utah State UP, 2001.

<sup>9</sup> Minkowski, William L. "Women Healers of the Middle Ages: Selected Aspects of Their History." *American Journal Of Public Health* 82, no. 2 (February 1992): 288.

<sup>10</sup> Deane, Jennifer Kolpacoff. *A History of Medieval Heresy and Inquisition*. Lanham: Rowman & Littlefield Publishers, 2011. 28.



the physical and imitated the holy was seen as an attempt to be god-like, and therefore, Satanic. It is humankind's hubric attempt at getting out of the suffering dealt to them by their God, and asserting their will and power upon the earth, elements, spirits and persons around them. Practicing magic was seen as a sure way to doom oneself, much like Icarus, to a fate of far falling. Hildegard's unique use of and integration of magic into her cosmology stands out for its presence alone. This blend of Christian theology and plain folk pharmacology marks her healing tradition as unique in a time what tolerated but did not celebrate the wise woman or the cunning man<sup>11</sup>.

In her works she seems to ignore or not know about the origins of magic as explained in the Scriptures. There is mention in the book of Enoch where it is said the angel fallen *Semyaza* taught enchantments and root-cutting to mankind and the angel *Barakiyal* taught astrology. She also does not seem to know of the Mohammedan accounts of Harut and Marut<sup>12</sup>. This is important to note, and one must be cautious here for it would not be hard to assume she was either willfully ignorant of the way in which her use of magic is technically heretical, that the way in which she uses magic in her remedies is more like that of the wise woman than that of the heretical sorcerer. She explains and sees magic as more of a fact of everyday life<sup>13</sup>. The people around her that sought her help were immersed in folk magic, and so was she. The walls of the Abbey did little to keep her healing ways entirely untouched by the belief of common folk. Perhaps the "subtleties" she speaks of in her works refers to that hidden force that lives in all things, that magic that so many cultures called upon to bring change to their inner and outer worlds.

Magic lives in the works of Hildegard von Bingen in a few different ways. It is an essential part of her cosmology which she relates in her first visionary work, *Scivias*<sup>14</sup>. A key concept of her body of work is *viriditas*. This melding of the words "green" and "truth" in Latin is a concept of her own invention which refers to the divine mysteries of the green world, the life-giving vital forces bestowed by God upon the plant kingdom, and even upon Adam himself. Hildegard mentions it in many of her works, and it seems not far from modern Witches interpretations of the Greenwood and its divine healing ways,

"O most honored Greening Force,  
You who roots in the Sun;  
You who lights up, in shining serenity, within a wheel  
that earthly excellence fails to comprehend.  
You are enfolded  
in the weaving of divine mysteries.  
You redden like the dawn  
and you burn: flame of the Sun."

– Hildegard von Bingen, *Causae et Curae*

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<sup>11</sup> Radimersky, George W. "Magic in the Works of Hildegard von Bingen (1098-1179)." Monatshefte no. 7 (1957): 353.

<sup>12</sup> Leo Jung, Rabbi. *Fallen Angels in Jewish, Christian and Mohammedan Literature* (Philadelphia, 1926), p. 13, 79 *in re* the Yaser Hara; Underhill; p.4; Hildegard's *Epistolae*, in an answer sent by her to an inquiry from Nicolaus, abbot at Heilsbronn, Ludwig Clarus, *Briefe der Heiligen Hildegard, Zweiter Teil* (Regens burg, 1854), p. 23.

<sup>13</sup> Radimersky, George W. "Magic in the Works of Hildegard von Bingen (1098-1179)", 353.

<sup>14</sup> Radimersky, George W. "Magic in the Works of Hildegard von Bingen (1098-1179)", 353.

“As above, so below,” became an important alchemical allegory for expressing the ways in which the physical world mirrored the metaphysical and vice versa in the Renaissance. Her use of the term *viriditas* may serve in this same way as a metaphor for the fecundity and verdure of the Earth when mirrored by the achievement of good health in a human body. This fertility and growth of fine health of the mind, body and spirit in her holistic view of human wellbeing is essential in her writings. However, she uses the term in such a wide variety of ways that it is difficult to define it exactly.

In the words of Hildegard experts Strehlow and Hertzka, “Hildegard uses the word *viriditas* to refer to all living things, the energy of life which comes from God, the power of youth and of sexuality, the power in seeds, the reproduction of cells, the power of regeneration, freshness, and creativity”. It plays on older Christian imagery of the withered garden and the verdant Eden.<sup>15</sup> The destroying force of illness in the green garden of the human body. This “greenness” that exists in all living things is a fascinating concept which shows a unique not-quite-dualistic dedication that Hildegard had to both the wonder of the natural world and her orthodoxy in her belief that God is the root of this vital force<sup>16</sup>. It could be said to be the vehicle for the magical cures she recorded.

### The Magic of Hildegard’s Herbs

Though it cannot be known for sure exactly how Hildegard differentiated the practices she engaged in with devilish magic it is most likely explained by her own words. In many of her cures and incantations she draws upon the fact that it is God who causes the plant to contain its special powers. Her magic is not concerned with the wrangling of demonic spirits to elicit change in her reality like that of later magicians, but rather the practice of knowing which plants contain those heavenly virtues bestowed upon them by God Almighty to be used by humankind. It is a sort of Church sanctioned magic in which the powers at play are rational in the worldview of Hildegard’s cosmology. We can see the use of incantation, charm making, mentions of the inherent power in certain plants and trees and other evidence of much older folk magic in her cures below, taken directly from her *Physica*.

**Apple:** “When in springtime the first shoots of the apple tree burst forth, tear off one little branch without cutting it with iron, and draw a strap of deer hide back and forth over the break in the tree and the branch, so that it becomes damp with sap. When you sense that there is no more moisture, then hack, with very tiny blows, this broken spot with a small knife, so that more of the moisture flows out. By drawing the deer hide strap over the same place and on the same branch, drench it with as much sap as you can. Then put it in a damp place, so that it may absorb even more sap. Anyone who has pain in his kidneys or has trouble urinating should gird himself with this strap, over his naked flesh, so that the sap which it drew in from the apple tree might pass into his flesh, and he will be better.”

**Stinging nettle:** “If a man is forgetful and would be cure of it, let him crush out the juice of the stinging nettle, and add some olive oil, and when he goes to bed, let him anoint his chest and temples with it, and do this often, and his forgetfulness will be alleviated.”

**Mandrake:** “It has grown from the earth of which Adam was created and is somewhat similar to a human. Holds onto the influence of the Devil more because of the similarity to humans. Place in a spring for one day and a night after digging. If it is washed it won’t be used for magic. If it has earth stuck to it,

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<sup>15</sup> Newman, Barbara. "Hildegard of Bingen's Medicine." *Daughters Of Sarah* 17, no. 5 (October 1991): 44.

<sup>16</sup> Malpezzi, Frances M. "Evergreen: The Enduring Voice of a Nine-Hundred-Year-Old Healer." 163-80.

it can be used for magic. If a man is lewd, place the female species of the this roots and place it between his chest and his navel for three nights. For someone who has depressions or “continuous pain and sorrow in the heart”, let them take mandrake already pulled from the earth and place it in a spring for a day and a night. Place it in bed with the person and have them say, “Oh God, you made man from the slime of the earth without any suffering. Now I place this earth which has never been walked upon, so that my earth may know that peace as you created it.” If you don’t have a mandrake the first roots that sprout from the beech tree, just carry it so that you do not break it, say the same words over it, and you will know health and happiness in your heart. Do the same with cedar and aspen.”

Hildegard was one of the first to record her criticisms of the mandrake, despite her own magical uses of it:

“With this plant, however, also because of it’s similarity to a person, there is more diabolical whispering than with other plants and it lays snares for him. For this reason, a person is driven by his desires , whether they are good or bad, as he also once did with the idols...It is harmful through much that is corruptive of the magicians and phantoms, as many bad things were once caused by the idols.”

**Beech Tree:** “The beech tree has the right mixture of cold and warmth, and both are good in it. It signifies right breed- ing. When the leaves of the beech tree begin to unfold but have not yet fully unfolded, go to the beech tree, seize a branch with your left hand and hold it over your right shoulder while saying the following words: "I cut your greening twigs that you might heal all juices of man that flow the wrong path or turn into unhealthy yellow bile, by the living word that created man." And as you say these words, let your left hand hold the twig, cut it off with an iron and keep it about a year. Do this every year, and if someone should suffer with the yellow bile, place the twig into a vessel, pour wine upon it three times, and give it to the patient that he may drink of it on an empty stomach three days in succession, and he will be healed, unless God wills it otherwise.”

**Fern:** “Fern (*farn*) is very hot and dry and has a little bit of juice in it. It holds within itself a great power, namely such a power that the devils flees from it [and it even has certain energy which is like the power of the sun. As the sun lights up dark places, so the fern chases away apparitions, and evil spirits disdain it]. In the places where it grows the devil rarely practices his deceptions. The fern avoids or shrinks back from any home or place where the devil resides. Thunder, lightning, and hail rarely fall near a home where there is fern. Hail also rarely falls in the field where it is growing. Magic and incantations of demons- as well as diabolic words and other phantasms- avoid a person who carries a fern with him. If any image is prepared for carrying out injury or death, it is not able to harm one who has a fern with him. For a person is sometimes reviled through an image in such a way that he is harmed by it and becomes mad...A human being has both good and evil knowledge, and good and evil herbs were created for him. Fern sap has been placed for knowledge, and in its honest nature, goodness and holiness are signified. All evil things and magic flee and avoid it.”

**Betony:** “For one who is foolish or silly and lacks knowledge, betony should be crushed to a juice and placed over his chest at night. It should be tied on with a cloth until morning. If this is done often, he will return to his senses. If someone is regularly tormented by false dreams, he should have betony leaves when he goes to bed, and he will see and feel fewer false dreams...If a man, by a woman, or a woman, by a man will have been deceived by some magic art, or touched by some illusion, or conjured by fantastic and diabolical incantations, or conjured by fantastic and diabolic incantations, so that the man is insane with love for the woman or the woman insane with love for the man, they should seek betony which has

not previously been used for medicine or magic...When found, one leaf should be placed in each nostril and one under the tongue. One leaf should be held in each hand, and one under each foot. The person should fix his eyes intently on the betony. He should do this until the leaves grow hot on his body. This should be repeated until he is better.”

**Myrrh:** “It chases from you phantasms, magic spells, and demonic invocations made with malign words over bad herbs. They will be less likely to hurt you, if you have neither eaten nor drunk magic things...Although myrrh’s odor chases lust from a person, it does not make his mind happy. It oppresses it and makes it heavy and sad. Therefore, along with myrrh, he should also carry gold with the impurities burnt out. This makes a person’s mind happy.”

**Cypress:** “[It] is very hot and signifies “secret of God”...Also, take some wood from the middle of the tree, from what is called the heart of the tree, and always carry it with you. The devil will all the more avoid you since, having a strong nature, the tree holds more good fortune than the wood of other trees...If a person is ensnared by the devil or by magic, take some of the wood from the middle of the tree, and perforate it with a bore. Then take water from a living spring in an earthenware vessel. While you pour it say, “ I pour you, oh water, through this hole, and this virtuous strength, so that you may flow in this person, whose senses are ensnared. With the strength present in your nature, may you destroy all the misfortunes within him, and put him back into the rectitude in which God placed him, in his right sense and knowledge.” Then...this water should be given to him to drink, while fasting, for nine days. He will be better, and indeed he should be blessed in this way for nine days.””

**Mullein:** “If any have a weak and sad heart, let him cook mullein with meat or fish, or with other herbs, and eat of them often, and it will strengthen his heart and make it merry.“

**Milfoil/Yarrow:** “Milfoil is rather warm and dry, and it is a sovereign remedy for wounds. Wash the wounds with wine and let plenty of milfoil cooked moderately in water be laid on the cloth, while still warm, and so bind over the wound. It will draw out the infection and heal. Internal wounds- drink yarrow tea. Drink for fever. “One who is unable to sleep for being occupied by some difficulty should, if it is summer, cook fennel and twice as much yarrow. Squeeze out water and lay around the temples. He should also take fresh sage and sprinkle it with a bit of wine and place it over his heart and around his neck.”

**Rose:** “Rose is cold, and this coldness contains moderation which is useful. In the morning, or at daybreak, pluck a rose petal and place it on your eyes. It draws out the humor and makes them clear. One with small ulcers on his body should place rose petals over them. This pulls the mucus from them. One who is inclined to wrath should take rose and less sage and pulverize them. The sage lessens the wrath, and the rose makes him happy. Rose, and half as much sage, may be cooked with fresh, melted lard, in water, and an ointment made from this. The place where a person is troubled by a cramp or paralysis should be rubbed with it, and he will be better. Rose is also good to add to potions, unguents, and all medications. If even a little rose is added, they are so much better, because of the good virtues of the rose.”

**Violet:** “Violet Is between warm and cold. Useful for cloudy eyes. A sad mind with bad breathing cook violets in wine, strain add galingale and drink. Drinking and eating violets chases away melancholy and brings gladness.”

The complex and murky forces at play that tell us *why* Hildegard von Bingen practiced herbal folk magic are eclipsed by the fact that she simply did it. Through the specific ways in which magic was viewed during the 12th century to her own explanations in her writings about where their power stems from, Hildegard’s works have provided us a special opportunity to peer into the 12th century Christian mind and witness it’s rationalization of magic. There is much more to be said about Hildegard and her place in the practice of folk magic in 12th century Germany, but the ways in which she practiced herbal healing have rendered her among the historical ranks of herbalist, folk magician, and mystic.

# *The Fantastic Fungal Kingdom: From Pharmaceuticals to Medicinal Mushrooms*

**Robert J. Silver DVM,MS**

## **THE FUNGAL KINGDOM**

Fungi are a separate Kingdom, different and apart from the Kingdom of Plants and the Kingdom of Animals. Fungi are ubiquitous on our planet. It has been estimated that there are approximately 2.2 to 3.8 million species of fungi globally<sup>1</sup>. Fungi can be found in our stratosphere, the bottom of the Dead Sea, in Antarctic glaciers and arid deserts. They have been identified in the digestive system of insects and in deep oceanic sediments.

Studies in evolutionary biology support the idea that fungal organisms share a common ancestor with animals, a flagellated protist. This means that the DNA of fungi are more alike with our own DNA than with plants<sup>2</sup>. This may explain why fungal infections can be so pathogenic and difficult to treat. It may also explain why the bioactive molecules found in fungi are so effective in supporting the health of humans and animals.

### **Fungi play many important roles in our biosphere:**

- Fungi are significantly involved in our global “bio-geochemistry” by recycling carbon and releasing nitrogen, phosphorus and other bio-elements.
- They provide intrinsic support to the Plant Kingdom in the form of endophytes and mycorrhizae.
- Many fungi have provided humans, and the animals they steward with fermented foods and beverages as well as medicines and compounds that have important industrial applications.
- Fungi are an important source of food
- Fungal biomasses are being used in the production of clothing and building materials.
- Fungal pathogens are some of the most toxic on the planet, and can destroy food supplies and entire species of plants and animals

Mushrooms have played important roles in the development of human civilization. They have been of interest to people for millennia. In addition to their nutritional value as a food, edible mushrooms have been appreciated for their medicinal properties. Other mushrooms, too woody to be edible can also have potent medicinal properties. Anthropological data supporting the use of mushrooms for medicinal purposes goes back to about 8000 BCE! “Otzi” an early human from circa 5000 BCE, was found frozen in the 1990s with two species of medicinal mushrooms by his body, presumably as wound dressings or to help with stomach problems or parasites.

Mushrooms have excellent nutritional value as well, with a high quality protein levels around 10-15%, high in fiber, low in carbohydrates with bioactive molecules that provide precursors for vitamin D and a glutathione-like antioxidant unique to mushrooms, ergothioneine. This is in addition to the recognized immune-modulating and bioactive molecules such as the beta glucans terpenes and flavonoids that are common to all healthy and functional mushrooms.

Mushrooms have, over the millennia, provided an easily-harvested forest edible, that has been cultivated and commercialized into the multi-billion dollar global industry it is in the world today. Mushrooms have been used for food and for health for as long as they have been collected. They have served as medicines prior to the age of pharmaceuticals. Mushrooms still play an important role in indigenous people's way of life today.

Medicinal mushrooms have become more commonly available in recent years in the natural products marketplace. The body of evidence supporting their value to the immune system and various diseases, including cancer, is becoming better understood with basic research and clinical trials.

Mushrooms have provided an other-worldly experience to many, who from that experience, glimpsing into "alternate universes", have created imaginative and unique music, books, artwork, and social systems that have left an indelible mark on human culture and society.

Mushrooms have been the source of many fatal poisonings over the millennia and are still a common source of ER visits in the summer and fall for both people and their pets. Affecting mainly those who forage without experience.

Quite a bit of ecological interest lately has been focused on the impact that mushrooms, and particularly their mycelium, have on the health of our planet. As recyclers, the fungal mycelium consumes dead and dying plant and animal materials, and by elaborating strong enzymes that digest these biological materials, that they break down into basic nutrients, they then provide nourishment for themselves, as well as supporting the growth of plants and animals, which when they die, are then digested and recycled by the fungal mycelium.

They are key players in the micro-ecology and macro-ecology of the earth. Interest in this mycelial network is high. Mycelial networks can spread through very large areas. One fungal mycelial network in Oregon has been measured to be 2385 acres in size! This mycelial network is likened to the circulatory and nervous system of an animal, providing a path for the movement and distribution of the digested nutrients and of "information" throughout the network.

This extensive system is thought to have an "intelligence" in how it transfers information and nutrients throughout it. The mycelial network intertwines with the root systems in forests, and interfaces with the forest this way. Mycelia, as the vegetative stage of the fungal lifecycle, have very powerful properties, which are similar, yet different to the powerful properties of the fruiting stage of the life cycle: the mushroom<sup>3</sup>.

## **THE COMPLEX LIFE CYCLE of MEDICINAL FUNGI**

Using the analogy of comparing the life cycle of fungi to the life cycle of angiosperms, or plants that flower and produce fruits containing seeds, the spore-bearing structure commonly called "mushroom" is the fruit in the complex fungal lifecycle. The mushroom produces spores, which are released to fall on dead wood or forest floor or be carried by the wind to seed other sites of mushroom growth. Like fruit, animals that eat the fruit or the mushroom will distribute the spores more widely through their droppings. Spores are the reproductive stage, or "seeds" of the fungus. Once the mushroom drops its spores on a suitable substrate, the spore germinates into a hyphal tube, the tip of which secretes enzymes which digest the substrate and provide nourishment to the growing tube.

As described previously, spores are the haploid gametes of the mushroom. There are two “sexes” or “polarities” to these spores. When the spore germinates, they produce a filamentous tube called the hypha. When opposite “sexes” of hyphal tubes find each other and join, they then form diploid hyphae which merge and join to form a complex tangled mass called the “mycelium”. Less commonly same sexes of haploid gametes will fuse. Mycelium is the vegetative stage of the fungal life cycle. Often the mycelium is likened to the roots of the plant, based on this analogy. But this is only partially true. Like the roots of a plant, the mycelium absorbs nutrients. But unlike the root analogy, the mycelium also elaborates digestive enzymes as it grows into the substrate, which enzymes break down the substrate into absorbable nutrients.

Fungal mycelium that has a commensal relationship with the roots of plants are called: mycorrhizae. The fungal mycelium of these soil organisms digests the substrate the plant is growing in, releasing nutrients for the plant to absorb through its roots. This relationship between these two different kingdoms illustrates well one important role that fungi play in our global eco-systems.

The mycelium continues to grow into the substrate as long as there is a supply of nutrients to nourish it and environmental conditions exist that are favorable for its growth. When conditions change, the mycelium produces hyphal knots, which are the first stage in the development and growth of the mushroom.

The hyphal knot goes through stages of development, first becoming organized as a “pin-head” and then developing into the “primordium” which are the first differentiations into the mushroom development. As it continues to mature, the final result is the mushroom, the “fruit” which contains the spores or “seeds”.

This cycle repeats itself as long as there is sufficient food for the mycelium and the environmental conditions remain favorable to growth.

Dead or rotting wood provides one of the most common substrates for the growth of the mycelium, which literally digests the wood. The mycelium thus “eats” itself into the wood and becomes indistinguishable from the wood substrate itself. It’s impossible to separate the mycelium from the substrate. The cordyceps fungus uses the body of the caterpillar pupa as its substrate, and sends its mushroom out of the caterpillar body. This caterpillar mushroom has a distinctive spear-like appearance as it emerges from the soil where the dead caterpillar pupa had been.

The caterpillar fungus *Ophiocordyceps sinensis* (syn. *Cordyceps sinensis*) is one of the *entomogenous* Ascomycetes, and parasitizes the caterpillar larvae of Lepidoptera, to form the well-known traditional Tibetan medicine “*yartsa gunbu*” or, in traditional Chinese medicine, *dong chong xia cao* (“winter worm-summer grass”) Lepidoptera are moths and butterflies. The fungus attacks the larva of some species of insects (Fam. *Hepialidae*), and converts each larva to a sclerotium, from which the mushroom grows.

A “sclerotium” is a compact mass of hardened fungal mycelium containing food reserves to survive adverse environmental conditions. In favorable environmental conditions sclerotia will germinate to form the mushroom in members of the basidiomycete and ascomycete phyla.

Mushroom cultivators use live mycelium to “seed” their cultivation of mushrooms. The mycelium used for this purpose is termed: “spawn”. Mycelium is first propagated on a carrier material, most commonly inoculated with mycelial fragments, and less commonly with spores. Spawn has historically been produced on many different carrier materials, including sawdust, wood and various grains. Grain is one of the most common carriers due to its small size and ease of mixing into bulk mushroom growing substrates.



Sterilized grain is inoculated with live mycelium which grows and infiltrates the grain. This mycelium grown on grain is “spawn”. Grain is not used as a substrate in commercial mushroom cultivation. The traditional path to growing mushrooms has been to use the spawn to inoculate the mushroom substrate (compost, manure, wood, sawdust) and then, as the mycelium grows and matures throughout the substrate, mushrooms will emerge when the conditions are favorable.

A contemporary manufacturing process for growing fungal mycelium involves growing the fungal mycelium on grain, and then harvesting the mycelium with the grain, drying this mycelial-grain biomass and grinding it to a powder. This powder is being sold as “mushroom” powder, but since there are no mushrooms (or very few mushrooms) in the powder, it is more appropriately called “fungal mycelium biomass”. The American Herbal Products Association (AHPA.com) has issued a directive regarding the definition of the words: “Mushroom” versus “Mycelial biomass” mycelium. Consumers need to be aware of whether their product contains any mushrooms or consists of mycelium grown on grain<sup>6</sup>.

In several studies that analyzed and compared the constituents of medicinal mushrooms grown on their native substrate, wood, with a mycelial mass grown on grain, results indicate a substantially higher concentration of bioactive constituents in the mushrooms versus mycelium grown on grain. The components of mushrooms that are usually measured as an estimate of potency, such as beta glucans, triterpenoids, ergosterol were lower in the mycelial biomass than in the mushrooms<sup>5</sup>.

## **HOW TO ACHIEVE THERAPEUTIC DOSING OF THE BIOACTIVE MOLECULES FROM MUSHROOMS**

Arriving at an effective dosage of a mushroom extract to remediate a clinical condition can be quite complex, depending on these factors:

- Mushroom species
- Method of cultivation
- Method of extraction
- Clinical condition
- Format and potency of dosage-form product of mushroom extract

Each mushroom species holds in common with other mushroom species their beta glucan content. There is variation in beta glucan content from one species to another, and from one method of cultivation to another as well. Other bioactive molecules in mushrooms share the same biochemical category, but differ in the actual molecules elaborated by the mushroom and its range of activity.

An example of this would be the triterpenes in Reishi versus the diterpenes in Lion’s Mane. If you are looking for immune modulation, then you could select the dosage to reflect the triterpene content of Reishi, but if you are looking for neuroprotection or cognitive benefits then you would select dosage to reflect the diterpene content of the Lion’s Mane.

For this reason, this author proposes a system of dosing medicinal mushrooms that is based on a standardized content of beta glucan, the single common denominator of all mushrooms. It is possible that after the appropriate Phase One dosage tiered studies have been conducted for a specific mushroom for a specific condition and specific bioactive molecule in a mushroom, we could then have a non-beta glucan-based dosage for that mushroom for that condition.

There now are 2 clinical studies in dogs using mushroom extracts. In each case the negative results of the clinical trials were not reflective of their pilot studies. This may speak to experimental design, as in patient selection or dosage chosen, as compared to the efficacy of that mushroom extract for that cancer diagnosis. There are studies in laboratory animals (mice and rats) for which dosages were published. Unfortunately, for some of the laboratory animal studies the routes of administration were not orally, but intraperitoneally or another parenteral route.

In the vaccination titer studies<sup>16,17</sup>, the oyster mushroom extract used was a hot water extract suspended in a syrup vehicle to improve palatability and compliance in these puppies. This liquid product contains 10 mg of beta glucans/mL. The puppies were given orally a dose of 20 mg of beta glucans per 5 kg of body weight daily. This computes to a dose of 4 mg/kg which successfully modulated the immunosuppression in these puppies.

In the maitake extract clinical trial in dogs with lymphoma<sup>18</sup> that did not achieve any successful clinical result in these end-stage cancer patients, a dose of 3 drops/kg/day, divided into two doses twice daily was administered. Their commercial product contains 1.1 mg of beta glucans/drop. So the dose administered in this study was 3.3 mg/kg orally.

Beta glucans exert their effects through interaction with macrophages and other elements of the innate immune system. Increased dosages can activate larger numbers of immune elements. Immune system strength varies from patient to patient. For these reasons, establishing an effective dosage for beta glucans, and by extension, the mushroom they are sourced from, is dependent on multiple factors.

This author suggests that the most effective and efficient approach to dosing mushrooms based on their beta glucan content, is by starting with a lower dosage, and gradually, over several weeks to months adjusting the dosage up to achieve better results.

It is also known, from studies in trained innate immunity, that the longer a patient is on a mushroom extract or other immune supportive and adaptogenic product, the better the innate immune system is able to respond with efficacy. Most of these studies gave the mushroom extracts and started measuring results almost immediately. If it's a cancer study and the subjects are near terminal, as in the maitake and PSP studies, then there may not be adequate time to "train" the innate immune system to respond to this neoplastic challenge.<sup>19</sup>

There are a few conclusions that can be made from the dosing strategies used in these two clinical trials. They are the only publications with precise beta glucan dosages reported for dogs. 1. For treating cancer, a dose higher than 3.3 mg/kg was not efficacious for end stage lymphoma; 2. For immunocompromised puppies, a dose of 4 mg/kg was effective in supporting their immune system enough to provide a more durable response to vaccination for rabies. 3. PSP dosed at 100 mg/kg/day is also not better in terms of mean survival times than chemotherapy in addressing naturally-occurring hemangiosarcoma in dogs.

Dosing for veterinary patients with cancer could conceivably be set 5-10 times higher than the dosages used in the maitake lymphoma and PSP hemangiosarcoma studies. Beta glucan polysaccharides have proven themselves to be safe at dosages much higher than those used in these two studies in dogs. In a 2011 document from the European Food Safety Authority (EFSA), it was found that doses of the beta glucans derived from yeast that were well within safety parameters ranged from 9-52 mg/kg/day. This

scientific panel that published this document state that the high intake scenario used in this study of yeast beta glucans was grossly similar to the intake of beta glucans from other sources.<sup>20</sup>

Vetvicka found that a minimum of 2 mg/kg beta glucan/day is needed to produce significant improvement in immune function. Several dosage tiers were used to stimulate immune function measurements. Significant improvements in immune function began after 2 mg/kg/day beta glucan. Dosages as high as 20 mg/kg/day may be needed when massive immune modulation is needed, and there is a definite dosage/response curve seen when higher amounts are administered. (59)

## **DOSING BETA GLUCAN by LEVEL of NEED**

Guidelines for Dosing: *Start at appropriate dose for the patient being treated; escalate or reduce as appropriate based on patient response*

2.5 mg/kg/d	Maintenance of wellness in healthy animals as a functional food and adaptogen
5.0 mg/kg/day	Immune Modulatory E.g.: Shown effective for vaccination titers
10+ mg/kg/day	Maximum immune system pressure consider to support cancer patients with cancer therapy side-effects (bone marrow stimulation) and to increase immune system cytotoxicity against neoplastic cells

## **SUMMARY**

Medicinal mushrooms are functional foods, providing nutritional value and bioactive molecules that have the potential to benefit the immune system, nervous system and other organ systems of humans and veterinary species. There are very few objective studies using mushrooms in our veterinary species, although many studies evaluate mushroom bioactivity in laboratory animal species. There are a few clinical trials and in vitro studies in dogs, none in cats or horses to date of several medicinal mushroom species.

The consumer needs to be aware of the conflicting and diverging cultivation technology for the commercialization of mushroom extracts. One method does not result in the cultivation of the actual mushroom “fruiting body” but instead consists of fungal mycelium grown on grain. The resultant product contains grain carbohydrates which are not naturally occurring in the mushroom or mycelium.. There can be as much as 50-90% grain carbohydrates in mycelium spawned on grain. It is impossible to separate the mycelium from the grain with this product. The second method of commercial mushroom cultivation has been in use for hundreds of years. This technology grows mushroom mycelium on grain first, then uses that myceliated grain to spawn new growth in the appropriate substrate, which is necessary for optimal potency. Most mushrooms grow on dead and dying wood, or on compost, manure and/or soil.

Clinical applications for mushrooms in our veterinary species are mainly anecdotal and putative based on historical uses and scientific studies determining the activity of the mushroom bioactive molecules.

**REFERENCES** (provided upon request with full article included)

## VETERINARY MATERIA MEDICA OF 11 FUNCTIONAL MUSHROOMS

IHS 2023 – INTENSIVE WORKSHOP

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<b>AGARICUS—COMMON EDIBLE MUSHROOM but VERY POTENT!</b>	
<b>Common Name(s)</b>	<ul style="list-style-type: none"> <li>• Crimini (<i>Agaricus bisporus</i>)</li> <li>• Field mushroom (<i>Agaricus campestris</i>)</li> <li>• Horse mushroom (<i>Agaricus arvensis</i>)</li> <li>• Portobello (<i>Agaricus bisporus</i>)</li> <li>• Royal Sun Agaricus (<i>Agaricus blazeii</i>; Also known as <i>A. subrufescens</i>)</li> <li>• White button mushroom (<i>Agaricus bisporus</i>)</li> </ul>
<b>Species Name</b>	<i>Agaricus spp.</i>
<b>Organs and Systems</b>	Immune system, Gastrointestinal, Metabolic
<b>Constituents</b>	Polysaccharides, Beta-glucans, Ergothioneine, Lectins, Unique anti-neoplastic molecules, Ergosterol
<b>Key Actions</b>	Antioxidant, Gastrointestinal support, Adaptogen, Immune support, Anti-neoplastic, anti-aging; Hepatoprotective; Improves appetite; cancer therapy side-effects; supports healthy microbiome; pancreatic support; sinusitis/cold/cough; anti-viral; anti-hypertensive; anti-hyperlipidemic; regulates blood sugar
<b>Japanese Name</b>	Commercial name: <i>Himematsutake</i> ; Common name: <i>Kawarihaaratake</i>
<b>Research</b>	None in veterinary species other than chickens and bees; Mushrooms fed to broiler chickens improved their health; bees fed agaricus syrup (beta glucans) had fewer <i>Nosema</i> fungal infections; breast cancer incidence reduced by 50-65% associated with daily consumption of 10 grams of fresh mushrooms daily (1/2 a button mushroom)
<b>TCVM action(s)</b>	<ul style="list-style-type: none"> <li>• Regulate Qi</li> <li>• Dispel Phlegm</li> <li>• Support Stomach &amp; Spleen</li> </ul>
<b>CHAGA – THE BIRCH TREE FUNGUS</b>	
<b>Common Name</b>	Chaga
<b>Species Name</b>	<i>Inonotus obliquus</i>
<b>Organs and Systems</b>	Gastrointestinal; Dermatologic; Immune System; Metabolism
<b>Constituents</b>	Polysaccharides, Beta-glucans, Polyphenols, Triterpenes and triterpenoids (betulinic acid, inotodiol, trametenolic acid); ergosterol
<b>Key Actions</b>	Antioxidant, Gastrointestinal support, Adaptogen, Immune support, Anti-neoplastic, anti-aging
<b>Chinese Name</b>	<i>Bai Hua Rong</i> (白 茸)
<b>Research</b>	None in veterinary species; multiple studies support: 1. mast cell degranulation properties; 2. anti-neoplastic properties; 3. activation

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	of NK T cells; 4. benefit to LUTD; 5. bronchial asthma; 6. fibromyalgia; 7. hypertension; 8. allergic rhinitis; and many more in the published literature
<b>TCVM action(s)</b>	<ul style="list-style-type: none"> <li>• Affinity for Liver, Stomach, Spleen, Kidney</li> <li>• Supports Zheng qi (adaptogen)</li> <li>• Tonifies deficiencies</li> <li>• Tonifies Kidneys/Adrenals</li> <li>• Strengthens Spleen</li> <li>• Dispels Toxins</li> </ul>
<b>CORDYCEPS – PERFORMANCE/AGILITY</b>	
<b>Common Name</b>	Cordyceps, Caterpillar mushroom
<b>Species Name</b>	<i>Ophiocordyceps militaris</i> ; <i>Cordyceps sinensis</i>
<b>Organs and Systems</b>	Lungs, Kidneys, Mitochondria, Adrenal glands, Immune system, Microbiome
<b>Constituents</b>	Polysaccharides, Beta-glucans, Cordycepin, Nucleosides, Ergosterol, Ergothioneine
<b>Key Actions</b>	Energy, Adaptogen, Performance enhancement, Immune support; Nootropic
<b>Chinese Name</b>	<i>Dong Chong Xia Cao</i> (蛹虫草)
<b>Research</b>	None in veterinary species; multiple studies support: 1. benefit to chronic kidney disease; 2. Improvement of exercise performance; 3. support of cancer patient; 4. benefit to asthma patients; 5. Anti-inflammatory, 6. anti-nociceptive
<b>TCVM action(s)</b>	<ul style="list-style-type: none"> <li>• Strengthens Kidney qi, yang and <i>mingmen</i></li> <li>• Builds marrow and benefits the brain</li> <li>• Nourishes blood; promotes circulation</li> <li>• Nourishes Lung yin</li> <li>• Stops hemorrhage</li> <li>• Transforms phlegm</li> <li>• Supports <i>Wei qi</i></li> <li>• Stops chronic cough</li> <li>• Sweet taste</li> <li>• Slightly warming</li> </ul>
<b>LIONS MANE – NEUROSUPPORT &amp; GI</b>	
<b>Common Name</b>	Lions Mane; Monkey Head
<b>Species Name</b>	<i>Hericium erinaceus</i>
<b>Organs and Systems</b>	Nervous system, Cognition, Digestion, Immune System, Microbiome
<b>Constituents</b>	Polysaccharides, Beta-glucans, Antioxidants, Triterpenes/Diterpenes (Hericenones, erinacines), Ergosterol, Ergothioneine Galactoxyloglucan, Glucoxylan, Mannoglucosyl, Xylan, Isoindolinones

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<b>Key Actions</b>	Cognitive support, Nootropic, Nerve Growth Factor support, Immune support, Neuroprotection, Nerve tonic; microbiome support; GI support, anti-neoplastic
<b>Chinese Name</b>	<i>Hou Tou Gu</i> (猴頭菇)
<b>Research</b>	None in veterinary species; multiple studies support: 1. Anxiety and depression; 2. Neoplasia; 3.
<b>TCVM action(s)</b>	<ul style="list-style-type: none"> <li>• Strengthens the Spleen</li> <li>• Regulates the Stomach (benefits digestion and metabolism)</li> <li>• Nourishes the Kidneys (and “Marrow” (brain)               <ul style="list-style-type: none"> <li>◦ helps with fatigue and concentration</li> </ul> </li> <li>• Nourishes the Lungs</li> </ul>
<b>MAITAKE MUSHROOM-Potent Multi-branched beta glucans</b>	
<b>Common Name</b>	Maitake mushroom; Hen of the Wood
<b>Species Name</b>	<i>Grifola frondosa</i>
<b>Organs and Systems</b>	Immune, metabolic, Glycemic normalization
<b>Constituents</b>	Polysaccharides, Beta-glucans, Ergosterol, Ergothioneine. Trehalose, Glycoproteins
<b>Key Actions</b>	Immune support, Antioxidant, GI support
<b>Chinese Name</b>	Hui Shu Hua (灰樹花)
<b>Research</b>	Published veterinary study of the effects of maitake beta glucan extract on canine cancer cell lines; published clinical trial in canine lymphoma patients using the same maitake beta glucan extract as the first study
<b>TCVM action(s)</b>	<ul style="list-style-type: none"> <li>• Affinity for Lung, Kidney, Large Intestine</li> <li>• Nourishes qi and strengthens Spleen               <ul style="list-style-type: none"> <li>◦ supports metabolism and energy levels</li> </ul> </li> <li>• Tonifies deficiency</li> <li>• Supports <i>Zheng qi</i> (adaptogen)</li> <li>• Benefits qi to promote health</li> <li>• Clears Heat</li> <li>• Drains dampness               <ul style="list-style-type: none"> <li>◦ Mild diuretic</li> </ul> </li> <li>• Sweet, Neutral</li> </ul>
<b>OYSTER MUSHROOM – FUNCTIONAL FOOD at its BEST!</b>	
<b>Common Name</b>	Oyster Mushroom: Yellow, Pink, Blue, King Trumpet
<b>Species Name</b>	<i>Pleurotus ostreatus</i> ; <i>Pleurotus spp.</i>
<b>Organs and Systems</b>	Metabolism, Immune system, Respiratory
<b>Constituents</b>	Polysaccharides, Beta-glucans, Lovastatin, Ergosterol, GABA. Chrysin

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<b>Key Actions</b>	Antioxidant, Anti-aging, Statin properties for cholesterol and triglyceride management, Immune support
<b>Chinese Name</b>	Ping Gu (平菇)
<b>Research</b>	<ol style="list-style-type: none"> <li>1. 2 veterinary studies using beta glucan extracts from <i>Pleurotus</i> to improve vaccine competence in immunocompromised shelter puppies</li> <li>2. Human studies - <i>Pleurotus</i> normalized blood glucose, blood pressure, triglycerides and cholesterol in diabetics while supporting liver and kidney;</li> <li>3. Anti-infective benefits of Oyster mushroom BGs for recurrent URI in children</li> </ol>
<b>TCVM action(s)</b>	<ul style="list-style-type: none"> <li>• Affinity for Spleen, Stomach, Liver</li> <li>• Strengthens Spleen (boosts metabolism and immunity)</li> <li>• Regulates fluids (mild diuretic)</li> <li>• Supports Liver (soothes sinews)</li> <li>• Invigorates Blood (promotes circulation)</li> <li>• Regulates Intestines (helps prevent constipation)</li> <li>• Sweet and slightly warming</li> </ul>
<b>PSILOCYBIN MUSHROOM</b>	
<b>Common Name</b>	Psilocybin, Magic Mushrooms, Shrooms; Liberty Cap; Laughing mushroom
<b>Species Name</b>	<i>Psilocybe cubensis</i> ; <i>P. cyanescens</i> ; <i>P. semilanceata</i> ; <i>P. azurescens</i> ; <i>Paneolus cyanescens</i> ; <i>Psilocybe caerulescens</i> ; <i>Gymnopilus junonius</i>
<b>Organs and Systems</b>	Nervous system
<b>Constituents</b>	Polysaccharides, Beta-glucans, Chitin, Psilocybin, Psilocin, MAO-inhibitors; Ergosterol
<b>Key Actions</b>	Produces an altered state that has been found to be beneficial for emotional support of disorders such as OCD, PTSD, depression and generalized anxiety syndrome.
<b>Veterinary uses</b>	Anxiety disorders, PTSD, OCD
<b>Research</b>	All published research is fairly recent and involves humans, or laboratory animals; psilocybin is a DEA Schedule One Controlled substance, but has been decriminalized in a few states and municipalities and for research.
<b>Traditional and Modern Uses</b>	Shamanic medicine; behavioral disorders; cancer-related anxiety and depression; major depressive disorder; addiction treatment and recovery; spiritual journeys; cluster headaches; neurogenesis-stimulates nerve growth; reduced fear response
<b>REISHI – The “Mushroom of Immortality”</b>	
<b>Common Name</b>	Reishi

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<b>Species Name</b>	<i>Ganoderma lucidum</i> ; <i>Ganoderma lingzhi</i> ; <i>Ganoderma applanatum</i> ; <i>Ganoderma tsugae</i> , <i>Ganoderma spp.</i>
<b>Organs and Systems</b>	Heart, Microbiome, Adrenals, Immune System, Nervous, system, Liver; most systems are involved in this mushroom's range of activity
<b>Constituents</b>	Polysaccharides, Beta-glucans, Triterpenes (Ganoderic acids), Ergosterol, Amino Acids, Polyphenols, Ganomycins, Nucleosides, Ergothioneine; soluble, insoluble fiber
<b>Key Actions</b>	Immune support, Oxidative stress support, sleep support, CNS support, adaptogen, antioxidant, immunomodulator, histamine-blocking action; liver support
<b>Chinese Name</b>	<i>Ling Zhi</i> (靈芝)
<b>Research</b>	None in veterinary species; multiple studies support: 1. mast cell degranulation properties; 2. anti-neoplastic properties; 3. activation of NK T cells; 4. benefit to LUTD; 5. bronchial asthma; 6. fibromyalgia; 7. hypertension; 8. allergic rhinitis; and many more in the published literature
<b>TCVM action(s)</b>	<ul style="list-style-type: none"> <li>• Tonifies lung qi and transforms phlegm to treat cough</li> <li>• Benefits the lung-kidney relationship to treat asthma</li> <li>• Tonifies heart qi and heart blood</li> <li>• Calms shen</li> <li>• Extends life</li> <li>• Clarifies the mind</li> <li>• Antidote to some varieties of poison mushroom</li> <li>• Sweet and Bitter taste</li> <li>• Neutral to slightly warming</li> </ul>
<b>SHIITAKE MUSHROOM –Immune &amp; GI Support</b>	
<b>Common Name</b>	Shiitake
<b>Species Name</b>	<i>Lentinula edodes</i>
<b>Organs and Systems</b>	Immune, microbiome, metabolic
<b>Constituents</b>	Polysaccharides, Beta-glucans, Eritadenine, Ergosterol, Thioproline, Ergothioneine. Trehalose, Lentinan, LEM ( <b>L</b> enintula <b>E</b> dodes <b>M</b> ycelium extract)
<b>Key Actions</b>	Immune support, Anti-microbial, Antioxidant, Metabolic, anti-hypertensive
<b>Chinese Name</b>	Xiang Gu (香菇)
<b>Research</b>	No studies in veterinary species; Multiple human and laboratory animal studies support these properties: 1. Hepatoprotective; 2. Gastro-protective; Reduces gastric hypermotility; controls hypercholesterolemia and triglyceridemia; increases endogenous SAME production when combined with choline;
<b>TCVM action(s)</b>	<ul style="list-style-type: none"> <li>• Affinity for Liver, Stomach</li> </ul>



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	<ul style="list-style-type: none"> <li>• Supports <i>Zheng qi</i> <ul style="list-style-type: none"> <li>◦ adaptogen</li> </ul> </li> <li>• Tonifies deficiency</li> <li>• Sweet and Neutral</li> </ul>
<b>TREMELLA MUSHROOM – REJUVENATION</b>	
<b>Common Name</b>	Tremella, Snow Fungus, Jelly Mushroom
<b>Species Name</b>	<i>Tremella fuciformis</i>
<b>Organs and Systems</b>	Integumentary, Gastrointestinal, Immune, Neurologic, Anti-oxidant, Anti-aging
<b>Constituents</b>	Polysaccharides, Beta-glucans, Ergosterol, Ergothioneine. Phenols
<b>Key Actions</b>	Moistening and hydrating, Immune support, antioxidant, supports healthy integument
<b>Chinese Name</b>	Bai Mu Er (白木耳)
<b>Research</b>	No studies in veterinary species; Multiple human and laboratory animal studies support these properties: 1. Memory and Cognition support 2. Improved WBC counts following radiotherapy for cancer; 3. Supports liver function and hepatitis control, hepatoprotective; 4. Neuroprotective; 5. Anti-neoplastic; 6. Antioxidant/Anti-inflammatory; 7. Supports and protects healthy skin, improves barrier function, supports collagen production comparable to hyaluronic acid, improves wound healing, protects from UV damage
<b>TCVM action(s)</b>	<ul style="list-style-type: none"> <li>• Affinity for Lung, Stomach, Kidney</li> <li>• Nourishes Lung yin – hydrates skin, moistens lungs</li> <li>• Nourishes Stomach yin – whole body hydration</li> <li>• Sweet, Bland, Neutral</li> </ul>
<b>TURKEY TAIL/IMMUNE SUPPORT</b>	
<b>Common Name</b>	Turkey Tail
<b>Species Name</b>	<i>Trametes versicolor</i> ; formerly <i>Coriolus versicolor</i>
<b>Organs and Systems</b>	Immune, Microbiome,
<b>Constituents</b>	Polysaccharides, Beta-glucans, Triterpenes, Ergosterol, proteoglycans (PSP/PSK), soluble and insoluble fiber
<b>Key Actions</b>	Immune support, white blood cell bone marrow production support, microbiome support, interferes with viral replication in vitro;
<b>Chinese Name</b>	<i>Yun Zhi</i> (雲芝)
<b>Research</b>	Pilot study in dogs with hemangiosarcoma found that a dose of 100 mg/kg/day of PSP improved survival times significantly; Follow-up canine hemangiosarcoma randomized clinical trial found evidence but not statistical significance that PSP combined with chemo in male patients may have some benefit.

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TCVM action(s)	<ul style="list-style-type: none"><li>• Strengthens the Spleen; Benefits Liver and Kidney</li><li>• Regulates Fluids; Resolves Phlegm</li><li>• Relieves cough</li><li>• Supports <i>Zheng qi</i> (adaptogen)</li><li>• Clears Heat and Toxins</li><li>• Sweet, bland taste</li><li>• Slightly cold energetics</li></ul>
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## *Cannabis: Guidance for Veterinarians*

**Robert J. Silver DVM,MS**

The use of cannabis for animal species is an area of growing interest, largely due to the therapeutic benefits being observed for humans and animals in the era of cannabis legalization. The close relationship humans have with their pets and other veterinary species has led to a renewed interest in the possibility and promise of cannabis to treat similar health issues in the animal community.

*Cannabis sativa* L., more popularly known as: Hemp, Marijuana, Mary Jane, Pot, Weed, Ganja, Bhang, Reefer, Dope, Grass, or Cannabis, has been a part of human history since before the written word. Archeological and anthropological evidence supports the fact that cannabis was cultivated by humans since the beginnings of agriculture more than 10,000 years ago. During the Neolithic period ancient peoples used every part of the plant: The stems and stalks for fiber for cordage and cloth; the seeds which are high in protein and omega 3 fatty acids, for nourishment, and the roots, leaves and flowers for medicinal and ritual applications.

Veterinary medicine has not yet seen the same advances compared to human medicine for objective, non-biased scientific evidence for the use of medical cannabis in veterinary species. This is due, in part, to the fact that the legalization statutes, state by state, do not provide similar legal privileges for veterinarians and their animal patients as physicians have for recommending cannabis for their human patients. However, with the passage of the Farm Bill of 2014, the cultivation and commercialization of hemp on a state-by-state basis began. The passage of the Agricultural Improvement Act (2018) and the Hemp Farming Act (2018), removed the Controlled Substance Act (CSA) Schedule I categorization of the resin derivatives of the hemp plant, thus opening the door to increased investigation with controlled studies into the benefits and potential risks of veterinary cannabis therapeutics.

However, even with the removal of the CSA scheduling of hemp resins, veterinarians are still in a difficult place. Many state's veterinary medical boards have admonished their veterinary members to not even discuss the use of hemp extracts such as the popular CBD, much less actually dispense this non-intoxicating extract of the legal hemp plant. By Federal law, hemp is defined as the *Cannabis sativa* L. plant that produces less than 0.3% THC on a dry matter basis at the time of harvest. The use of THC-dominant cannabis, which is called "marihuana" or just "cannabis", still remains a Schedule One substance, according to the Drug Enforcement agency (DEA) and is only permitted to be recommended by physicians who are certified as medical marihuana physicians.

Four states, California, New York, Nevada and Michigan have had bills introduced in their state legislatures to give veterinarians the ability to discuss CBD with their clients, and potentially to dispense CBD as well. Whether they are able to gain the same or similar privileges that human physicians have to recommend medical marihuana to their patients, remains to be seen. Pet owners and veterinarians need to work within their state legislatures to introduce similar or more expansive legislation as these three states have done. Hopefully this trend will extend to all of the states offering medical cannabis legislation.

## PHYTOPHARMACOLOGY

There are many plant constituents in cannabis of medicinal value. Of most interest are the phytocannabinoids, which consist of more than 100 terpenophilic compounds, found mainly in cannabis, but recently have been described in several other plants in the family Linaceae (Flax), and Asteraceae (Echinacea<sup>1</sup> and Helichrysum<sup>2</sup>). Other phytoconstituents such as terpenes, terpenoids, and flavonoids also contribute to the medicinal profile of cannabis.

Phytocannabinoids exist in the plant as carboxylic acids and in that form are all non-intoxicating. The acidic form is converted to neutral molecular analogs by light, heat and combustion<sup>3</sup>. The phytocannabinoid that has gotten the most attention in this plant is  $\Delta$ -9 Tetrahydrocannabinol (THC), which provides its recreational and some of its medicinal qualities. THC has resulted in cannabis' value, notoriety and illegality. The other phytocannabinoids which are divided into multiple classes based on chemical structure, are not intoxicating, but possess most of the medicinal properties of this plant.

Terpenes/Terpenoids are equally important phytoconstituents of cannabis. These organic compounds are produced by a variety of plants. It is thought they serve a protective function for these plants. They are a significant component in plant essential oils. These molecules are responsible for the aroma of cannabis, and because they, like cannabinoids, are lipophilic, they also cross the blood-brain barrier and contribute to the medicinal benefits of cannabis. Their activity is synergistic with the phytocannabinoids.

The US FDA considers terpenes and terpenoids to be Generally Recognized as Safe (GRAS), as they are flavor and fragrance components common to human and pet diets. Cannabinoids, terpenes and terpenoids are all produced in the same glandular structure on the cannabis plant, the trichome, from the same chemical precursor, geranyl pyrophosphate. Hops (*Humulus lupulus*) is a member of the same Cannabaceae Family as cannabis, and shares many of the same terpenes and terpenoids such as  $\beta$ -myrcene,  $\beta$ -pinene, humulone, and  $\beta$ -caryophyllene. Cannabinoids are virtually odorless, emitting only a slight pitch-pine scent.

Flavonoids provide additional anti-inflammatory and anti-oxidant properties to cannabis. There are 29 flavonoids identified in cannabis that are in three different categories: 1) Flavones, such as vitexin, apigenin, isovitexin, luteolin and orientin; 2) Flavonols such as quercetin and kaempferol; and 3) Prenylated aglycone flavanones, which are unique to cannabis: Canniflavins A, B & C, which are similar to the prenylnaringenin from hops (*Humulus lupulus*). These are potent inhibitors of COX2 enzymes, affecting PGE<sub>2</sub> production, reducing inflammation through that pathway.<sup>4</sup>

The Entourage Effect describes the interactions among the three main phytoconstituents: phytocannabinoids, terpenes and flavonoids. This complex interaction has been termed the "Entourage Effect", and helps to explain the multiple biological activities of the cannabis plant, and the differences that are seen in bioactivity of the different strains of the cannabis plant. The Entourage Effect explains that the potency of the whole plant extract is the sum total of the interaction of all of the plant constituents involved, and is different than the effect of any individual plant component alone. An additional aspect of the Entourage Effect is that there are multiple Cannabinoid receptor-mediated and non-Cannabinoid receptor-mediated pathways that influence the biomedical activity of the plant as a whole. To summarize, not only do you get this synergy amongst the constituents in the plant, there also are multiple signaling pathways each of these constituents can take to further enhance their biomedical activities.<sup>5</sup>

## THE ENDOCANNABINOID SYSTEM: LIGANDS, RECEPTORS AND ENZYMES

Following the determination of the structure of the first cannabinoid,  $\Delta$ -9 THC in 1964 by Mechoulam, researchers started looking for the membrane receptors that could mediate the activity of the phytocannabinoids and the endogenous ligands to these membrane receptors. In 1988, the first cannabinoid receptor was discovered in the rat brain using a radioactive-labeled THC derivative. This receptor, termed Cannabinoid Receptor 1 (CB1), was determined to be a G-protein coupled receptor with the highest density in the rat cerebral cortex, hippocampus, hypothalamus, cerebellum, basal ganglia, brain stem, spinal cord and amygdala. This receptor is present in all vertebrate species and many invertebrates, indicating that the endocannabinoid system or elements of it, has been in existence for over 500 million years.

The Endocannabinoid system consists of: 1) **the ligands**, which bind to the cannabinoid receptor, 2) **the receptor** itself, and 3) **the enzymes** that synthesize and degrade the ligands. The endocannabinoid system (ECS) has been identified in nearly all animals, from complex mammals like primates, to phylogenetically primitive animals such as the Cnidarians. The near universal presence and early emergence of the ECS, evolutionarily, is a strong indicator of its biological importance.

Cannabinoid receptors are expressed in most animals, including: Vertebrates: mammals, birds, reptiles, and fish; Invertebrates: Sea urchins, leeches, mussels, nematodes and others. The most primitive animal an ECS has been observed in is the Hydra (*H. vulgaris*), a Cnidarian in the Class Hydrozoa, which was the first animal to develop a neural network. De Petrocellis et al. determined the major function of the ECS in the Hydra is to control the feeding response<sup>6</sup>. Insects do not have a complete ECS, and it is thought that is due to the fact that the precursor for the synthesis of endocannabinoids is from arachidonic acid which is lacking in the insect.<sup>7</sup> It is evident from this, that all veterinary species contain an ECS. Therefore, an understanding of the ECS in these species is critical to the development of clinical applications for endocannabinoids and the phytocannabinoids derived primarily from *Cannabis sativa* L.<sup>8</sup>

### ENDOCANNABINOIDOME<sup>20</sup>

The group of molecules and receptors that comprise the classic endocannabinoid system are part of a larger family of signaling molecules and receptor promiscuity termed the “Endocannabinoidome”. These are compounds that are not specifically part of the endocannabinoid system but have a cross-signaling effect with the ECS. They are found to act on several receptor targets (GPR55, GPR18, GPR119, TRPA1, CB1, CB2, TRPV1, TRPA1, opioid, dopamine, and serotonin (5-HT) and glycine receptors) and non-receptor targets within the ECS. The individual molecules of the endocannabinoidome termed “entourage compounds” or “endocannabinoid-like molecules” include the acyl ethanolamides<sup>21</sup>.

**Acyl Ethanolamides.** The endocannabinoidome contains endocannabinoid-like molecules, the acyl ethanolamides, that do not bind to cannabinoid receptors but have binding affinity to the nuclear receptor-transcription factor, peroxisome proliferator-activated receptor (PPAR  $\alpha$  &  $\gamma$ ). These molecules are fatty acyl ethanolamides such as palmitoylethanolamide (PEA) and oleoylethanolamide (OEA). These endogenous ethanolamides can potentiate anandamide’s effect through the competitive inhibition of FAAH, similarly seen with CBD and other phytocannabinoids. Ethanolamides have an allosteric modulatory effect on another receptor system, the transient receptor potential vanilloid (TRPV) channel. The effect these molecules have on the endocannabinoid system to potentiate the actions or serum levels of endocannabinoids has been termed the “Entourage Effect”. The definition of the entourage effect extends to include the interaction of the active components of *Cannabis sativa* L., namely, the phytocannabinoids, terpenes, and flavonoids, and the endocannabinoid system<sup>22</sup>.

## PRACTICAL GUIDANCE to PRODUCT SELECTION and ADMINISTRATION<sup>23</sup>

As the use of cannabinoids for people and pets progresses, and as the technology involved with formulating these products advances, it becomes more problematic to select that appropriate cannabinoid product for your patient or your pet. This section will go over the details of what product “technology” is available in the marketplace for your clinic or your clients. “Technology” includes not just the type of product, but also the extraction technology that produced the extract, and the use of emulsions and down-sizing the particles or other approaches to improve absorption.

Dosage is not a simple matter of multiplying body weight by the mg/kg that you’ve found somewhere in print. It is much more nuanced than a simple equation, and it is here that the veterinarian who has become practiced in the clinical uses of cannabinoids can shine. Our observational skills and experiences with dosing other medications to effect can serve us well in establishing an effective phytocannabinoid dose for a specific patient’s needs.

The cannabis plant is a bio-remediator, which means that it will absorb substances from the soil and retain them in its biomass. Cannabis hemp plants were seeded all around the Chernobyl nuclear plant accident to scavenge radioactive material from the soil. Cannabis hemp plants grown in a high selenium soil are being used as a natural source for selenium supplements. But, if the cannabis is grown in soil contaminated with pesticides, herbicides or heavy metals, the plant will contain those toxins which will be passed onto the consumer of the cannabis plant, whether it be the seed oil, seed protein, or the resin of the flowers.

The solvents used to extract the thick cannabinoid and terpene resins from the plant can also be retained in the plant bio-mass, and pose a health problem to the consumer of the plant’s consumable products. Even the carrier oils that are not derived from the cannabis plant, or the other ingredients in soft-chews or complex nutraceutical formulations can be contaminated. The only way the products of the plant can be considered safe for consumption, either by humans or animals is by reviewing the **Certificate of Analysis** for the finished product, the tincture, the soft-chew, the hard biscuit, or the nutraceutical formulation.

And finally, in spite of the advances in absorption technology in the cannabis/hemp industries, which are being used to market one product as being superior to another product, the way in which the product is administered can improve absorption as well, if not better than these emerging technologies, at a much more reasonable cost.

**Absorption technologies.** “Water” soluble cannabinoids are emerging in the human and pet CBD marketplace, as companies are vying for sales in what has become a very crowded industry but employing pharmaceutical technology to provide a more “advanced” and hopefully attractive product to their customers. All of the cannabinoids are extremely lipophilic, which means that technically they can’t be “water soluble”. Water soluble CBD uses an emulsion base to be able to mix oil with water so to speak, and typically the CBD oil has been reduced in size to increase its absorption.

The emulsion creates tiny “micelles”, which are made up of dipolar molecules surrounding a lipid molecule, with the water soluble pole of the dipolar molecule allowing the micelle to be suspended in an aqueous medium. Smaller sized “micelles” can pass through the barrier of the bowel more easily than larger ones.

The difference between "micellar", "liposomal" and "nanosomal" is the size of the micelle. Each company that provides one of these technologies claims their technology provides the best absorption. The only way to decide this is to run head-to-head studies comparing each technology. Each technology does improve absorption. Be aware, though, that increased absorption doesn't guarantee increased efficacy, and may require more frequent dosing to keep blood levels stable.

**Navigating Product Selection.** Products come in a variety of formats. Each format has pros and cons about it. Different patients and different anticipated outcomes require specific product types. The following is a list of the types of products available for veterinary use, excluding products from a dispensary which normally contain THC which makes them a bit risky for a vet to recommend.

### **Types of CBD Products for Veterinary Use:**

- Tinctures (oil-based liquids)
- Hard capsules (containing powders)
- Soft gel capsules (containing liquids)
- Soft chew treats
- Hard chew biscuits
- Pellets
- Powders
- Topicals
  - Salves and Liniments
- Transdermals
- Ratio Products: CBD:THC; CBD:CBDA; CBD:CBG; etc.

Each of these has an appropriate clinical application. You would tend to not give a soft chew designed for a dog to a horse, but there are hard biscuits designed for equine use. Each is just a delivery system, and it's your choice to select the format that best meets your practice needs.

Ratio products are found in dispensaries if they contain CBD and THC, but we are seeing more Ratio Products emerging in the hemp marketplace with ratios between CBD and the minor or acidic cannabinoids.

**Reading A Certificate Of Analysis.** After selecting the product format, it's very important to request and review the Certificate of Analysis (CoA) for the finished product. CoA's will analyze using specific technical procedures for each category being measured. Look for a laboratory that has ISO/IEC 17025 Accreditation, which is currently the gold standard in laboratory quality control. Look for companies that use a lab with this accreditation for an impartial third party analysis.

Typically a complete analysis will include the following tests by the following analytical procedures:

1. Cannabinoid measurements by HPLC-PDA
2. Heavy metals by ICP-MS
3. Pesticides by LCMS/MS & GCMS/MS
4. Microbials by PCR
5. Mycotoxins by LCMS/MS
6. Residual Solvents by HS-GC/MS
7. Terpenes by HS-GC/MS

8. Dosing & Micro Dosing is a “slippery slope”. Unlike many pharmaceuticals, phytocannabinoids have complex activity, involving signaling a variety of different pathways, that themselves will create the effects seen by the cannabinoids. Thus a single, by weight dosage, although a good starting place, may not be the final effective dosage used. Dosage is determined by body weight, for sure, but is also dependent upon the degree of obesity of the patient, the severity of its condition, the type of its condition (e.g.: anxiety needs lower doses than pain), and the patient’s individual endocannabinoid system’s density and distribution of cannabinoid and non-cannabinoid receptors.

Clinically, this author has found that the best way to establish a dosage is by starting low, and giving your patient time for the cannabinoids to saturate its tissues, which is usually about 7-14 days, and then adjusting up or down the dosage to achieve the desired effect. Other practitioners may suggest going in the other direction, starting with a high dose if the patient is very painful, in an attempt to medicate the pain as quickly as possible with a higher dose, and then titrating the dose down once clinical results are achieved to the minimum effective dose for the sake of economy of expense and materials.

The existing published canine and feline research has used the dose of 2.0 mg/kg BID, and in the studies this dose has been found to be effective. This dose was derived from rodent data using CBD isolate. In the field, most products are not isolate, but full or broad spectrum whole hemp plant extracts. Isolates have been found to need higher doses for the same effects as whole plant extracts, and to be associated with a greater number of adverse events.

This author empirically developed a lower dose for a broad-spectrum hemp product that was sold exclusively to veterinarians beginning in 2015. Following hundreds of thousands of doses of CBD given at this dosage (0.5 mg/kg BID), anecdotally, veterinary users have confirmed that it can be effective in most patients for arthritis, mild-moderate pain, and epilepsy. A few patients with cancerous growths also went into remission at this dosage. It’s important to note that the higher 2 mg/kg BID dosage has been associated with a great risk of adverse events, but for some individual patients they may need that higher dose for their conditions.

By starting to dose at the lower tier of 0.5 mg/kg BID, if, after 2 weeks progress is not as hoped for, one can easily and safely double that dose in search of the effective final dose. Based on safety studies showing reasonable safety (but with greater adverse events) at doses as high as 10 mg/kg BID. So there is plenty of wiggle room in dosing, its best if you start low, go slow, and try to stay as low as possible and still gain the benefits of using CBD.

Equine dosing considerations. Studies in the horse have lagged behind those for dogs, but are beginning to be completed and published. It is acknowledged that horses appear to be more sensitive to the effects of cannabinoids, with observations that doses as low as 0.5 mg/kg once or twice daily can achieve some clinical response for conditions of anxiety and mild gait abnormalities or pain. More serious conditions may need higher doses. Similarly to what we have found with dogs, (there is only a single PK study in cats to date, and feline pharmacodynamic studies are still lacking), the dosing strategy depends upon the body weight and body condition score of the patient, the severity of the problem, and the patient’s individual endocannabinoid system density and distribution. For your average 1000-1200 pound horse, this means that doses of 25-50 mg of CBD once or twice daily can be effective for less severe conditions, and doses as high as 250 mg daily have been used for more severe conditions such as mechanical allodynia, laminitis or navicular disease.<sup>24</sup>



In the first peer-reviewed published data on equine cannabidiol pharmacokinetics, Ryan et al. found a prolonged  $T_{1/2}$  of 10.7 hours and 9.9 hours for 0.5 mg/kg and 2.0 mg/kg dosages. This prolonged half time, in comparison to those found in dogs and humans, supports the observations that single day dosing in the horse can achieve pharmacodynamic results.

In an unpublished dosing study performed by this author in 30 horses in 3 different stable it was determined that doses of 25-50 mg twice daily were able to smooth out mild gait abnormalities, but horses with more severe conditions, such as chronic navicular, needed doses as high as 100 mg twice daily to produce observable benefits. The second half of the study was to determine clearance time from when the CBD therapy ceased to when the blood would be clear of CBD, in order to avoid issues with performance drug testing for competition.<sup>1</sup> THC has already been designated a disqualifying substance with positive testing, and CBD is also considered a PED, and can disqualify if detected in the blood upon testing. It is recommended to withhold CBD and THC for 7 days prior to PED testing.

The owners of the horses in this dosing study were observing such positive benefits to the use of CBD in their horses that most of them refused to discontinue administering the CBD oil!!!!

Administration. With food or without, that is the question. Studies in multiple species all show that administering food or after a meal improves  $C_{max}$  and AUC by 4-8 fold.<sup>25</sup> the use of liposomal or micellar, or nanosized water soluble emulsions can increase absorption but numerically they don't compare to administration with food in terms of magnitude of absorption.

In a 2019 study in rats comparing the PK of the oil-based liquid versus a nano-emulsion, 50 mg of the nanoemulsion had a greater  $C_{max}$  than 100 mg of the oil formulation. Time to peak levels was substantially higher in the oil administered subjects, but the time to eliminate the CBD in the nanoemulsion was twice as rapid (4.68 vs 2.4), thereby necessitating a more frequent administration to maintain therapeutic blood levels. (50) Similar PK curves for absorption-enhanced emulsions were seen in an unpublished PK study this author conducted comparing the single dose oral PK of an oil based CBD liquid compared to a liquid CBD nanoemulsion in research bred beagle dogs, and have also been reported in human PK studies.<sup>26</sup>

My suggestion: Skip the technology, save your money, and give with food. It's easier, especially with cats who detest having things shoved into their mouth, and it provides increased blood levels with greater efficacy. Another option is using soft-chews or biscuits which dosage comes "bundled" with its own food.<sup>27</sup>

### **Concluding Remarks**

Since its introduction to the veterinary community in 2014 as a potential therapeutic, our knowledge and understanding of CBD and all of the molecules derived from cannabis and their targets within the body has been gaining ground. Pharmacokinetic and pharmacodynamic information is currently being compiled for many veterinary species, including livestock. The future looks bright for veterinary cannabis therapeutics, and the day will come, relatively soon, when there will be FDA-approved cannabinoid-derived medications labeled for veterinary application.

REFERENCES (provided upon request -full paper will be included)

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1 Silver, RJ. White Paper: Equine Phytocannabinoid Dosing Study; April 2018; unpublished data available upon request

## *Strengthening Your Immune System and Herbal Alternatives to Antibiotics*

**Robin Rose Bennett**

Your immune systems are comprised of all parts of the eco-system you know as yourself, and include not only every part of you, from your conscious and subconscious thoughts to your physical body systems, but also how you live and function in relationship with the larger eco-systems that surround you. So perhaps it would be more accurate to talk about your collective of immune systems. Part of our focus will be on the lymphatic system, the part of the body designed to engage in self-defense and self-protection, as it's the system most clearly connected to what we call "immunity." The lymphatic system is primarily a fluid system connected to the element Water. It also involves the ground of your being and thus the Earth. It is a remarkably intelligent system that, in addition to its innate abilities, acquires new knowledge through experience. It learns how to identify, tag and neutralize or destroy foreign presences. Your combined internal defenses collectively known as your immune system know how to tell the difference between self and not-self, to know whom and what to eat, engulf, and/or render inert, one way or another.

This system and its health, acute illnesses, and chronic challenges teach you what it is you actually need—emotionally, spiritually, nutritionally, sexually, socially, creatively, etc. in order to feel healthy, vibrantly vital, and alive. And when you're not well, these challenges ask you to find what you need—how much rest and how much activity, for instance, how much giving and how much receiving, and/or what you may need to let go of or embrace in order to heal. And you don't have to do it all at once. Sometimes you change your attitude, and that helps a difficult situation to shift and change too.

I prefer to nourish my general immunity with lots of time outdoors, green herbs such as nettles, dandelion, plantain, yellow dock leaves, parsley, kale, broccoli, and more, and a great assortment of wild greens such as lamb's quarters, amaranth, cinquefoil, strawberry leaves, sorrel, onion grass, and more—as well as with whole foods, good friends, community projects, time to play, meaningful work (even if unpaid), sexual fulfillment, time spent doing absolutely nothing, self-expression, sensual connection, creative outlets, and good quality and quantity of sleep.

Additionally, there are some immune-protective foods I include in my diet on a regular basis such as:

**Berries** - support veins and capillaries; immune-building.

**Carrots** - liver-nourishing.

**Lemon** - cooling, antiseptic.

**Milk thistle seeds** - liver-protective, with 2,000 years of recorded use.

**Mushrooms** - immune-modulating, anti-tumor.

**Olive oil** - an excellent, healthy source of dietary fat.

**Onions and other alliums** - immune-supportive.

**Seaweeds** - feed all body systems and protect against radiation.

**Sunflower seeds** - protective against radiation.

**Wild greens** - feed all body systems; high in vitamins, minerals and essential fatty acids.

**Yogurt** - for immune and digestive nourishment.

**Some of my favorite immune-strengthening and anti-infective allies are:**

echinacea roots, usnea, yarrow flowers and leaves, poke root and berries, plantain leaves, burdock roots, dandelion roots, yellow dock roots, barberry root bark, astragalus roots, nettle leaves and stalks, elder flowers and berries, calendula blossoms, pine needles and twigs, propolis, sage leaves, turmeric root, garlic cloves, basil leaves, thyme, honey, salt, violets, cleavers, nettles, hyssop.

**Some immune-strengthening, anti-microbial herbs include:**

**Astragalus** (*Astragalus* species) - An immune-modulating member of the pea-family (Leguminaceae) whose root helps rebuild the immune system after depletion; valuable tonic used as tea, in food, and in tinctures. Useful during and after chemotherapy or other harsh treatments to revitalize immunity; moistening, cooling, nourishing.

**Barberry** (*Berberis vulgaris*) - The root bark, leaf, and stem of this non-native invasive shrub is a berberine-rich anti-inflammatory herb, beneficial for digestive system “bugs” and for those who have developed resistance to conventional pharmaceutical antibiotics. It is being used in herbal medicine to help people with tick-borne infections.

**Basil** - Antiviral, antifungal, antibacterial, and antiparasitic, for the digestive, respiratory, and nervous systems.

**Burdock** - Provides lymph nourishment; helpful as an antibacterial, antifungal, and antiviral agent; supports kidney and skin health.

**Calendula** - Vulnerary (wound healing), antiseptic, antibacterial, anti-fungal, antiviral; valuable for skin, topical and internal use.

**Cleavers** (*Galium aparine*) - Helpful in a fresh tincture for stimulating lymph; useful for skin and urinary system, including prostate.

**Dandelion** - Nourishes lymph and liver, strengthens kidneys.

**Echinacea** - Lymphatic support; supports and nourishes general immune functioning; best combined with herbs specific to the system being helped.

**Garlic** - Respiratory, digestive, skin, and lymphatic wonder-plant.

**Goldenseal** - Another berberine-rich anti-inflammatory and anti-infective, this herb is overharvested and endangered in the wild and should only be purchased organically grown.

**Hyssop** - Antiviral, wound-healing; supports respiratory system; especially helpful for bronchitis.

**Lavender** - Antiseptic, heals burns (simple or infected).

**Lemon balm** - Antiviral for herpes, venereal warts, shingles, and colds; calms nervous indigestion.

**Oregon Grape** (*Mahonia aquifolium*) - Berberine-rich anti-inflammatory; anti-infective.

**Plantain** - Antibacterial, antiseptic herb for the digestive and lymph systems; supports healthy lungs, kidneys, skin, and veins.

**Rosemary** - Antifungal, antibacterial, liver-supportive; a cardiovascular, central nervous system/brain tonic.

**Sage** - Antibacterial, antiseptic, especially for throat and feet.

**Salt** - Antibacterial; pulls out poisons.

**Thyme** - Antibacterial for lungs and bronchi; antifungal.

**Usnea** - Broad-spectrum antibacterial lichen, especially important for respiratory healing from fungal infections.

**Yarrow** - Antimicrobial, anti-inflammatory, and pain-relieving, especially for the respiratory system, liver, intestines, and skin.

The optimum use of herbal medicine is to take in our plants in foods, teas, etc. as preventative medicine to strengthen the ground of our being. However, when infection or other illness is present, a skillful herbalist can help determine whether the challenge is on the surface or runs deep, whether it is acute or chronic, and finally, which body system is in need of herbal support. We can support a person's healing from most infections - bacterial, viral, fungal, or even parasitic, with the proper usage of common plants from echinacea to astragalus, from shiitake mushrooms to holy basil, to thyme, using a combination of internal and topical remedies depending upon the situation, and upon what's available. Always use the best medicine that is available to you with gratitude, trust in the plants, and in the body's innate orientation to heal itself.

## *Everything is Medicine – Herbal Medicine in your Spice Rack and Pantry*

**Robin Rose Bennett**

One of the most common ways of healing self, family and friends is with homemade herbal medicines called “meals.” As Hippocrates said, “Let your food be your medicine, and your medicine be your food.”

There is medicine all around us. Our kitchens, including our spice racks, can be an abundant source of effective medicine for us, and safer than what we find in the pharmacy. Open your mind and your senses to the broader possibilities for creating healing feasts in your own kitchen.

Common herbs, foods, and condiments such as basil, garlic, salt, onions, carrots, dark leafy greens, honey, vinegar, and so much more provide remedies for a vast variety of conditions. Mint plants so rich in antioxidants and helpful for digestion, can help keep us well and in tip-top shape, which is to say, in mint condition! Many healing spice plants are in the mint family, such as basil, sage, rosemary, and lavender.

### **Some Common Healing Foods**

**Apples** – for digestive health.

**Basil** – for good fortune, good spirits; helps the system heal in the presence of parasites, fungi, viruses, and/or bacteria.

**Cinnamon** – styptic, antiseptic; helps circulation, balances blood sugar

**Garlic** – for respiratory, immune, cardiovascular, and digestive health

**Ginger** – euphoric, stimulant, antispasmodic, and anti-inflammatory

**Honey** – for wounds; rehydrating, anti-allergenic, provides amino acids.

**Hot coca/dark chocolate** – healthy comfort food; antioxidant, endorphin-stimulating.

**Lavender** – soothing, antiseptic; heals burns.

**Lentils** – phytoestrogen-rich, nourishing, and protective to female reproductive system.

**Marjoram** – antibacterial, warming, soothing to joints.

**Mushrooms** – immune-modulating, cancer-protective, anti-tumor.

**Mustard** – pungent, breaks up congestion in the respiratory system, brings heat to release pain (though too much mustard can cause pain).

**Onions** – drawing, anti-infective, anti-inflammatory, cough-relieving

**Rosemary** – enhances cardiovascular circulation and brain functioning; memory tonic, liver tonic; helps ease headaches including migraines.

**Sage** – mineral rich brain and nervous-system tonic for illnesses that cause paralysis; good in foot baths; throat-healing, strong antiseptic.

**Salt** – for wounds, anemia; protective against bacterial infections.

**Seaweeds** – rich in antioxidants, carotenes, calcium, and selenium; removes heavy metal and radioactive isotopes from the body.

**Slippery Elm**- demulcent for throat and intestines; nourishing mucilage; helpful for constipation and/or diarrhea.

**Thyme** – warming, calming; bronchial antispasmodic, antibacterial.

**Turmeric** – for circulation; warming liver and digestive tonic; anti-inflammatory, immune-supportive.

**Vinegar** – helpful to acid/alkaline balance in body, restoring proper pH; digestive aid; helps joints remain flexible; menstruum for minerals.

If you are eating well and feeling gratitude for your food, you are already taking good medicine. Medicine is anything that heals, including and perhaps especially, positive energy that comes from genuine kindness extended to oneself and others. When our food is prepared with love and care, these foods and spices are among the best medicines in the world. Along with a sense of connection to nature and a community of people, they truly form the foundation of good health.

Let's talk about **Barley** (*Hordeum vulgare*)!!

Once when I was quite ill I had a dream that my great-grandmother Esther, whom I had never known, and whom I found out years later had been a renowned herbalist in Brooklyn, NY, told me to eat barley. I was weak and had lost a substantial amount of weight. It turns out barley is a perfect food for convalescents, deservedly famous as a supremely nourishing food, especially when the digestion is weak. Barley water is gentle enough for infants and elders, and I have used it for both.

When I was cooking the barley, I felt the presence of my great-grandmother guiding me in a way I have never felt before. She occasionally *corrected* me as we went along, so I made it exactly how she “told” me to.

### **Great-Grandmother Esther's Barley Recipe**

1 - part pearled barley

2 parts water

1 medium onion

1 tablespoon butter

Salt and black pepper to taste

Put the barley and the water into the pot. Cut the whole onion into quarters, but not all the way through, and place it on top. Put the butter on top of the barley, too; do not stir it in. Add salt and pepper. Cook until the barley is soft; the onion will be soft by then too. Only at this point, and not before, stir everything together, and then adjust seasoning as desired.

Your ancestral foods provide something indefinable that nothing else can give you. When you eat foods that your ancestors favored and evolved with, as at least part of your diet, it nourishes your body at a cellular level, and satisfies your being in a way that may be immeasurable. One study I read showed that two groups (Swedish and Japanese) not only didn't enjoy the others' meatballs and/or seaweed soup, they didn't derive the same vitamins and minerals from the foods. Enjoyment matters!

# *Integration of Herbal Medicine into Veterinary Practice*

**Rona Sherebrin DVM,CVA**

This lecture will outline strategies for veterinary practitioners to use in introducing herbal therapies into their clinics/hospitals. Also covered will be how herbalists treating animals can communicate and collaborate with veterinarians about their mutual patients.

Integrating herbal medicine into veterinary practice can be a great way to provide a broader spectrum of care for your patients.

The first step is education. In order to incorporate herbal medicine into your practice, it is important to have a solid understanding of the principles of herbal medicine and how it can be used to treat various conditions in animals. Explore the evidence base in veterinary species through PubMed searches and journals such as the JAHVMA, AJTCVM, JVBMA, and others. There is a growing volume of research, but be critical of the references claimed by supplement salespeople and perform due diligence to ensure that the product format, dose and method of administration used in the study are comparable to the product in question.

Currently there are online and in-person courses in veterinary herbal medicine, both introductory and intensive. These allow practitioners to be able to learn more and be comfortable with prescribing and dispensing herbal materials.

Consider consulting with a qualified veterinary herbalist, to ensure that you are using the correct herbs and dosages for your patients.

Get to know your herbal product suppliers. It is crucial to choose high-quality, reputable products for your herbal pharmacy. Be comfortable with the quality control and testing procedures that the producers use to ensure the safety and effectiveness of their products. Ask questions and make sure that the answers are complete and accurate. Look for third-party quality assurance such as the National Animal Supplement Council (NASC) seal on the label, a Natural Product Number (NPN), National Sanitation Foundation (NSF), and United States Pharmacopeia (USP).

Integrating herbal treatments into your diagnostic and treatment plan can be as simple as using them in addition to conventional therapies to support the function of the affected organ. Monitor results regularly and evaluate the patient's progress. Make adjustments in dose, format and components as necessary. Keep detailed records including the name of the product, the herbal constituents, format, dose and frequency of administration. Use your records to be able to document successes and failures, so that you can learn from your experiences and communicate them to other veterinarians and to your clients.

Communication with your clients is of utmost importance. Make sure to communicate clearly with your clients about the herbal treatments that you are using. Let them know why you chose them, what the expected results may be, and potential adverse effects. Let them know what to do if there are any unintended effects, or sudden changes. It is always a good plan to provide clients with written information about any prescriptions or treatments, and any potential issues to be aware of.

If you are the only veterinarian in the practice who prescribes herbs, be available to communicate with your colleagues about the cases that you are prescribing herbs for. Ensure that you have detailed information in your medical records about any potential drug-herb interactions, and expected effects, both positive and negative. Look at what level of evidence base there is for the use in the target species, and consider including publication references in your medical records if you are in a practice where colleagues are less open to change.

Start integrating herbs into your practice with small simple steps. Choose one area or systemic issue that is not well served by conventional therapeutics or that already has an accepted botanical or nutraceutical product. Chronic inflammatory diseases that are not imminently life-threatening are a good example of issues that do not currently have a wide range of prescription therapeutics. Another example of an area where herbal medicine shines is in diseases with comorbidities that preclude the use of the pharmaceuticals available.

Look at products commonly available in the grocery store and generally regarded as safe (GRAS). Teas and culinary herbs are easily accessible and can be incorporated safely and easily. For example fresh aloe vera leaf gel for GERD, strong chamomile tea decoction for intestinal cramps, fresh ginger juice for motion sickness prevention, fresh sage mixed in honey for uncomplicated cough, strong green tea infusion and aloe vera gel topically for superficial pyoderma.

Look at products that you may already be using in your clinic, you may not even realize that they are of herbal origin. There is quite a range available from your veterinary product distributors that is labelled and licenced for use in the target species.

eg

- *Silybum marianum* (milk thistle): Marin, RxV Hepatosupport, Denemarin, Zentonil Advanced
- *Camellia sinensis* (green tea): Anxitane (SunTheanine)
- *Linum usitatissimum* (flax): SDG Lignans, whole food
- *Plantago ovata* (psyllium): Vetasyl, whole food
- *Biota orientalis*: 4Cyte
- *Crataegus oxycanthus* (Hawthorne), *Coleus forskohlii*: RxV CV Formula
- *Cannabis sativa*: ElleVet, various products (check local legal status)
- *Vaccinium oxycoccos* (cranberry): Crananidin, juice, extract and powder products, whole food

Considerations:

- Quality assurance (NASC seal), NPN, NSF/USP
- the format of the product
  - whole herb,
  - powdered herb
  - alcohol extract
  - glyceextract
  - extract granule/powder
  - tablet
  - flavouring and/or excipient agents added
- dose volume and frequency
- with or without food



- We all want to provide the best care for our animal patients and companions. Herbalists and veterinarians without herbal training can collaborate effectively by ensuring that we are speaking the same language. Open, honest, and effective communication is key to building a strong relationship and cooperation between herbalists and veterinarians. Sharing information about each other's areas of expertise and also being honest about areas you need to learn more about, level of previous experience, and approach to patient care is the foundation of a working relationship. Collaborating with mutual respect and a shared goal of providing the best care for the patient can help ensure a successful and long-lasting team approach for the clients and patients.

One thing to consider is offering joint consultations for patients. During the consultation both practitioners can evaluate the patient together and develop a comprehensive integrative treatment plan. This can be particularly beneficial for complex cases or for patients with comorbidities or unstable disease.

Where herbalists and veterinarians are collegial and comfortable with each other's areas of expertise, a referral system can be effective. Each can refer patients to the other as needed. This ensures both practitioners are involved in the decision-making process, and that the patients receive herbal therapies that are appropriately integrated into their medical plan. Any patient referrals need to have their medical records kept up to date on both sides. All parties treating the animal need to be kept "in the loop" and updated on any changes and relevant information.

Participation in veterinary continuing education opportunities together with veterinarians, like this one, will go a long way to be able to stay current on the latest developments in conventional veterinary medicine, as well as veterinary herbal medicine. Conferences, courses and workshops are also an opportunity to meet and network with veterinarians who have an interest in herbal medicine but may not have the expertise yet to feel comfortable prescribing on their own.

- Respect each other's expertise.
- Respect each other's approach to patient care.
- Collaborate with the shared goal of providing the best care for the patient

By working together and sharing information and expertise, herbalists and veterinarians can provide comprehensive and holistic care for animal patients and improve their health and well-being. Veterinarians starting on their journey with herbs can easily and effectively integrate herbal medicine into their veterinary practice and provide their patients with the best possible care.

# Top 10 Herbs (Singles and Formulas) for Integrative Veterinarians

Rona Sherebrin DVM,CVA

*This lecture will introduce and discuss ten of the most utilized and useful formulas and single herbs in the author's practice.*

## ***Withania somnifera* Ashwagandha**

Ashwagandha is sometimes referred to as “Indian Ginseng”. It is a plant commonly used in Ayurvedic medicine as a *rasayana*, a tonic herb used for longevity and vitality, which classifies it as an adaptogen. It is moderately stimulating in nature. Botanical family *Solanaceae*

It is a long tuberous root with a strong odour; the translation of the Hindi name is “impart the strength of a horse” but can also be interpreted as “strong horse’s smell”. It has a wide range of health benefits.

**Stress and anxiety:** Reduces stress and anxiety in animals, making it a useful addition to the treatment plan for animals with behavioral issues, and potentially could be an intervention to help with improving quality of life and meat yield of food-producing animals.<sup>1,2,3</sup>

**Pain and inflammation:** Anti-inflammatory and analgesic properties, increases effectiveness of chronic opiate drug use (reduces buildup of tolerance)<sup>4</sup>

**Immune system support:** Ashwagandha has been shown to have immunomodulatory effects, helping to improve the function of the immune system in animals.<sup>5</sup>

**Chemo-protective:** Increased effectiveness and reduced side effects of chemotherapy and radiation.<sup>6,7</sup>

**Cognitive function:** Positive effect on cognitive function in animals and may be useful in the treatment of age-related cognitive decline.<sup>8</sup>

**Preservation of sperm viability for artificial insemination and in-vitro fertilization:** Ashwagandha extract maintains viability of semen for AI<sup>9</sup>

**Endurance and athletic performance:** Used as a performance enhancer for animals involved in athletic or high energy output working activities to improve endurance and stamina.<sup>10,11</sup>

**Non-insulin-dependent diabetes mellitus:** increases insulin sensitivity<sup>12</sup>

**Nephroprotective and nephrorestorative:** protects kidneys from renal damage due to dehydration<sup>13</sup> and reverses nephrotoxicity due to gentamycin.<sup>14</sup> Fruit extract protects against cisplatin toxicity.<sup>15</sup>

**Hypothyroidism:** Human and rodent studies show that Ashwagandha increases endogenous thyroxine production.<sup>16,17</sup>

## **Chemical Constituents:**

Withanine, withanolides (withanolide D) steroidal lactones (withaferin A), steroids, saponins, phenolics, flavonoids, phytophenols, and glycosides

**Dose:** 25-60mg/kg bid

**Caution:** Hyperthyroid<sup>18</sup>

**Grow It!** Ashwagandha is in the Solanaceae family, also commonly referred to as Nightshades. This family includes peppers, eggplant and tomatoes, who all like a hot, sunny spot with good drainage, without competition from nearby plants. Plants reach 3-4 feet tall. Harvest roots in the fall of the first year (in more temperate climates) or second year (in hotter, drier zones). Wait until the leaves are yellowed and the husked berries turn red. Dry it at cool temperatures, away from other herbs (note aforementioned strong horsey smell!)

## **Camelia sinensis Green Tea**

Tea is commonly found in most areas of the world as a beverage, available as loose-leaf or teabags, powdered dried leaf (matcha) and as purified extracts (EGCG, Theanine). Effective as a cardiogenic, hepatoprotective, antioxidant, antineoplastic, and anti-inflammatory, it acts in part by reducing vascular permeability and platelet aggregation. It has antibacterial, antifungal, and antiviral properties. Green tea's strong antioxidant properties prevent damage to DNA and reduce the risk of cancer cell formation<sup>19</sup>. The effective reduction of liver and intestinal inflammation with oral administration benefits animals with enteritis and hepatitis. High quality Japanese loose leaf green tea has almost twice the EGCG content as Chinese green tea. If you are concerned about the caffeine content and chemical decaffeination process, consider either CO<sub>2</sub>-process decaffeination or Rooibos *Aspalathus linearis*, which is naturally caffeine free yet also contains high levels of antioxidant polyphenols.

**Antioxidant:** Reduces ROS to help protect cells from oxidative damage, contributes to anti-neoplastic effects

**Anxiety:** L-theanine constituent of green tea acts on the central nervous system. Commercially available in supplements labelled and licenced for pets: Composure, Anxitane

**Anti-inflammatory:** Polyphenols in green tea are the main constituent with this action.

**Cancer prevention:** Inhibits breast cancer by binding to estrogen receptors.

**Weight management:** Regulates metabolism to support weight management.

**Skin and coat health:** Topical wash for superficial pyoderma to reduce bacterial numbers, soothe skin irritation, reduce itching and promote re-epithelialization of wounds.

**Dental health:** Antimicrobial properties that may help improve dental health by reducing plaque biofilm. Commercially available VOHC product for pets: Healthy Mouth

### **Chemical Constituents:**

Epigallocatechin-3-gallate (EGCG), epicatechin, epigallocatechin, and epicatechin-3-gallate, xanthine alkaloids (caffeine, theobromine, and theophylline), proteins (including enzymes), amino acids (theanine), simple and complex carbohydrates, minerals, volatile compounds, and trace amounts of lipids (sterols) and vitamins

**Dose:** 10-40 mg/kg standardized extract (EGCG), 5-20 mg/kg L-Theanine, 10 ml/kg brewed green tea, 100 mg/kg dried leaf (or "used" tea leaf after tea has been brewed for human consumption)

**Caution:** high doses should be taken with food (lethal toxicity in dogs possible at 200mg/kg taken on an empty stomach, no adverse effects at 600mg/kg taken with food)<sup>20</sup> Caution should be used with patients that have nephritis, gastrointestinal ulcers, cardiovascular disease, hypertension, sleep-wake cycle disturbances and increased intraocular pressure. Caffeine-free green tea would be preferred in those cases.

## **Cannabis sativa Cannabis**

Yes, cannabis and its purified constituents, such as cannabidiol (CBD), can be used in animals. However, the use of cannabis herb and extracts in animals is still relatively new, and more research is needed to fully understand the effects, benefits and risks of using cannabis products in animals.

**Pain and inflammation:** Effects on the CB2 receptor which modulates both neuropathic and inflammatory pain pathways. CBD alone and in combination with CBDA and/or THC as well as the terpenes myrcene and  $\beta$ -caryophyllene have been shown to have pain-relieving and anti-inflammatory properties, making it useful for managing pain and inflammation in animals.

**Seizures:** Extracts with high CBD and low THC levels can be used as single-agent AED's or in combination with other herbs or pharmaceuticals to help manage idiopathic epilepsy.<sup>21,22</sup> Due to variability in products available, more research is needed.

**Anxiety and stress:** CBD has been shown to help reduce anxiety and stress in animals, making it a useful addition to the treatment plan for animals with behavioral issues. Lower doses (0.1-0.2mg/kg) and strains with a ratio of 5:1 CBD:THC and the terpenes linalool and bisabolol seem the most effective in my practice

**Cancer:** A recent study in canine cancer cell lines show that CBD has antineoplastic and pro-apoptotic effects mediated via induction of ERK and JNK. There may also be effects on MMP, TRP-V, and other cellular receptor and signaling pathways.<sup>23</sup>

It's important to note that the use of cannabis-based products in animals is still a heavily regulated area, and the legality of such products can vary between states in the US and in other countries. While Canada has legal recreational and medical cannabis programs, veterinarians are to date excluded from prescribing and dispensing, and can only offer clients harm-reduction information. In places where cannabis products are freely available, the quality and safety of cannabis-based products for animals can vary widely. Look for specifically formulated products for animals and that have been tested for quality and purity, and have every lot tested for constituents.

**Chemical Constituents:** Depends on the strain (chemovar); >100 phytocannabinoids, including  $\Delta^9$ -tetrahydrocannabinol (THC), cannabidiol (CBD), acid forms THCA and CBDA, cannabinolic acid (CBNA), cannabigerolic acid (CBGA), cannabichromenic acid (CBCA,) cannabinodiolic acid (CBNDA). >100 terpenes including D-limonene,  $\beta$ -myrcene,  $\alpha$ - and  $\beta$ -pinene, terpinolene, bisabolol, linalool,  $\beta$ -caryophyllene and  $\alpha$ -humulene.

**Dose:** 0.1-5 mg/kg CBD

**Caution:** High doses of CBD are associated with hepatotoxicity. Addition of cannabis products to pharmaceuticals such as gabapentin can potentiate sedation and ataxia. Monitoring liver enzymes one month after introduction and every 3-6 months after that is advised.

### ***Ganoderma lucidum* Reishi Mushroom**

**Immune modulation:** Like all mushrooms, the polysaccharides in *Ganoderma lucidum* have been shown to have immunomodulatory effects.

**Antioxidant, antibacterial, antitumor, antifungal, antiviral, anti-inflammatory, and neuro-protective**<sup>24</sup>

**Cancer:** Anti-angiogenesis, cytotoxicity to tumor cells, inhibition of tumor cell invasion. Can be used for any type of cancer.

**Liver health:** Hepatoprotective effect, prevention of copper toxicity (ergothionine content)<sup>25</sup>

**Skin health:** Antihistamine and immunomodulatory effects in atopic dermatitis

**Stress and anxiety:** Reduces effects of early life stress (separation from dam and littermates)<sup>26</sup>

**Chemical Constituents:** triterpenes, meroterpenoids, steroids, alkaloids, nucleosides, nucleobases, and polysaccharides<sup>27</sup>

**Dose:** whole mushroom dogs & cats 1-6g/day; extract powder cats and dogs <5kg 200mg 5-15kg 300mg 15-30kg 500mg >30kg 1000mg horse 1000-2000 mg (once daily) Alcohol/Hot Water Tincture extract 1-2 drops/kg

**Caution:** bitter flavour; needs hot water + alcohol extraction to yield full spectrum of compounds (triterpenes, meroterpenoids and sterols are not water soluble) in a liquid extract, alternatively need the whole mushroom to be consumed

**Grow It!** Commercially available to be cultivated on logs and sawdust spawn bags. Needs to have a very shady and humid spot outdoors. You can put spawn cookies in recently fallen tree stumps of appropriate evergreen species such as hemlock.

### ***Silybum marianum* Milk Thistle**

**Liver health:** Milk thistle has been shown to have a protective effect on the liver and may help improve liver function in animals. This makes it a useful addition to the treatment plan for animals with liver-related health problems, such as liver disease or liver toxicity from certain medications.

**Detoxification:** Milk thistle has been used to support the body's natural detoxification processes, helping to remove toxins from the liver and other organs in animals.

**Anti-inflammatory:** The compound silymarin has anti-inflammatory and analgesic properties<sup>28</sup>

**Antihistamine:** The compound silibinin inhibits pro-inflammatory cytokines and mast-cell activation<sup>29</sup>

**Giardia:** antiprotozoal properties, improved efficacy and reduced side effects of metronidazole<sup>30</sup>

**Cancer:** Increases programmed cell death (apoptosis and cell cycle arrest) via STAT3, MMP-2/9, and mTOR pathways, inhibits cellular glucose uptake in cancer cells, inhibits metastasis by impeding epithelial to mesenchymal cell transition, reduces multi-drug resistance (MDR). Reduces mucositis secondary to radiotherapy. Good evidence for milk thistle as an adjuvant to chemotherapeutic drugs to improve the antineoplastic effects and prevent the side effects.<sup>31</sup>

**Chemical Constituents:** Silybin A, silybin B, isosilybin A, isosilybin B, silydianin, silychristin A, silychristin B, silyamandin

**Dose:** dogs & cats: whole seed powder 100mg/kg; extract 20-25mg/kg; isolated silymarin (Silybin A+B) 1.5-3mg/kg

**Caution:** None! GRAS status.

**Grow It!** Milk Thistle must have well drained soils but is very adaptable and can tolerate full or partial sun. Due to its tendency to spread, site selection should take this into consideration so it can be controlled if necessary. Seed is sown under ¼” soil in spring or fall and takes two weeks to germinate.

### **Mushroom Combination Products**

This is an example of the “more is better” approach. Theoretically there will be a broader spectrum of activity for overall optimal health support. It is also useful in situations where there is no clear “organ affinity” or “directionality” for a single species of mushroom.

Usually there are 5-8 different species in total, provided in a capsule, tincture or powder format.

**Dose:** extract powder- cats and dogs <5kg 200mg 5-15kg 300mg 15-30kg 500mg >30kg 1000mg horse 1000-2000 mg (once daily); Alcohol/Hot Water Tincture extract 1-2 drops/kg

### ***Si Miao San (Wan) Four Marvels Powder (Pill)***

Si Miao San (Four Marvels Combination) contains just four ingredients. It is a strong Damp-Heat clearing formula, and therefore my first choice for acute inflammation. Damp-Heat can be understood as a tendency to acute inflammation over epithelial and mucosal surfaces. Si Miao San's antimicrobial (due in part to its berberine content) and anti-inflammatory effects address acute inflammation of the intestinal tract, bladder, pancreas, skin, hooves, gallbladder and biliary tree. Si Miao San is a good

choice for patients who respond well to corticosteroids. Si Miao San reduces insulin resistance and increases insulin sensitivity and can be used with corticosteroid to both to reduce the dose needed and to reduce their side effects. It is also indicated for very hot, inflamed tumours with robust blood supply, in combination with other more specific anti-neoplastic herbs or formulas.

Pinyin	English Name	Action
25% Cang Zhu	Atractylodes rhizome	Promotes insulin sensitization Strengthens the Spleen (gentle warming) and dries Dampness
25% Huang Bai	Phellodendron bark	Strong anti-inflammatory, inhibits TNF $\alpha$ , iNOS <sup>32</sup> , anti-oxidant, antibacterial Clears Heat, dries Dampness in the Lower <i>Jiao</i>
25% Yi Yi Ren	Coix seed	Strong anti-inflammatory, inhibits NO synthesis, promotes insulin sensitization. Drains Damp, discharges pus, supports Spleen, Tonifies Liver, Kidney
25% Huai Niu Xi	Achryanthes root	Anti-inflammatory, regulates Th2 Cytokines and Chemokines <sup>33</sup> Moves Blood, astringes Fluids, Nourishes Liver and Kidney Yin, Descends Blood and Fire, Clears Damp-Heat in the Lower <i>Jiao</i>

### **Si Wu Tang Four Substance Decoction**

This formula is a very effective therapy for anemia of chronic disease, and is a component of other larger formulas for issues that benefit from the addition of a blood-tonifying component. The classical formula contains a lower percentage of Chuan Xiong Ligusticum (as low as 7.5%).

Pinyin	English Name	Actions
25% Bai Shao Yao	White Peony root	Nourishes Blood, preserves Yin, calms Liver Yang and alleviates pain. Gathers Blood together to facilitate its more effective movement.
25% Chuan Xiong	Ligusticum rhizome	Invigorates (moves) Blood, moves Qi, releases Stagnation and alleviates pain.
25% Dang Gui Shen	Chinese Angelica root	Nourishes and invigorates (moves) the Blood, regulates Liver and Kidneys, regulates menses and alleviates pain.
25% Shu Di Huang	Prepared Rehmannia root	Strengthens the Liver and Kidneys and Nourishes the Yin of the Blood.

### ***Xiao Chai Hu Tang* Minor Bupleurum Decoction (and variations)**

This formula (and its variations) is a major workhorse formula for me.

Pinyin	English Name	Actions
25% Chai Hu	Bupleurum root	Resolves Shao Yang disorders, reduces fever, spreads Liver Qi and relieves Stagnation.
25% Huang Qin	Scutellaria root	Clears Lung Heat, drains Fire and calms ascending Liver Yang.
25% Ban Xia	Pinellia rhizome	Dries Dampness, transforms Phlegm, descends Rebellious Qi, harmonizes the Stomach and stops vomiting.
7% Gan Cao	Licorice root	Resolves Phlegm, stops cough, clears Heat. and moderates and harmonizes the properties of other herbs.
6% Sheng Jiang	Fresh Ginger rhizome	Releases the exterior, disperses Cold, stops vomiting, stops cough and reduces the toxicity of other herbs.
6% Da Zao	Jujube	Strengthens the Spleen, tonifies Qi and moderates and harmonizes the harsh properties of other herbs.
6% Ren Shen	Ginseng root	Tonifies Yuan Qi, Spleen, Stomach, Lung and Heart Qi.

### **Chamomile & Wild Yam Formula**

I use this formula for those dogs that have intermittent episodes of “tummy rumbles” with or without anorexia or hyporexia, intermittent abdominal pain and intermittent compulsion to go eat grass and vomit. This formula regulates peristalsis, helps to prevent or resolve post-prandial gastric and abdominal distention, borborygmi, and pain secondary to intestinal spasm. It works rapidly, relieving pain within 10-30 minutes. It has mild to moderate anti-inflammatory effects, so I will use it on an ongoing basis at a low dose to prevent flare-ups of inflammatory bowel disease. The formula has also been effective in preventing bloat in deep chested dogs prone to GDV. The herbs in the formula are mild-tasting, non-toxic and safe for long term use, even when given at high dose or frequency. It is an alcohol extract so often I will have the client mix each dose with very hot broth and let cool prior to administration, or de-alcoholize the entire bottle.

English Name	Latin Name	Action
20% Chamomile flowers	<i>Matricaria chamomilla</i> <sup>34</sup>	Circulates intestinal Qi, harmonizes digestion, relieves pain. Clears internal wind and stops spasms. Harmonizes LV-SP Analgesic, spasmolytic, anti-inflammatory, relaxant <sup>35</sup>
20% Wild Yam root	<i>Dioscorea villosa</i>	Circulates intestinal Qi, harmonizes digestion, relieves pain. Clears LV, GB Yang excess, reduces LV Qi stagnation, intestinal Qi constraint, kidney and adrenal Qi constraint Harmonizes LV-SP Analgesic, spasmolytic, anti-inflammatory <sup>36</sup>
20% Licorice root	<i>Glycyrrhiza glabra</i>	Tonifies SP (digestive) Qi, stops spasms and relieves pain, promotes absorption and relieves fatigue SP and KI Yang deficiency Demulcent, anti-inflammatory, hepatoprotective Harmonizes herbal formula <sup>37</sup>
20% Mint leaf	<i>Mentha piperita</i>	Stimulates digestion, promotes secretion, clears flatus, stops vomiting, relieves pain; circulates Qi, releases constraint. Cooling and/or warming (depends on constitution and pathological excess/deficiency) Releases GB, LV and ST Qi stagnation, intestinal Qi constraint Spasmolytic, anti-inflammatory, analgesic <sup>38</sup>
20% Ginger root	<i>Zingiber officinalis</i>	Dispels Wind-Cold, relieves pain, stimulates digestion, warms the middle, settles stomach, relieves flatus, stops vomiting; warms the Spleen. Carminative, antiseptic, antiviral, antibacterial, diffusive (increases arterial blood circulation), digestive stimulant <sup>39</sup>

### Instructions to de-alcoholize tinctures:

Pour the tincture onto the bottom of a saucepan at the lowest heat, stirring constantly until the smell of alcohol at the rim of the pan is barely noticeable. Pour the liquid back in the bottle it came in, making note of how much less volume there is. Either replace the missing volume with water, or reduce the dose by the percent decrease in volume (eg if 1/3 of the volume is gone after evaporating the alcohol, reduce the dose by one-third. Store the bottle in the fridge, as the tincture has lost the alcohol's preservative effects.

**Dose:** 0.1-0.3ml/kg (use higher doses per kg in smaller dogs due to body surface area adjustment)

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## *Plant Allies for Radiant Well Being ~ The Amazing Adaptogens & Tonic Herbs*

### **Rosemary Gladstar**

Perhaps the best group(s) of herbs that help us attain and maintain ‘radiant well being’ are the Adaptogens & Tonics. And for good reason. These herbs help restore balance, boost energy, restore vitality, and help raise the body’s ability to deal with the stresses of modern life ~ and, as an added bonus, they generally have no harmful side effects. They are also the prime herbs used for increasing life force and ones quality of life as one ages (or saging, as I prefer calling the aging process). While there may be some differences between Adaptogens and Tonics, there are also many similarities. Both group of herbs are used for foundational health and radiant well being.

Broadly speaking an Adaptogen can be any substance or life style change that helps one adjust or adapt to our modern day environment (such as a heater or air conditioning), but the term is most often used to describe a group of herbs that have a long history of promoting longevity and increasing the over all strength and resiliency of our bodies.

The term, adaptogen, is fairly new and won’t be found in many of the older herb books (those books written before 1990) and you won’t find the word in a dictionary, either. Yet is a common term amongst herbalists and holistic practitioners and is used to describe a highly regarded and well-known group of herbs. The term was coined by a Russian scientist, Dr. Lazarev, in the late 1940’s, and was used to describe any substance that: (a) had a normalizing and balancing effect; (b) was non toxic and didn’t create any harmful side effects; and (c) worked by a ‘non specific’ or more generalized action to increase resistance to illness through a wide range of physical and biochemical factors.

Dr. Lazarev’s protégé, Dr. Brekhman, was a holistically minded scientist with an interest in herbalism. Thankfully for us, he expanded Lazarev’s work by centering his research on herbs that had a history of ‘adaptogenic’ like qualities. Dr. Brekhman studied hundreds of herbs to see if they had adaptogenic properties but ended up focusing most of his research on *Eleutherococcus senticosus* (Siberian Ginseng), *Rhodiola*, *Panax* and Asian varieties of ginseng. He conducted literally hundreds of studies on thousands of people (factory workers, truck drivers and athletes, primarily) that proved that there were herbs that had the unique ability to help the body adapt to the stresses of modern life, improved energy and stamina, and increased one’s ability to adapt to their environment.

**Adaptogen Herbs** are identified by their non-specific, broad health benefits. They increase the body’s inherent life force, increase stamina and endurance and improve the over quality of physical well being. By definition, adaptogens are non-toxic and have little or no side effects (other than the side effect of good health) even when used over a long period of time.

Though the term adaptogen may be new, the knowledge of herbs with ‘adaptogenic’ qualities ~ those herbs used to promote and enhance life force, increase immune response, and that help us adapt to the stresses of every day life ~ have been around for generations. Though the terminology used to describe this group of herbs may be different in different parts of the world, they were always among the most valued of herbs in most cultures around the world. For example, in Traditional Chinese Medicine (TCM), herbs with these adaptogenic like qualities were termed “Superior Medicine” and were among the most widely used of the Chinese herbs. Superior Herbal Medicines, like adaptogens, were safe and non-toxic, raised immune function and increased resistance to illness, and were used to promote health and well being.

In Ayurvedic Medicine, a herbal system originating in India and considered one of the oldest, most respected and renowned systems of healing in the world, herbs that were rejuvenating and restorative and had the ability to sustain and nourish life were called Rasayana herbs, which meant, literally, path of essence. An entire system of practice developed around this special group of Rasayana, or restorative herbs.

In Western or American Herbalism, herbs that were restorative, tonifying, and rebuilding to the system were classified as Herbal Tonics and were used to treat a wide range of imbalances as well as to restore and maintain good health. Though tonics are not as appreciated as they once were, western herbal tonic therapy was at one time the foundation of many herbal treatments in North America ~ the adage was treat from the foundation up by tonifying, supporting and building life force with tonic herbs and most illness's would improve or disappear. No matter what they're called, Superior Medicines, Herbal Tonics, Rasayana's, or Adaptogenics, worldwide these are among our most well-known and beloved herbs. And because they are rejuvenating and restorative, and strengthening they help us adapt to the stresses of modern day life!

Traditionally, these herbs were often incorporated into one's meals, cooked into soups, sprinkled into food, or made into syrups, tonic drinks, and delicious spreads that were enticing to eat. Of course, one can take them as capsules and tinctures as well ~ there are many fine adaptogenic and energy building formulas available in capsules and as tinctures ~ but most herbalists prefer to use these particular herbs as food rather than 'medicine' and herbalists have developed many delicious recipes to entice one into taking these herbs on a regular basis.

**To be considered an Adaptogenic, herbs must meet three criteria (which can also be loosely applied to Tonic Herbs (Western Herbalism), Superior Medicine (TCM) and Rasayana Herbs (Ayurveda Medicine):**

- 1) Non Toxic: They must be non toxic and cause minimal negative disturbances in the physiological functions of the body
- 2) Generalized Action: They are non-specific in action and have a more generalized action in the body. In other words, these herbs are not generally indicated for one specific condition or illness but rather tonify and build the entire system.
- 3) Normalizing and Balancing: They must have a normalizing effect on the body, helping to restore balance and homeostasis. Can be used for either/or situations such as high or low blood sugar, or high or low blood pressure.

**Adaptogens help the body:**

- Restore balance
- Increase energy
- Improve stamina
- Increase immune response
- Improve homeostasis
- Improve brain and memory function
- Balance and normalize over all body energy and health

**How do these herbs work in the body?** In truth, in spite of numerous scientific studies, no one's quite sure exactly how these herbs work in the body. But here's a few of the theories of how they are able to restore health and vitality to our amazing human bodies ~

- They enhance the ability of enzymes to transform glucose into energy
- They activate the synthesis of proteins and nucleic acids
- They build and support immune health through numerous immuno enhancing mechanisms
- They are antioxidant rich and thus limit the number of free radicals in the system. Excess free radicals roaming in our systems are one of the key factors in age related disease.
- They work by supporting endocrine gland function and have a positive influence on the secretions of hormones and other chemicals produced by the pituitary, hypothalamus, and adrenal glands

\*Perhaps it's too complex to fully understand the *'how's'* of how plants work, but we do know they work through countless centuries of human interaction with plants; what we plant people refer to as *'empirical evidence'* ~ the first hand experience of untold centuries of people using plants on themselves. That's the best and most accurate science there is. Experience, experiment, play with, and enjoy these herbs. By their very definition they are generally safe to use\*, and used over a period of time can increase one's energy, build stamina and endurance, and help one adapt both mentally and physically to the stresses of life. Who doesn't need that today?! Here's to radiant well-being and good health with a little help from our herbal friends.

\* Please note, while adaptogens and tonics are generally classified as safe, people can have individualized reactions to any thing. If you note itchy throat or eyes, or stomach upset shortly after ingesting any herb (or anything for that matter), discontinue use, drink several glasses of water, and, if you have it handy, add lemon to the water (lemon helps detoxify the system). If symptoms don't improve, wait a little while...if they get worse, then consult with your health care professional. If you are a particularly sensitive person who has allergic reactions to several different things then it's always best to be respectful of this and to introduce new things slowly, gently into your system. Always listen to your body.... no one knows it like you do.

\* **For further reading on adaptogens and tonic herbs:** Adaptogens, Herbs for Stress, Stamina, & Stress Relief by David Winston & Stephen Maimes (this book is highly recommended. A second edition is now available). Adaptogens; Herbs for Longevity and Everyday Wellness by Adriana Ayales (another excellent book on the topic). Herbal Tonic Therapies by D. Mowrey (out of print, but well worth searching for. Look online for used copies); Chinese Tonic Therapies by R. Teeguarden (a fun, entertaining and informative book on Chinese tonic herbs); Herbs for Long Lasting Health by Rosemary Gladstar (my small book on the subject; basic, easy to read, and filled with great recipes). There are several other titles on adaptogens as well. Lots of information on this group of herbs now when even just a few years ago it was hard to find anything in the modern herb books!

Some of our best and well known Adaptogens and Tonic Herbs:

Ashwaganda (*Withania somnifera*)

Astragalus (*Astragalus membranaceus*)

Ginseng (*Panax and related species*)

Siberian Ginseng (*Eleutherococcus senticosus*)

Ho Shou Wu or Fo ti (*Polygonum multiflorum*)

Schizandra (*Schizandra chinensis*)

Reishi or Ling Zhi (*Ganoderma lucidum*, *G. lucidum*, and *G. applanatum*)

Holy Basil (*Ocimum sanctum*)

Rhodiola (*Rhodiola rosea*)

Gota Kola (*Hydrocotyle asiatica*, *Centella asiatica*)

Dandelion root (*Taraxacum officinale*)

Burdock root (*Arctium lappa*)

Nettle (*Urtica dioica*)

Milk thistle seed (*Silybum marianum*)

Gingko (*Gingko biloba*)

Hawthorn (*Crataegus* spp.)

Milky Oats (*Avena sativa*)

\* This is only a partial listing. There are other favorite herbs that could be included on this list, for sure! Which ones would you include?

Here are a couple of recipes that use a variety of adaptogens.

### **Adapto~Chocolate Herbal Goodness**

*'adapted' from herbalists Penny & Bevin Clare (Mother & Daughter team).*

Ingredients;

16 oz. bittersweet dark chocolate

8 oz. Coconut Oil

1 cup finely chopped walnuts

¼ - ½ cup finely powdered adaptogen/tonic herbs. I like to use these herbs; equal parts Siberian Ginseng (Eleuthero), Rhodiola, Schizandra and turmeric. But you can vary the herbs in this formula (see list of adaptogens above). Try your own herbal combinations. Just be sure that herbs are finely powdered and remember the flavor of the herbs will affect the flavor of your herbal candy (though the chocolate is quite good at disguising the flavors)

1 tsp. pure Vanilla Extract

Coarsely ground Pink Himalayan Salt

Optional: 2-3 tablespoons grated fresh ginger (not dried)

\* If using Turmeric in your herbal candy, add a small amount of coarsely ground black pepper (its said to activate or synergize the turmeric and make it more bio-available); approximately ½ teaspoon will do.

### **To Make:**

1) Melt Chocolate & Coconut oil together over low heat.

2) Stir in Vanilla and add herbs. Stir well, making sure there aren't any lumps.

3) Stir in finely chopped nuts. If using fresh grated ginger, stir in with the rest of the herbs. \* Can also add a little shredded coconut, too, if you like

- 4) Pour into a shallow baking dish.
- 5) Sprinkle the top lightly with course ground Pink Himalayan salt (or a salt of your choice ~ there's so many to choose from today!). Can also sprinkle with grated grinder, and/or rose petals or other powdered herbs for color and flavor.
- 6) Set in a cool (or cold) place to harden. While still soft, score into small pieces; this will make it easier to cut or break when the chocolate has hardened.
- 7) Important! Store in a cool place, not near heat. \* The coconut oil will cause this chocolate to melt in 'your hands' and not in your mouth if it gets warm, so be sure to store in a cool place.

### **ADAPTOGEN and/or ZOOM BALLS**

This may be one of my famous recipes; delicious and nutritious and fun to make and eat. This recipe makes a lot of balls (approximately 60 large sized). You might wish to cut the recipe in half. Or make half the recipe as Adaptogen Balls and half the recipe as Zoom Balls! As with the recipe above you can use different adaptogens (see list above); just be sure that all herbs are finely powdered.

#### **Ingredients:**

\* Please note; all herbs must be finely powdered

3 cups tahini, also called sesame seed butter

1-cup cashew or almond butter (or any other nut butter. Experiment with the different flavors of nut and seed butters)

2 cups honey (or more ~ sweeten to taste)

2 oz. Siberian Ginseng powder (You can also add Panax Ginseng, though its more expensive)

2 oz. Rhodiola powder

2 oz. Ashwagandha powder

1-tablespoon mace or nutmeg powder

1 tablespoon of cardamom powder

1-cup Goji berries (or dried cranberries or raisins)

8 oz. unsweetened shredded coconut. Toast the coconut lightly in a non greased cast iron skillet until lightly browned ~ adds a delicious flavor and crunch to the balls

1 cup finely chopped walnuts or almonds

Unsweetened cocoa powder to thicken

Cocoa powder and/or shredded coconut for rolling balls in

Optional: Bittersweet dark dipping chocolate to dip the balls in for a chocolate coating.

#### **To make Zoom Balls:**

Add the following two herbs, which contain high amounts of caffeine, to the above formula only if you want to Zoom. This formula actually gives you a nice burst of energy, without feeling depleted afterwards because the adaptogenic herbs balance and rejuvenate the body while the caffeine rich herbs provide the stimulus. While the added kola and guarana this formula is very effective for short term use, but because of the caffeine is not recommended for daily use.

2 oz. kola nut powder

4 oz. guarana powder



**Steps to make:**

- (1) Mix tahini, nut butter and honey together until smooth and well mixed
- (2) Mix herbal powders together and add to nut butter mix
- (3) Add toasted coconut, finely chopped nuts, goji berries, raisins, etc. to mixture and mix in well. Usually will require mixing with your hands, as it gets very thick.
- (4) Add enough cocoa powder to the mix to make into desired thickness and roll into large walnut sized balls.
- 5) For finishing touch, roll each ball in cocoa or coconut to coat.
- (5) Or if you prefer, you can dip balls in dipping chocolate for a delicious chocolate coating. For easier dipping, let balls cool in the refrigerator for a few hours. Melt dipping chocolate in a double boiler. When chocolate is completely melted, dip balls one at a time in the chocolate. Use a fork to dip, tap fork against side of pan to get rid of excess chocolate and place on waxed paper to cool.

To store your balls: Store in baking tins in a cool place. They will last several weeks if stored in an airtight container in the refrig or cool area.

# *Herbs that were Important to Enslaved African Americans*

**Ruby Daniels**

## **Herbs that were Important to African American Slaves**

1. ButtonBush *Cephalanthus occidentalis*

Parts used- Root

Uses During Enslavement: Chills

Contemporary Use: Sore Throat Cough

Preparation: Tincture, Syrup, Infusion/Decoction

2. Wild Black Cherry *Prunus serotina*

Part Used: Bark

Use During Enslavement: Sore throat, stop menses

Contemporary Use: Arthritis, colds, pain

Preparation: Decoction/Infusion, and syrup

3. Elderberry *Sambucus canadensis*)

Part used: Flower, berries, inner bark, leavers, and roots

Use during enslavement: Fever, sores

Contemporary use: Flu, fever, viral infection.

Preparation: infusion, syrup, tincture

4. Sassafras (*Sassafras albidum*)

Parts used: Root Bark

Uses During Enslavement: Measles, blood cleanser, pain, health

Contemporary Use : flu, common cold, immune support

Preparation: infusion

5. Horehound (*Eupatorium hyssopifolium*)

Parts Used- leaves and root

Use during enslavement: cols, fevers, worms, preventative

Contemporary use: expectorant-loosen bronchial secretions and eliminate mucus

Preparation Decoction

Others plants used by African Americans:

**Vermifuge:**

- Rue (*Ruta graveolens*)
- Sampson Snake root (*Psoralea psoralioides*)
- Tulip Poplar (*Liriodendron tulipifera*)
- Black Walnut (*Juglans nigra*)
- Fig (*Ficus carica*)

**Abortifacient:**

- Bitterroot (*Apocynum cannabinum*)
- Tansy (*Tanacetum vulgare*)
- Cotton (*Gossypium herbaceum*)

**Fevers and cold:**

- Dogwood (*Cornus*)
- Black Cohosh (*Cimicifuga racemosa*)
- Boneset (*Eupatorium perfoliatum*)
- Catnip (*Nepeta catara*)
- Jimson Weed (*Datura stramonium*)
- Mullein (*Verbascum thapsus*)

## ***Connecting to Nature by Nibbling on It***

### **Russ Cohen**

Connecting to Nature by Nibbling on it

by Russ Cohen ([eatwild@rcn.com](mailto:eatwild@rcn.com); <http://users.rcn.com/eatwild/bio.htm>)

[NOTE: A version of this article first appeared in *A Native Plants Reader*, ([https://www.bbg.org/gardening/handbook/native\\_plants\\_reader](https://www.bbg.org/gardening/handbook/native_plants_reader)) published in 2012 by the Brooklyn Botanic Garden.]

Foraging for edible wild plants typically involves a considerable amount of effort. Every once in a while, though, you get a lucky break. That's what happened to me one spring when I was paddling the Contoocook River in central New Hampshire. A patch of Groundnut (*Apios americana*), a native edible species, had made its home in the sandy soil along the river. The main edible portion of this plant—the tuberous roots—grow several inches underground, and harvesting them usually requires quite a bit of digging. But the Contoocook had flooded that spring, washing away a layer of topsoil and exposing the groundnut tuber strings. All I had to do was bend down and pick them up.

The Groundnut is similar in flavor and texture to the potato, and has its own storied past. It was once a major food resource for Native Americans and also became a staple for early European explorers and settlers in New England. (It was none other than Myles Standish, who reputedly uncovered a cache of Groundnut tubers in the former indigenous encampment the Pilgrims of Plymouth occupied, that helped keep them alive during the harsh winter of 1620–21, their first in the New World.) While the aboveground part of the Groundnut—a vine with compound, beanlike leaves and fragrant, chocolate-colored flowers—is herbaceous and dies back at the end of each growing season, the edible tubers are available year-round. A skillful forager can spot the dried vines and trace them to the tubers, even in the middle of winter.

That's what I did one year during a cross-country ski weekend in Vermont. The higher elevations were snow-covered, but in the warmer valley where I was staying, the ground wasn't yet frozen. I went for an early-morning walk along a nearby river and noticed the familiar-looking dried vines. I followed them along the ground, started digging, and sure enough, unearthed some sizable groundnut tubers. Later that morning, we cut the starchy tubers into thin slices, fried them in a little vegetable oil until golden, and ate them with our breakfast. Yum!

### **First Child in the Woods**

Connecting to the landscape of the Northeast through my taste buds has been a passionate pursuit of mine for the last five decades. I grew up in the town of Weston, Massachusetts, a woodsy suburb west of Boston, where I had one of those quintessential “playing in the woods” childhoods extolled by journalist Richard Louv in his seminal book, *Last Child in the Woods*. I fondly remember pushing rocks around in streams to create swimming holes, and riding my one-speed, fat-tire Royce Union bicycle on trails in the surrounding woods well before “mountain biking” became popular. Other than the occasional family berry picking or nutting expedition, however, I didn't have much exposure to, nor was I particularly interested in, eating wild plants. I distinctly recall my father giving me one of Euell Gibbons' books on wild edibles (I think it was *Stalking the Wild Asparagus*) when I was in eighth grade, but I didn't even glance at it.

It was during my sophomore year at Weston High School that my lifelong passion for foraging was sparked. I enrolled in a minicourse, Edible Botany, offered by the high school biology department, in which we learned about two dozen edible species that grew around the high school grounds. For the course's finale, my classmates and I prepared and shared dishes made from the plants we had learned about. That class got me so excited about foraging that I subsequently went to the town library and took out every book I could find on the topic. Over the next two years, I taught myself more than 50 more edible wild plant species, and in my senior year of high school, I taught a section of the Edible Botany class I had taken as a sophomore.

My enthusiasm for foraging—and teaching people about foraging—continues unabated to this day. I find that my connection with edible wild plants enriches my time spent outdoors, whether it be in a vacant lot or park near my former office in downtown Boston, in the suburbs where I live, along the seacoast, in the mountains. I spot edible wild plants just about everywhere I go. Even if I'm not actively hunting and gathering, just encountering an edible plant on a walk is like an old friend coming to greet me along the way.

### **The Natives Versus Exotics Debate**

Here is where I admit that I do not chant the “native species are good; nonnative species are bad” mantra as fervently as some native plant advocates. I enjoy finding and nibbling on exotics (including many weeds and invasive species) just as much as I do natives. I don't insist on checking a plant's passport or pedigree before deciding whether or not to eat it (though I do make sure it's not rare or endangered; my foraging book, *Wild Plants I Have Known... and Eaten* (Essex County Greenbelt Association, 2004, [http://users.rcn.com/eatwild/press\\_release.htm](http://users.rcn.com/eatwild/press_release.htm)), provides considerable guidance on how to forage in an environmentally and ethically responsible manner). My main question is, “How yummy are you?” My general attitude on the subject is that if the ecologists eradicate edible weeds and invasives from our landscape, so be it, but in the meantime, as long as these plants are here, I will pick and eat as many of them as I can, and encourage others to do so too.

As I see it, the very fact that many nonnative edible species maintain a pervasive presence in our midst while offering relatively few if any ecological benefits makes them ideal, “guilt-free” foraging targets. For example, of the 66 species featured in the Massachusetts Department of Fish and Game's booklet *A Guide to Invasive Plants in Massachusetts*, at least 20 are edible, including these delicious exotics: Autumn Olive (*Elaeagnus umbellata*); Black Locust (*Robinia pseudoacacia*); Common Barberry (*Berberis vulgaris*); Dame's Rocket (*Hesperis matronalis*); Japanese Knotweed (*Fallopia japonica*), and Wineberry (*Rubus phoenicolasius*). As far as most ecologists are concerned, they'd be thrilled if you and I picked and ate as many of these species as we possibly could, provided we don't help spread them around in the process, which is usually easy to avoid doing.

That said, some of my favorite edible plants are natives. Of the 42 plants featured in my foraging book *Wild Plants I Have Known...and Eaten*, more than half are native to the Northeast, including Sassafras (*Sassafras albidum*), Groundnut, Cattail (*Typha* species), Juneberry (*Amelanchier* species), Common Milkweed (*Asclepias syriaca*), Pokeweed (*Phytolacca americana*), Staghorn Sumac (*Rhus typhina*), and Shagbark Hickory (*Carya ovata*). I also support the growing trend among homeowners and property managers to incorporate more native plant species into their landscaping.

## **Edibility: A Blind Spot Among Nativists**

In recent years, I have encountered many new publications, websites, and other outreach materials that extol the ecological and aesthetic virtues of native plant species and implore folks to plant them. The information is often provided in a regional context, accompanied by lists of plants that are deemed to be native to that specific region. To help people determine which plants are best for their particular situation, the materials typically include the plants' size at maturity, their preference for sun or shade, and salt tolerance, along with desirable traits such as fall color and wildlife food value.

What has been strangely missing on most of these “plant natives” outreach efforts is any information on the edibility of some native plant species by people. (One notable exception is the Brooklyn Botanic Garden's handbook *Edible Gardens* ([https://www.bbg.org/gardening/handbook/edible\\_gardens](https://www.bbg.org/gardening/handbook/edible_gardens)), which goes out of its way to highlight edible natives.) I think this is a major shortcoming, as the “you can eat it too” factor could be a powerful additional selling point in motivating people to work more natives into their landscapes. I have embarked upon a campaign to raise the profile of edible native species wherever I can, speaking out about the topic at native plant lectures, conference sessions, and online forums. And the response is usually very favorable.

To give one example: I attended a session at the 2010 annual conference of the Ecological Landscaping Association, an organization that advocates for environmentally responsible stewardship of land and natural resources—and is a strong promoter of native plant species. The session was led by Kate Venturini, a landscape restoration specialist. She was running a program encouraging homeowners along the shore of Narragansett Bay, Rhode Island, to plant native species as a vegetation buffer to help absorb excess nutrients like nitrogen that can degrade coastal embayments. Kate's presentation and accompanying handouts provided many recommendations for native species suitable for improving water quality and wildlife habitat.

During the Q&A portion of her talk, I asked Kate why she had not indicated which species are edible by people. She replied that providing a food source for people wasn't the intention of the program. I responded by pointing out that blueberry (*Vaccinium* species) was on her list. Was she hoping that homeowners would plant the shrub but not actually eat any of the fruit themselves? When she answered no, I suggested that she might as well inform people about the edibility of some of these plants, and I marked up her list with information about the edible natives she was unfamiliar with. When I ran into her at the 2011 ELA conference, Kate happily informed me that she now includes the “edible by people” information in her plant lists and outreach efforts.

## **Another Good Reason to Plant Natives**

I think we can have our cake—or if you prefer, maple hickory-nut pie (the recipe is on p. 53 of my book), and eat it too. That is, we can promote and plant natives that provide food for people as well as wildlife. Once you begin to explore the comestible charms of native plants, you'll find that many are at least as tasty as their domesticated or more familiar exotic counterparts, if not more so. (Compare the distinctively-flavored nuts of our native Black Walnut, *Juglans nigra*, to those of regular store-bought walnuts, and you'll see what I mean.) And in most cases, it should be possible for a native species planting to provide ample food for wildlife as well as people. For instance, most mature Juneberry plants are at least nine feet tall, which means their upper branches are out of human foragers' reach. We can content ourselves with the fruit from the lower branches, and all that fruit at the top is the songbirds' share.

For the last decade, I have offered, in addition to my standard presentations covering all species of wild edibles, native or not, a version of my presentation that showcases only native edible plants. My goal is to persuade gardeners not entirely sold on the idea of planting natives for their ecological or aesthetic benefits to “go native” because of how delicious some of these plants are to eat. For extra effect, I accompany my talk with a few yummy, wild-foraged treats made from native species. I know that my slide show is not going to convince everyone to rip up their lawns and put in edible native plants, but I’m optimistic that it will induce some folks still on the fence to give them a try.

### **A Sampling of Tasty Natives**

Following are tidbits about some of our tastiest Northeast native plants.

#### **Beach Plum (*Prunus maritima*)**

The location of wild populations of this prized native plum is often a heavily guarded secret among wild food foragers. What’s more, the fruits, which ripen to a dull purple color around Labor Day, are hard to see except at close range. A good trick is to “pre-identify” the plant in the landscape when it’s blooming in May: Masses of creamy-white flowers make beach plum bushes easy to spot from a distance. Beach plums (more the size of a cultivated cherry than a plum) can be quite tart, so they’re mostly used for jam and other recipes that employ lots of sugar. But occasionally, you can find fruits that are quite sweet and delicious when eaten right off the bush. Beach plums are sometimes planted (and may even grow wild) many miles from the ocean, so keep on the lookout for them even where you might not otherwise expect to find them.

#### **Black Walnut (*Juglans nigra*)**

The nuts of black walnut are often found in abundance along roadsides in early October. Wrapped up in their spicy-smelling green husks, they are similar in size and color to old tennis balls. Remove the husks (an admittedly messy task) and allow the nuts (still in their shells) to dry out for at least several weeks. Then, use a hammer or vice to crack them open. Black walnuts have an assertive, aromatic flavor, quite different from store-bought walnuts (*Juglans regia*). The flavor works well in recipes that use honey as a sweetener (for baklava, for example). Before introducing this tree to your yard, though, beware that it will likely have an allelopathic (growth-inhibiting) effect on some plant species growing nearby.

#### **Carrion Flower (*Smilax herbacea*)**

A thornless, nonwoody cousin of roundleaf greenbrier (*Smilax rotundifolia*, also edible), carrion flower sends up delicious young shoots that can be harvested and prepared in a similar manner to asparagus (a distant relative). Be sure to do your harvesting before the plant flowers in May and June. The blooming plant smells just like dirty gym socks or rotting meat and can be a bit off-putting. Nevertheless, some permaculturalists and other edible landscapers have chosen to deliberately introduce this plant to their yards in the hope that it will attract the carrion fly pollinators that some other native edible species, such as Pawpaw (*Asimina triloba*), also rely upon.

#### **Cattail (*Typha latifolia* and *T. angustifolia*)**

Dubbed by 1960s-era wild foods guru Euell Gibbons as the “supermarket of the swamps” because of its many edible portions—including the rhizomes, sprouts, hearts, and immature flower spikes—cattail has a mild flavor reminiscent of artichoke and cucumber. Even the (hypoallergenic) pollen can be collected and added to flour to make attractive and nutritious baked products such as crepes and muffins. If this wetland landscaping choice is too bland for you, consider the spicier Sweet Flag (*Acorus americanus*), a plant with

similar habitat preferences. Sweet Flag rhizomes were once candied and eaten as an after-dinner treat. My favorite part is the tender, yellowish foliage in the center of the growing plant that adds a spicy, ginger-like flavor when used in salads.

### **Evening Primrose (*Oenothera biennis*)**

Though it favors fields, disturbed ground, and forest-edge habitats like many of our exotic weeds, evening primrose is indeed a native species. The main edible part of this biennial species is the taproot. Resembling a small parsnip in flavor and size but with some pink coloration at the crown, it is at its best for eating from the end of the first growing season to the beginning of the second (October to April). The root is tasty grated and substituted for the potato in potato pancake recipes.

### **Hickory (*Carya* spp.)**

Hickories are important “mast” trees, large trees that provide edible nuts and many other resources for people and wildlife. Of New England’s native hickories, the Shagbark (*Carya ovata*) produces the largest and tastiest nuts, with a flavor similar to walnuts dipped in maple syrup. (They are my #1 favorite wild edible.) The nuts typically ripen from mid-September through the last week of October. Mature Shagbark trees have interesting peeling bark that, in addition to its ecological value (bats roost under it), make it a worthwhile ornamental landscape tree for winter interest. An adaptable large tree (70’+), it will grow just about anywhere except a very dry or ledge-y spot.

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Postscript, February 2023: I am happy to share the news of a **terrific new publication** that eloquently states the case on behalf of the deliberate inclusion of native plants with edible and/or medicinal values in all native plantings, including ecological restoration plantings. The newly-published (in November, 2022, by New Society Publishers) ***Wild Plant Culture, A Guide to Restoring Edible and Medicinal Native Plant Communities*** <https://newsociety.com/books/w/wild-plant-culture>), by NJ-based ecologist and native plant propagator **Jared Rosenbaum**, is a 324-page guide to restoring ecological balance to, and a benign human presence in, the ecosystems of the Northeast. Jared brings to light restoration practices, foraging, herbalism, and permaculture as a means to re-wild ourselves and connect with the land. The book provides a methodology for observing the current and potential plant communities on the land, including preparation of the site, seeding, planting, and upkeep of recovered areas. The book also includes engrossing accounts of plant communities in the wild and restoration initiatives as well as detailed descriptions for over 200 native plant species, with a focus on their culinary and medicinal applications.



**Annotated Bibliography of Books on How to Propagate Native Plants**, especially by seed – compiled by Russ Cohen (eatwild@rcn.com ; <http://users.rcn.com/eatwild/bio.htm>), February, 2023.

[N.B.: the info below is gleaned in part from the *Maryland Native Plant Society*. This link <https://mdflora.org/publications/booklist.html> also includes very useful info on books for plant ID, Native Gardens, Invasive plants, ecology, ethnobotany, etc. See also <https://grownativemass.org/Great-Resources/best-books>].

(1) *The New England Wild Flower Society Guide to Growing and Propagating Wildflowers of the United States and Canada*; William Cullina; 2000; Houghton Mifflin Co.; 322 pgs.; ISBN: 0-39596-6094. [See also Cullina's related books: *Native Trees, Shrubs and Vines A guide to using, growing and propagating North American woody plants*. Houghton Mifflin Company, 2002, and *Native Ferns, Moss and Grasses*. Houghton Mifflin Company: 2008.]

**Recommended** - This book is useful for the gardener and has a very good section on propagation. There is an excellent introduction that covers most of the issues faced in propagating from seed. These include seed cleaning and storage, pre-treatment of seeds, choice of containers and propagation mix, sowing, and the care of seedlings. It also covers propagation by cutting and division. It then gives suggested strategies for hundreds of specific genus/species. The content of the book is based on the author's direct experience gained at the New England Wild Flower Society (NEWFS)'s Garden in the Woods. The issue of hydrophilic germinators (seeds that need a warm moist period before a cold moist one) is explained better here than in any other source. [NOTE: since Cullina's books came out, NEWFS has been renamed the Native Plant Trust, and the organization has an additional plant propagation facility, Nasami Farm, in Whately, MA.]

(2) *Growing and Propagating Wild Flowers*; Harry R. Phillips; 1985; University of North Carolina Press: Chapel Hill; 325 pgs.; ISBN: 0-8078-4131-5.

**Recommended** - This book, based on the accumulated experience at the North Carolina Botanical Garden, covers general gardening topics and the cultivation of numerous species; its focus is on seed and vegetative propagation. It gives a careful description of seed collection, seed cleaning and storage, pre-germination treatment, and seedling care for more than 150 species of plants appropriate to gardens. It has a section on carnivorous plants (such as the sundews and pitcher plants) as well as propagating ferns. It points out the alien origin of the few non-native plants that are discussed.

(3) *Woody Plant Seed Manual*. 2008. USDA Forest Service Agriculture Handbook 727. 2008. [an update of *Seeds of Woody Plants of the United States*] [http://www.nsl.fs.fed.us/nsl\\_wpsm.html](http://www.nsl.fs.fed.us/nsl_wpsm.html)

**Recommended** – As noted, this is a revised edition of “*Seeds of Woody Plants in the United States*”, USDA - Handbook 450. As with the original it contains practical advice for the forester and gardener but it has been expanded to cover over 385 genera. For each genus covered there is a brief discussion of its general growth habit, distribution and uses (by humans and, to a very limited extent, wildlife) followed by more detailed information on flowering and fruiting phenology, seed collection and storage methods, germination and field/nursery techniques for sowing. Most entries also include very good drawings of seeds and seedlings. There is a passable glossary and a large bibliography. One warning is that this book was written before the dangers of invasive exotics were generally accepted. It contains, for instance, careful instructions on propagating *Rosa multiflora*.

(4) *Collecting Processing and Germinating Seeds of Wildland Plants*; James A. Young, Cheryl G. Young; 1986; Timber Press; 236 pgs.; ISBN: 0-881920-576.

Even though the info given about propagation for each genus is much shorter, this is not simply a dumbed down version of the book *Seeds of Woody Plants in North America* [1992; Dioscorides Press: Portland, Oregon; 407 pgs.; ISBN: 0-931146-21-6.] by the same authors. This book has chapters which provide a general introduction to the handling of seeds, which is something their other book lacks. Topics such as seed physiology, seed collection, cleaning, storage, and pre-planting treatment are discussed in depth starting from a layman's understanding. This book also includes many herbaceous species. Specific propagation instructions are generally given at the genus level and are basically a collection of untested, but footnoted, personal observations. The book has an overall agri-forestry slant but contains info useful for any propagator.

(5) *Seeds: Ecology, Biogeography, and Evolution of Dormancy and Germination*; Carol C. Baskin, Jerry M. Baskin; 1998; Academic Press; 666 pgs.; ISBN: 0-120802-600.

This is basically a textbook, suitable for ecologists, plant scientists, horticulturists, and foresters. It stands out from the other books on propagation because the Baskins handle seed germination from an ecological rather than a strictly horticultural perspective. Topics covered include types of dormancy, theories of the relationship between dormancy and germination, the timing of germination, the various factors that control germination, and the general aspects of germination in different sorts of habitats. There are tables listing the specifics of germination for hundreds of species.

(6) *The Reference Manual of Woody Plant Propagation: From Seed to Tissue Culture: A Practical Working Guide to the Propagation of over 1100 Species*; Michael A. Dirr, and Charles W. Heuser; 1987; Varsity Press Inc.; 1100 pgs.; ISBN: 0-942-37500-9.

One of the most widely used reference manuals in the landscape/nursery trade. It focuses on cultivars and non-native trees, shrubs, groundcovers and vines but can be helpful with natives as well. Over 1100 pages, many entries with line drawings. Details about morphology, culture, disease/insect pests, landscape value, propagation practices, and the habitat of native species are covered for each entry. This book includes horticultural varieties and cultivars.

(7) *Growing Trees from Seed: A practical guide to growing native trees, vines and shrubs*. Henry Kock. Firefly Books: Buffalo, NY, 2008 ISBN 978-1-55407-363-4

**Recommended** - Heather McCargo of the Wild Seed Project heartily recommends this book: "An excellent book by a highly experienced woody plant propagator from the University of Guelph's Arboretum in Ontario with detailed drawings and information on many species native to Maine."

(8) *Growing Woodland Plants*. Clarence and Eleanor G. Birdseye. New York: Dover Publications © 1951 223 pp. Paperback.

This is indeed the same Clarence Birdseye of frozen foods fame. This book, which he co-wrote with his wife Eleanor, resulted in part from Clarence taking his doctor's advice to take on more sedentary pursuits after he was diagnosed with a heart condition. The book documents the Birdseyes' experience with propagating and planting native plants, much of which took place at their home on Eastern Point in Gloucester.

(9) *Pioneering with Wildflowers*. George D. Aiken. Prentice-Hall, Inc. Englewood Cliffs, NJ. © 1968. 208pp. Hardcover.

Before (and during) Aiken's long-term career in politics (he served a Republican Governor of, and, for over 30 years, was a U.S. Senator from, Vermont), his interests in plants and nature led him to learn how to propagate native plants and add them to landscapes, operate a (mostly) native plant nursery, and to share his knowledge in book form.

**Appendix: Selected online resources on propagating native plants from seed:**

**How to grow native plants from seed (Wild Seed Project):** <https://wildseedproject.net/how-to-grow-natives-from-seed/>

**Growing in the Off-Season – Native Perennials from Seed – Ecological Landscape Alliance newsletter** - <https://www.ecolandscaping.org/09/designing-ecological-landscapes/native-plants/growing-in-the-off-season-native-perennials-from-seed/>

**Native Plant Seed Propagation**, from Rutgers: <https://njaes.rutgers.edu/fs1329/>

**Native Plant Propagation by Seed** – video hosted by the Indiana Native Plant Society <https://youtu.be/frKuQ6vXWTQ>

**Seeds to Seedlings: Starting native plants from seed video** (Pollinator Partnership, Canada): <https://youtu.be/1WXbgJdgt5U>

*Indus Valley Rose Sustainability Project (IVRSP):  
Ethically Reviving Roses of the Indus Valley!*

Saad Admani

## HISTORY OF ROSES IN THE INDUS REGION; THE MUGHAL DYNASTY (1526-1857).



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Rose Capital Of The World;  
the Indus Valley Civilization  
(2600-1900 B.C.)

100% PURE FLORAL HYDROSOLS:  
- ARABIAN JASMINE  
- ROSES OF THE INDUS VALLEY



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# INDUS VALLEY STUDY TOUR

Our goal is to educate & benefit the world of natural aromatic plants. An opportunity to make successful business connections face to face. We would like to welcome all rose lovers to smell & see the Indus Valley in her true colors. Enjoy our food, culture & ofcourse the ROSES!



a project of

**Saad Admani**

Owner of Moonstar Admani Rose/ Arabian Jasmine Gardens, (550 acres - Largest landholding in the region). Also, serving as the head of Indus Valley Rose Sustainability Project.

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**the Indus Valley Civilization (2600-1900 B.C.)**

\* **History Of Roses In The Indus Region;**  
**the Mughal Dynasty (1526-1857)**

\* **Healing With Roses.**

\* **Educational Field Session;**  
**rose picking as we travel through the valley.**

\* **IVRSP GIRLS EDUCATION PROGRAM;**

Educate a girl, you educate a nation. We commit to donate a part of our revenue to the AMAN School for each batch of roses sold.



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EACH LITRE OF ROSE HYDROSOL EDUCATES A GIRL



THE INDUS REGION HAS ONE OF THE LOWEST (LITERACY) RATES IN THE WORLD, THE SITUATION FOR WOMEN IS EVEN WORSE.

**"NEVER TAKE EDUCATION FOR GRANTED"**

For each batch of Floral Hydrosol sold, we donate a part our revenue to the AMAN School that promotes girls education in the Indus Region. We are committed to empower girls by giving them access to literacy, respect, hygiene & tolerance awareness. Without this initiative, the girls in the Indus Region would have never gone to school.

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## IVRSP GIRLS EDUCATION PROGRAM EACH LITRE OF ROSE HYDROSOL EDUCATES A GIRL

*Photo of students at the AMAN School, 17 August 2017.*

### EDUCATE A GIRL, YOU EDUCATE A NATION

According to UNICEF statistics, the Adult Literacy Rate in the Indus Region is 54.9% - one of the lowest in the world. The situation for women in the region is even worse.

Education remains a big challenge for women because of various reasons; weakness of the government schooling system, poverty and most of all gender discrimination. Women are often confined to their house management role, education becoming a wasted effort.

IVRSP team believes that stay-at-home women in poor neighborhoods are still the strongest knowledge medium for the children they raise, to the future generation. Hence, for each batch of floral hydrosol sold, we donate a part our revenue to the AMAN School that promotes girls education in the Indus Region.

Currently the school operates on two shifts daily in two class rooms where kids from all ages learn how to read, count, and write. They are not only taught history, science & english but also basic hygiene, tolerance, & respect.

The community is thankful for the opportunity to send their children to school for a minimal contribution. Without this initiative, the girls in the Indus Region would have never gone to school.

Due to limited funds, the school has not been able to make significant investments into the betterment of the infrastructure. Such as: renting more rooms, hiring more teachers, or affording necessary school instruments and uniforms for the children. We have decided to partner up and help this little microcosm improve and spread. How? We commit to donate a part of our revenue to the AMAN School, for each batch of floral hydrosol sold.

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## Indus Valley Rose Sustainability Project

'Ethically Reviving Roses Of The Indus Valley Civilization'



a project of  
**SAAD ADMANI**

For me farming is not a job, but a commitment to the land. Growing and foraging food allows me to engage in the act of collecting our ancestors harvest. Wouldn't it be awful to never honor the saplings that were brought here in the hands of our greatest grandparents? But undoubtedly this is a privilege. Pouring the sweat and blood into the soil & collateral souls.

“Owner of Moonstar Admani Rose/ Arabian Jasmine Gardens, (550 acres - Largest landholding in the region). Also, serving as the head of Indus Valley Rose Sustainability Project.”

If you're able to be paid well enough to live while you do a job that you love, I think that's spectacular. But it's also okay to dare to dream of an existence that's rooted in the "be-ing" part of all it means to be human.

Our goal is to educate & benefit the world of natural aromatic plants. An opportunity to make successful business connections face to face. We would like to welcome all rose lovers to smell & see the Indus Valley in her true colors. Enjoy our food, culture & ofcourse the ROSE ADVENTURES!

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# *Herbal Therapeutics for Fatty Liver Disease*

**Sajah Popham**

Non-Alcoholic Fatty Liver Disease (NAFLD) is becoming a greater focus amongst the medical communities both conventional and alternative, for it is proving to be one of the leading causes of end stage liver disease and liver transplant. While the statistics vary, estimates range from 20-30% of Americans have a degree of NAFLD, and an alarming 75% of obese individuals having it. This condition parallels most of the leading causes of mortality in the western world, including diabetes, heart disease, and carcinoma.

One of the biggest challenges with this disease is that it is, for the most part, silent. Meaning that people generally don't display severe enough symptoms that send them to the doctor, at least not those related *directly* to NAFLD. More often than not, by the time severe enough symptoms manifest, there is a much deeper level of metabolic syndrome developed and other associated health concerns.

The general progression of this disease is beginning with NAFLD, also referred to as hepatic steatosis (steatosis = fatty change, or abnormal retention of fats), which then can progress to Non-Alcoholic Steatohepatitis, or NASH. This latter occurs when the fat accumulation builds up to the point of leading to chronic inflammation of the liver (hence *steatohepatitis*). This often occurs due to hepatocytes swelling to the point of bursting, emptying their contents into the liver and general circulation, leading to further inflammatory damage. NASH can ultimately progress to cirrhosis of the liver and hepatocellular carcinoma.

Being that this is such a common condition amongst the Western population, and that it falls into the category of metabolic diseases that can be corrected through the means of what we do as herbalists (diet, nutrition, lifestyle, plant based medicine), I thought it worthwhile to bring it to the table so we're all aware of what it is and what we can do about it.

## **Some Background Physiology**

As stated, NAFLD is a *metabolic disorder*, meaning that it is directly influenced by the processes of the body that govern digestion, assimilation, utilization and elimination of nutrients and metabolic wastes. The basis of what leads to NAFLD is the specific metabolism of fats and sugars, both in our ability to burn them as a fuel, as well as the hepatic processes that store them for later. So let's take a look at the process a fat goes through in its journey from ingestion, to utilization for energy and onwards into storage.

While there are many types of fats, triglycerides are the ones routinely oxidized for energy. This is done via the enzyme **lipase**, which splits lipids into their glycerol backbone and fatty acids. The glycerol can be transformed into glucose, but the fatty acids go through a process called **beta-oxidation**. In this process, fatty acids are broken apart into acetic acid fragments, which are fused with coenzyme A, to form **acetyl CoA**, which is the main input molecule for the Krebs cycle. This is essentially how fats are burned for fuel by providing the basic inputs needed for generating ATP (cellular energy) via the Krebs cycle.

Generally speaking, glycerol and fatty acids from the diet that are not immediately used for energy are stored for future usage by being recombined back into triglycerides. The process of synthesizing triglycerides is called **lipogenesis** (lipo=fat, genesis = to create), **and it occurs when cellular ATP and glucose levels are high**. This is a key point that must be understood, because one of our main indicators of metabolic distress is insulin resistance, which means our blood levels of glucose tend to remain high. Glucose ultimately forms acetyl CoA to enter the Krebs cycle to be burned for energy, BUT acetyl CoA is also the starting point for forming fatty acids and then triglycerides. Thus when there is an abundance

of fuel in the system and its main starting material accumulates, it diverts its pathway towards forming triglycerides for storage. This is how glucose can be turned into fat, whereby excess levels of glucose are stored either as long chain sugar molecules (a process called glycogenolysis) or converted into fat. The body can store much more fat than glycogen thus fat accounts for 80-85% of stored energy. **When blood sugar is high, lipogenesis is actively occurring in adipose tissue as well as in the liver.** Thus we can generally say that lipogenesis is occurring while we are in a fed state.

On the contrary, when we are in a fasting state, the body triggers a process called **lipolysis** (lipo = fat, lysis = splitting). This is essentially lipogenesis in reverse, taking stored fats and breaking them down into fatty acids and glycerol, which are released into the bloodstream to be used for fuel. Interestingly enough, the cardiac muscle and liver tend to prefer fatty acids for fuel. The key to understand here is that the central molecule in lipid metabolism is acetyl CoA, which again is the primary molecule that enters the Krebs cycle to produce cellular energy. (1.) It is what glucose turns into through the process of glycolysis; (2) It is what fatty acids turn into via beta-oxidation to be burned as fuel; (3) it is what ketone bodies turn into when fat oxidation is incomplete. But when acetyl Coa builds up and accumulates due to either excess ATP or inadequate Krebs cycle intermediates to run the cycle, the ultimate result is the formation of triglycerides as acetyl CoA turns into fatty acids, ketone bodies (which in turn convert into fatty acids), all of which turn into triglycerides. Acetyl CoA is also what forms cholesterol to either create steroid hormones or bile salts.

This all comes down to the differences in physiological processes during the **fed or absorptive state** and the **fasting or post absorptive state**. During the fed state, we are in the anabolic, or building, phase of metabolism. Absorbed carbohydrates enter the liver to either be released into the blood to be used as fuel, or to be stored locally as glycogen, or transformed into fat. This fat is packed into VLDL and sent into the bloodstream to be stored by adipose tissue. Triglycerides are hydrolyzed into fatty acids and glycerol to be used for energy, or reconverted into triglycerides for storage. Note that adipose tissue, skeletal muscle cells, and liver cells use triglycerides as their main energy source, **BUT when dietary carbohydrates are limited, other cells can oxidize fat for energy.** All events in the fed state are controlled by the hormone **insulin**, secreted by the pancreas. Typically this state occurs during eating and for approximately a 4 hour period of time after eating.

The fasting state is what begins 4 hours after eating. In this state, stored nutrients are liberated from their tissues to be burned as fuel. As we've seen, glucose is the primary source of fuel in the body, so it is the first to be liberated in a process called **glycogenolysis** (glycogen = storage form of glucose, lysis = to split). With fats, this is done via **lipolysis**, which turns stored triglycerides into glycerol and fatty acids, the first of which is converted into glucose. When glucose and fat stores in the body are spent, only then will cellular proteins enter catabolism to assist in the formation of glucose, which is done in the liver. The fasting state is associated with the antithetical hormone to insulin, called **glucagon**.

Okay so all of that is a super in-depth way of describing the fact that when we are in the fed state for too long a period of time, our body stores excess energy (from fats AND carbohydrates) in the form of triglycerides in adipose tissue and the liver. And when our body does not enter into the fasting state often enough, or long enough, it never gets the chance to burn through the stores of glucose and fats for energy, and thus they accumulate. **Basically we see an overfed state combined with a lack of energy expenditure**, which in a way kind of defines a lot of the modern human condition. We have an abundance of food available to us at all times, rarely enter a fasting state, and live sessile lifestyles, all of which add up to create the physiological environment primed for storing fuel in the form of fat, and the liver is ultimately what takes the brunt of it.

## Pathogenesis

So ultimately at the root of NAFLD is this imbalance between the fed and fasting state and the body's innate physiological coding to store fat as fuel storage in the long term. But there are many accompanying pathological patterns that accompany this metabolic imbalance, most of which further trigger the development of NAFLD, especially insulin resistance, hormonal dysregulation, and intestinal dysbiosis. But first, let's look at what exactly is happening as NAFLD develops.

We have the liver, and it is being invaded by too many triglycerides. Adipocytes are full and the excess is being sent to the liver to be stored there. As this happens, we see microvesicles of fat begin to enlarge within hepatocytes (enlarged liposomes). This swelling tends to push the nucleus to the edge of the cells, essentially reducing the functional capacity of the liver cells. As more and more of these liposomes swell and hepatic function decreases, we see inflammation increase and a degree of apoptosis, which bursts the cells and releases their contents into the liver and bloodstream. At this point NAFLD has developed into NASH, as there is active inflammation in the liver. Eventually, collagen begins to replace liver cells in an attempt to repair itself, a process called fibrosis. When this happens long enough we eventually see cirrhosis of the liver, at which point the damage is said to be irreversible.

**Insulin Resistance:** As stated above, insulin is the “fed state hormone,” telling the body that fuel is coming in and it's time to either burn it for energy or store it to burn later. When the cells become resistant to insulin, the gating channels do not open, glucose does not enter the cell and stays in the bloodstream. This leads to more insulin being secreted, but blood sugar levels do not drop. The receptors are thus said to be “insulin resistant,” they're tired and just don't want to open the gates anymore. And the first part of the body to typically become insulin resistant is none other than the liver.

Under normal circumstances, insulin promotes lipogenesis, to store fats as fuel for later, and inhibits lipolysis. After all, why would we start oxidizing stored fat for fuel when we just ate a meal? In the liver, insulin specifically has three central roles: (1) promotes glycogen storage, (2) inhibits gluconeogenesis (which is the process that forms glucose from triglycerides), and (3) activates regulators of lipogenesis. Okay so insulin *triggers these pathways* in the liver. Think of what happens when the body is resistant to insulin... these things don't happen. We see the adipocytes (fat cells) engage in lipolysis (because they think they're being starved) and liberate fatty acids into the bloodstream which are taken up by the liver. When these liberated fatty acids are taken up into the liver, they lead to what is referred to as lipotoxicity, which damages the mitochondria of the cells.

Glycogen storage is inhibited in the liver, and thus all sugars will be transformed into triglycerides for storage. Gluconeogenesis will be stimulated as well, which creates new glucose molecules from amino acids and glycerol. **The net effect of all of this is excessive fat accumulation in the liver and heightened levels of circulating VLDL cholesterol**, which unfortunately can't be taken up by adipocytes. This ultimately will lead to weight gain. Over time, the liver's inability to accommodate this level of lipids leads to lipotoxicity, which further inhibits insulin signaling and ultimately leads to oxidative damage, inflammation, and promotes fibrosis.

**Intestinal Dysbiosis:** As we can see, this is ultimately a result of the modern diet and lifestyle, and whenever there's issues with food it tends to affect the gut. There's been some research demonstrating that NASH patients have a compromised intestinal epithelial barrier, which has allowed bacteria to access systemic circulation and release proinflammatory compounds (specifically cytokines) that contribute to steatosis and inflammation. Many of these bacteria that cross the gut barrier have riding on their outer membrane various endotoxins that cause a lot of problems related to our immune response and inflammatory cascades. Of these, lipopolysaccharide (LPS) is associated with elevating inflammatory cytokines such as TNF-alpha and IL-6, able to enter the body from poor intestinal barrier function. Of course, many practitioners know that disrupted tight junctions in the intestinal epithelium are a root cause of many chronic and systemic inflammatory diseases, even autoimmune diseases.

Disturbances in the gut flora also influence the metabolism of bile acids, which in turn decreases the activity of specific receptors in the gut. One example of this is farnesoid X receptor (FXR), which when activated suppresses hepatic lipogenesis, stimulates fatty acid beta-oxidation (burning fat for fuel), and reduces hepatic lipid accumulation. When this receptor doesn't work due to an imbalanced gut flora, naturally NAFLD will be increased. These are a host of complex interactions happening here in what is referred to as the gut-liver axis.

**Hormonal Influences:** Of course the dysregulation of insulin and glucagon is central to the pathogenesis of NAFLD, but there are other hormones that definitely contribute to its development. One thing that has been noticed is the stimulation of reward centers in the brain in association with foods high in fat and sugars, specifically opioid and dopamine receptors in areas of the brain that correlate to the development of cravings. We all know that *feeling* right of really wanting something sweet to eat, or maybe something really fatty or oily... What's been shown though is that as these reward centers are stimulated, there is oftentimes a systemic reduction of gut-derived hormones, specifically glucagon-like-peptide 1 (GLP-1) which promotes satiety, and an increase in ghrelin, which is known to stimulate hunger. So, you eat the super sugary food, get that craving based satisfaction, but ultimately are left not feeling satiated (decreased GLP-1) and in fact, feel more hungry (increased ghrelin).

The other important hormone to consider here is leptin, which is derived from the adipose tissue and functions as a grand regulator of energy expenditure and appetite. Leptin secretions essentially reduce sensations of hunger and regulate your body's long term usage of energy. It basically tells the body "Hey we don't need anymore food, I am well nourished right now." The amount of leptin in your body is 100% proportional to the amount of body fat you have, as it is manufactured and secreted by adipocytes. When there's too much fat, there can be too much leptin, which ultimately can lead to **leptin resistance**, which is just like insulin resistance... which is a major double whammy.

So now the body is not only resistant to insulin (keeping sugar levels high and the body thinking it's in a fasting state when it's not), but it also gets resistant to leptin, which results in one not feeling satiated *ever* and you're always hungry. You can see how this is a pretty bad combination in terms of metabolism. It's been shown that people with NAFLD typically have elevated leptin levels, and likely leptin resistance. Its relative, adiponectin, helps to increase hepatic insulin sensitivity and reduces body fat, and unfortunately in NASH patients this hormone is deficient. This hormone also reduces pro-inflammatory cytokines like TNF-alpha and IL-6. These patterns are commonly referred to as the adipose tissue-liver axis.

## Diagnostic Criteria

As mentioned above, one of the biggest challenges of NAFLD is the fact that it is for most, especially in the early stages, a silent disease. **Most people that have it have no idea they have it.** The most common complaints people will mention are generally: weight gain, lowered energy levels, especially in the morning, changes in appetite, changes in digestive function (quality of bowel movements, general dyspepsia, etc.), feelings of fullness in the epigastrium, or even pain in the upper right quadrant of the abdomen. You might also see other general liver signs and symptoms, such as psychological or physiological tension, irritability/anger/frustration, depression, consistent sighing or yawning, skin conditions, headaches, impaired vision, or irregular menses.

Once it has progressed to NASH and full-blown cirrhosis, you will likely see more severe symptoms of serious liver disease, such as ascites, jaundice, enlarged spleen, edema, and esophageal varices (which is basically a varicose vein in the esophagus that can burst and bleed).

The general consensus for diagnosing NAFLD is essentially to do a biopsy of the liver. This is obviously impractical for most, so here's some general criteria that can be assessed via a simple blood panel:

- **Elevated liver enzymes:** AST and ALT primarily, this shows hepatocytes are bursting and releasing their enzymes into the bloodstream. Though it's important to note that some people with NAFLD or advanced NASH may have AST or ALT levels within normal limits.
- **Elevated LDL and VLDL cholesterol**
- **Elevated triglycerides**
- **Increased TNF-alpha:** directly correlated with increased severity of NAFLD and its progression to NASH and ultimately cirrhosis. It also induces hepatocyte death and modulated hepatic immunity.
- **Decreased adiponectin:** this will appear in the later stages of the disease.
- **Elevated leptin:** indicated leptin resistance, decreased satiety, and excessive hunger signaling
- **Fasting Glucose and Insulin:** to test for insulin resistance

It's also helpful to determine any genetic predispositions, family history of liver disease, past exposure to hepatitis B or C, alcohol intake, patterns of weight gain, history of autoimmune diseases, as well as any potential steatogenic medications (as NAFLD can be induced by certain medications).

This also brings us to the concept of the Liver in Chinese medicine, which is a much greater pattern than our western anatomical liver. Some researchers have postulated potential patterns in Chinese medicine related to NAFLD, including: dampness and heat accumulation syndrome, Spleen deficiency phlegm and dampness syndrome, Liver stagnation and Spleen deficiency syndrome, Phlegm and blood stasis syndrome, and Liver and Kidney deficiency syndrome.<sup>1</sup> Not being an expert in TCM diagnosis, I cannot elaborate much on this.

Since I use medical astrology as one of my main assessment and evaluation tools, NAFLD falls under the dominion of the following archetypes: Jupiter (fats, oils, metabolism, liver, damp/heat) Mars (inflammation, heat patterns, cell death, deterioration); Virgo-Pisces axis (rules liver, small intestine and connection to immunity/lymphatics)

## **Therapeutics and Materia Medica**

Below are some of the most commonly researched supplements and herbs to support NAFLD. Many of these are supporting various pathways that point towards fatty liver, such as inflammatory cascades, lipolysis/lipogenesis, blood sugar management, and overall metabolism. There's much more research on TCM herbs and formulas than there is on Western herbs unfortunately.

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<sup>1</sup> *Chinese Medicinal Herbs Targeting the Gut–Liver Axis and Adipose Tissue–Liver Axis for Non-Alcoholic Fatty Liver Disease Treatments: The Ancient Wisdom and Modern Science.* Shuwei Zhang, Yui-Tung Wong, Ka-Yu Tang, Hiu-Yee Kwan and Tao Su. *Front. Endocrinol.*, 30 September 2020

- **B Vitamins-** to help stimulate Krebs cycle. Particular here are B5 (precursor to CoA), B7 (biotin) for fatty acid synthesis, B12 fatty acid metabolism, Inositol
- **Resveratrol-** increases substances that burn fatty acids (AMPK, SIRT1), reduces inflammation, support cholesterol and triglycerides,<sup>2</sup>
- **Fish Oil-** reduces inflammation, cholesterol and triglyceride management, lowers liver enzymes
- **CoQ10-** modulates inflammation via TNF-alpha and adiponectin levels
- **Milk Thistle-** protects hepatocytes from oxidative damage, reduces lipogenesis, reduces hepatic inflammation, benefits insulin resistance. Quite well studied for NAFLD and NASH
- **Coffee and Tea-** both highly antioxidant, polyphenols in coffee similar in structure to silymarin, reduced risk of NAFLD and fibrosis. EGCG in Green Tea most studied for NAFLD in antioxidant protection and regulating hepatic lipid metabolism.
- **Turmeric-** powerful liver antioxidant, hepatoprotective, heals intestinal epithelial barrier function (upregulates occludin which enhances epithelial tight junctions), bitter tonic
- **Cardamom**
- **Berberine-** shown to inhibit upregulation of key inflammatory markers (TNF-alpha, IL-6, etc) from lipopolysaccharides in the liver.<sup>3</sup> It's important to understand that most research is done on isolated berberine alkaloids rather than whole plant extracts. Nonetheless, berberine containing plants such as Coptis, Goldenseal, and Oregon Grape are classically considered hepatic, bitter tonic, and alterative type herbs which would based on tradition be applicable to NAFLD.
- **Aromatic mints (Rosemary, Peppermint, Basil, Lavender, Oregano, Sage)-** tentative research done on plants containing ursolic and carnosic acids, which have been shown to improve lipotoxicity and lipid metabolism in the liver, as well as antioxidant, anti-inflammatory, and hepatoprotective properties.

While these are the compounds and plants that have been officially studied by science, I believe we can come to some conclusions about what types and categories of remedies could prove beneficial here based on herbal tradition.

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2 *Effect of resveratrol on non-alcoholic fatty liver disease.* Marios Theodotou, Konstantinos Fokianos, Demetris Moniatis, Rudolf Kadlenic, Asimina Chrysikou, Andrea Aristotelous, Alexia Mouzouridou, John Diakides, and Eliza Stavrou. *Exp Ther Med.* 2019 Jul; 18(1): 559–565.

3 *Berberine inhibits free fatty acid and LPS-induced inflammation via modulating ER stress response in macrophages and hepatocytes.* Yanyan Wang, Xiqiao Zhou, Derrick Zhao, Xuan Wang, Emily C. Gurley, Runping Liu, Xiaojiayang Li, Phillip B. Hylemon, Weidong Chen, Huiping Zhou. Published: May 1, 2020. <https://doi.org/10.1371/journal.pone.0232630>

- **Bitter Alteratives:** As we've seen, NAFLD is the hepatic component to the greater complex of metabolic disease (obesity, insulin resistance, etc.). From a traditional standpoint these conditions would require alterative/reducing/detoxifying type therapies. Many remedies in this category, especially those that are hepatic oriented and bitter in taste have been shown to improve cholesterol and triglyceride levels and overall liver function. Since bitters have such a strong affinity for lipid digestion and absorption, it may be safe to assume that they also influence deeper levels of lipid metabolism in the liver, since bitters are renowned for their strong affinity for the liver. Most of these plants would be considered damp/heat clearing plants, which folks with NAFLD likely have a degree of. Remedies to consider include: Oregon Grape (*Mahonia aquifolium*), Gentian (*Gentiana lutea*), Artichoke (*Cynara scolymus*), Dandelion root (*Taraxacum officinale*), Blessed Thistle (*Cnicus benedictus*).
- **Inflammation Modulators-** This isn't typically a category I think of, but since these patterns are rooted in systemic inflammation, anything that will reduce inflammation will prove to be beneficial. Of course many plants modulate inflammation, so choosing those with a stronger affinity for the liver and digestive tract would be preferred. Remedies to consider include: Yarrow (*Achillea millefolium*), Chamomile (*Matricaria recutita*), Turmeric (*Curcuma longa*), Calendula (*Calendula officinalis*), Plantain (*Plantago major*), Licorice (*Glycyrrhiza glabra*)
- **Hepatoprotectives-** NAFLD is the early chapter of more severe liver pathologies that ultimately result in cirrhosis and fibrosis. Providing antioxidant protection, reducing hepatic inflammation, and overall support for the liver is obvious in its support for these patterns. Remedies to consider include: Schisandra (*Schisandra chinensis*), Milk Thistle (*Silybum marianum*), Reishi (*Ganoderma lucidum*), Turmeric (*Curcuma longa*), Licorice (*Glycyrrhiza glabra*).
- **Blood Sugar Regulation-** As noted, NAFLD is likely one of many results of insulin resistance, thus herbs that support blood sugar regulation and insulin sensitivity would likely prove supportive. Herbs to consider: Devil's Club (*Oplopanax horridus*), Holy Basil (*Ocimum sanctum*), Goat's Rue (*Galega officinalis*), Gymnema (*Gymnema sylvestris*)
- **Cardiovascular/Circulatory Stimulation-** This liver pattern innately spills over into the cardiovascular system, as we see with elevated cholesterol, triglycerides, and systemic inflammation. Remedies to consider: Hawthorn (*Crataegus spp.* - note Chinese Hawthorn has been studied for NAFLD), Ginger (*Zingiber officinale*), Cayenne (*Capsicum annum*), Yarrow (*Achillea millefolium*), and Japanese Knotweed (*Polygonum cuspidatum* - note high in resveratrol)
- **Gut Trophorestoratives-** intestinal hyperpermeability has been clearly demonstrated to be a causative factor in NAFLD. Plants that support healing the gut epithelium (vulnerary, astringent, demulcent) and reduce inflammation would be supportive. Plants to consider here include: Calendula (*Calendula officinalis*), Plantain (*Plantago major*), Marshmallow (*Althea officinalis*), Slippery Elm (*Ulmus rubra*), Licorice (*Glycyrrhiza glabra*), Yarrow (*Achillea millefolium*), Meadowsweet (*Filipendula ulmaria*).

These are of course generalized categories with a small handful of plant examples to consider, these lists are by no means exhaustive. Another important point to make here is that as herbalists, we of course are focused on treating the whole person, not just the name of the disease that they have. Each unique individual will have their own unique expression of NAFLD. Perhaps some might be insulin resistant, some might not be. For some it might be due to a sessile lifestyle, others it might be due to excessive eating of fats and sugars. The point is that **every person will have their unique NAFLD expression.**

While there are certain commonalities, it's important to not just have a cookie-cutter approach. Treat the person, not the disease. But that being said, it's useful to have an understanding of the disease... Hopefully this has helped.

Last and likely most important, is that metabolic diseases of this nature are at their root **lifestyle based diseases**. Sure there may be genetic components and constitutional predispositions, but at the end of the day, this is a problem of (1) diet and (2) activity/exercise (or lack thereof); the ratio of intake (fuel) and outtake (activity) is majorly imbalance. So in my opinion, it doesn't matter how many supplements or herbs you give to someone, if they don't adjust their diet and lifestyle they likely will not see the level of improvement that's possible. So here are a few other recommendations to support:

- **Intermittent Fasting:** this is in my opinion probably the best therapeutic intervention, because it is based on resetting the metabolism by allowing the body to be in a fasting state for a longer period of time (thus burning more fats as fuels). There are different ways to do it, and different schedules may be more suitable for different people/constitutions, but a 16:8 fasting:fed pattern seems to work well. Though it is important that adequate nutrition is present to actually burn stored fats as fuels, most notably are amino acids and B-vitamins.
- **Anti-Inflammatory Diet:** Oh the diet thing... Basically it's best for people to eat a diet that is high in protein, relatively low in carbohydrates, and revolving around plants (not necessarily vegetarian but definitely very rich in plant foods). Avoiding common food allergens/intolerances is generally recommended (gluten, dairy primarily), as well as processed foods, which includes heavily processed oils. Grains can sometimes be difficult for people too especially if they have compromised digestion. Simple is good. Vegetables, fish, and chicken is in my opinion one of the best diets as it's simple, clean, and not aggravating for most people. And as hard as it is for me to say, supplementing with a multivitamin can be helpful, as most of our food is nutrient deficient.
- **Probiotics:** As correcting gut function is an important piece for NAFLD, I think probiotics are essential, especially these days when so many people have had to take antibiotics, are overly inflamed, and have compromised digestion. Fermented foods are ideal, but sometimes taking something more concentrated is helpful too. I think the benefits of probiotics are pretty clear.

Hopefully this helps to provide some guidance and insight into NAFLD, it's pathogenesis and how you might consider approaching treating the people with it through natural therapeutics and herbal medicine.



# ***Mars: Systemic Inflammation, Burnout and Immunity***

**Sajah Popham**

Over the last few decades, it's become clear both in alternative and conventional medicine that at the root of some of the leading causes of mortality lies a singular force: inflammation. From heart disease and degenerative nerve diseases, to type II diabetes and chronic pain, many of our modern woes come down to not just inflammation, but inflammation on a systemic and chronic level.

At the same time, we can consider what the #1 most common complaint is amongst people that take the time to go see an herbalist (or doctor or acupuncturist or whoever)... fatigue. It seems like *everyone* is tired these days, and not just from an explainable "I stayed up too late last night and got up early this morning" kind of tired, but a deeper level of sometimes inexplicable fatigue that is consistent enough to make someone go to the doctor for it.

And on a whole other note, the last number of decades have seen huge spikes in autoimmune conditions. From systemic lupus erythematosus and rheumatoid arthritis, to Hashimoto's thyroiditis and multiple sclerosis, it's alarming that millions of people's bodies are literally turning against them and attacking themselves, leading to serious and debilitating physical states. These can be understood as immunological excess patterns (though sometimes dipping into deficiency at times as well), but on the other end of the spectrum, we're seeing millions of people catching every virus and bacteria floating around in the air. I can't tell you how many people in recent years I've seen that just seem to *always be sick*, as if the human immune system just isn't really functioning up to par.

On the surface these can all seem like somewhat disconnected patterns. Immunity patterns over here, inflammation over there, fatigue way over there. But in fact these are intimately and intricately interwoven physiological phenomenon that influence and affect one another. While they are certainly tied together on a physiological level, there is another level of association we can see when we look at these patterns through the lens of medical astrology, as they all bare correspondence to the planet Mars.

## **A Brief Note on Medical Astrology and Its Place in Herbalism**

Astrology... it's definitely one word in the English language that makes a lot of people cringe, laugh behind their hand, or vehemently denounce. This is really because it is just misunderstood and commonly misrepresented out in the world... If you think astrology is about predicting your future, telling you who you are, what kind of job you should have, who you should marry, or is about planets in star constellations (which it's not), then please read on.

Astrology is ultimately based on a traditional holistic view of the world that sees nature as being interconnected, that all of life is interwoven. This is based on the principle of the "macrocosm and the microcosm," which states that each part of nature contains the pattern of the whole. Essentially that what is "out there" is also "in here." This is not disharmonious with many other traditions of medicine in the East such as Chinese medicine, Ayurveda, Kampo, and Tibetan medicine, which all have a cosmological understanding of nature that connects the parts of nature (IE people, plants, minerals, etc.) with the whole of nature (based on archetypal forces such as the Elements and Planets). Western medicine, philosophy, and herbalism have gone through many identity crises throughout time, especially through the advent of science, and with it the more esoteric, energetic, cosmological, and spiritual orientations associated with medicine. Everything irrational, non-reductionistic, and non-linear was stripped from the system, and with it went astrology, which was once an integral part of the practice of medicine both east and west.

Medical astrology has been practice in the western tradition for a very long time, and it wouldn't have stuck around for this long if it didn't work. And contrary to popular belief, it has played a central role in herbalism, influencing and guiding our work with plants on multiple levels, such as: planting, growing and harvesting, preparing medicine, holistically evaluating and assessing clients, classification of plants, determining the constitution, root pathological patterns, formulation and administration.... The list goes on.

Ultimately, I like to think of medical astrology as being simply another "tool in your toolbox" as an herbalist. Just like some people use the tri-dosha of Ayurveda, the 5 Elements of TCM, tongue or pulse evaluation, 4 humors, or 6 tissue states, the patterns of the 7 Planets and 12 Signs are simply another framework, another tool to use to help us determine what's going on in a person and holistically understand what a plant is doing.

## **Mars: The Red Planet**

So to get a full understanding of the characteristics of a planet astrologically, I like to study it from three primary perspectives, which equate in general to the triune pattern in alchemy: Sulfur (soul), Mercury (spirit), and Salt (body). This is looking at the planet from a mythological or archetypal perspective (Sulfur), the aspect of the psyche it represents, or mental/emotional patterns (Mercury), and tying all of that into its physiological correlations in the organ systems, tissues, pathological patterns, and constitution (Salt). This is also translated into herbal properties.

## **Sulfur: The Martian Archetype**

Mars is unique in that when you can see it in the night sky it's the only planetary body that has such a distinct red coloration. This planet was commonly considered to be a bad omen, as traditionally when its force was particularly strong, it was a sign of coming war, plague or fever. Thus Mars is classically called the "lesser malefic" as it typically brings about challenges and difficulties in one's life (the "greater malefic" being Saturn). From a medical perspective, these two malefics are considered to bring about diseases of heat (Mars) and extreme cold (Saturn).

In classic Greek mythology, Mars is associated with the deity Ares, the god of war, who did not necessarily have a well favored place in the people nor the pantheon. Yet his incarnation in the Roman tradition was a place of high honor, which makes sense as Rome was distinctly martial, war glorifying culture. The red planet was called Nergal by the Babylonians, also related to war, battle, plagues, epidemics, and the noonday sun that scorches the Earth. Regardless of the culture or people we look at, they all came to the same conclusions: the red planet is intense.

If we were to summarize the archetype of Mars, we could say that it is associated with **the warrior**. While this may not have quite as much meaning to most people these days as it did in times past, I think we can come to a deeper understanding of this archetype if we consider the specific role and function of the warrior, which is to defend, to protect, and at the same time to destroy. And if we consider the overall dynamic of a battle, we would see that there is a high degree of intensity present, a certain force and power that is present as blood is being spilled, and life is being taken. Note some of the key words here as they all have direct correlations and translations to the physical/medical understanding of Mars.

Within ourselves we can think of Mars as representing **forceful action**. It is the part of the self that carries out the actions of our greater will and purpose (represented by the Sun). It is the warrior riding forth to carry out the instructions and guidance of the King (again the Sun). This bears correlation physically as the Sun is the heart and Mars is the blood. I like to simply think of it as the part of ourselves that gets stuff done, representing our will in action. Mars is the part of ourselves that has the power and the courage to look within and slay our own inner demons, to face the dark parts of the self that we want to overcome. Like all of the archetypes, Mars has positive and negative attributes, virtuous and harmful expressions—unfortunately more often than not the negative/harmful qualities have been more exemplified than the others.

## Mercury: Mars in the Psyche

When Mars is embodied and expressed in a healthy way in a person's mind, we see that they have a certain strength within themselves, not just in who they are but in what they stand for. The Mars person is empowered, but in an overbearing or domineering way. It is not that they do not experience fear, but rather they have the ability and courage to face it and move through it. There is a willingness to look at the darker parts of the self and in that way a well expressed Mars is humble. I like to think of it as the peaceful warrior, the chivalrous knight, of having the courage to stand up for what is right and good and true in this world. A healthy Mars is energetic, expression, and outgoing, and not in a "look at me" showing off sort of way, but rather they are not going to hold themselves back in any way.

But when the warrior archetype is imbalance, particularly in a state of excess, that's when we start to see some of its nastier side. When Mars is not well integrated into the psyche, builds up in the system and becomes excessive, we start to see the war-like qualities emerge. This is primarily in the form of anger, frustration, irritability, and a power over others complex rather than being empowered from within. The excessive Mars person can be insensitive, arrogant, egotistical, and overly defensive. If we think of the Sun as the gravitational center of the psyche, the "King," or the essence of our being, then Mars should be in service to that part of the self. When it is excessive it has run rampant, lacks direction, acts without purpose, and can become cruel. Mars explodes out of us in bursts of intensity, acts now and thinks—and often regrets—later.

When Mars exists in a state of deficiency, we see the opposite of all of that. There is a timidity, a lack of sense of self and ability to express oneself, fear, and an overall lackluster, deficient, weak, cold, uninspired, and underwhelming energy in one's life. Deficient Mars leads to us being easily controlled, manipulated, or influenced by others and an inability to stand up for ourselves, primarily because we ultimately do not have a solid connection with ourselves.

### Salt- The Anatomy and Physiology of Mars

I like to begin a discussion of a planet talking about the archetypal and psychological/emotional expressions of it first because it lays the overall context and understanding of some of its main qualities and characteristics. From there, the transition into talking about its medical, or physiological aspects is actually quite simple, for we're just taking that *same energetic quality* that exists on the archetypal and psychological level and imprinting it into the body.

On a constitutional level, Mars people tend to be choleric and/or *pitta* in nature, that is: of a medium athletic build with prominent musculature, red coloration to the skin, hot tempered, direct in their mannerisms, sharp and intense in tone of voice. The urine tends to be yellow and aromatic, the stool loose and malodorous. These are the constitutional types that have an excess of the Fire element, they burn bright, hot, intensely... and then *out*. They're often sweaty, warm to the touch, and have chiseled features- well defined jawlines, high cheekbones, sculpted bodies. The Aries type Mars people oftentimes are rushing headlong into things, speak and act before thinking, and are accident prone (they're always bumping their heads or hurting themselves), whereas the Scorpio type Mars people have an intensity to their behavior and mannerisms, a penetrating look the eye, and are more sensual than the Aries type, who tend to be a little more concerned with themselves.

Within the body proper, Mars rules a handful of important organ systems that clearly reflect its other qualities and characteristics. First is the blood. In alchemy, every planet has an associated metal- for Mars it's iron, which makes sense since the planet itself is full of iron, old implements of war were made out of iron, it's relationship to battle, and it's rulership of the blood, which is obviously full of iron. Mars

governs the formation, preservation, and circulation of the blood, with the latter being co-ruled with the Sun, who rules the heart proper. This is similar to the association of the “king and the warrior,” the heart and the blood, the Sun and Mars, and the alignment of our action and energy in the world (Mars) with our true essential nature and greater purpose (Sun). We see the blood attributes of Mars in the constitution too, as its circulation out to the surface makes for a red coloration to the skin and overall feelings of warmth, to the point of being hot and sweaty.

Next we have the immune system, which makes perfect sense for the warrior archetype. This is the part of our body tasked with protecting and defending it from foreign invasion. I find it interesting that at the core of proper immune function is the ability for it to properly differentiate self from non-self. Astrologically speaking, the self is the Sun, again showing the connection between Mars and the Sun. This is where autoimmunity becomes interesting, as the Mars function in the body has lost its capacity to differentiate self from non-self and is attacking the body’s own cells.

When our immune system becomes acutely triggered in the presence of a pathogen, one of the most common symptoms is none other than a **fever**, which ties together the Mars functions of immunity, inflammation, and blood. When the febrile mechanism is triggered, the hypothalamus tells the pores to close, ramps up the inner body temperature, and drives the blood to the surface from the core. This leads to the clear signs of excess Mars: heat, redness, pain, and general discomfort.

One of the hallmark signs and symptoms of activation of the immune system is none other than inflammation, which is shown by the classic signs of Mars: redness, heat, and pain! The inflammatory process is at its core a destructive process, as the cells become oxidized, broken down, and in essence damaged. It is literally like a microscopic warzone! Another way we can think of Mars is that it is *catabolic* in nature, it is the force and energy that breaks things apart and destroys, it metabolizes things to use its energy. But when inflammation is occurring systemically and chronically for an extended period of time, serious problems can occur which has clearly been demonstrated in the medical literature. Rather than just taking something to take the inflammation away, we have to consider what is actually causing it to happen in the first place? What is causing our inner Martian defense mechanisms to be on such high alert and have such heightened sensitivity?

We can consider this based on another physical rulership of Mars, which is the adrenal glands, governors of the fight/flight/freeze response, which is interestingly enough another physiological pattern hardwired into our system to protect and preserve the body. I would imagine anyone going into a fight or a battle has some serious adrenal activity happening for sure! There’s a number of factors that correlate here to Mars: 1) stimulation of the nervous system to increase vital energy; 2) redistribution of the blood from the core to the periphery/limbs (so you can run away or fight); 3) shutting down of the immune system (after all, fighting a minor pathogen or inflammation is low priority when you’re about to fight for your life). Again, the entire cascade of stimulation of the adrenal hormones (epinephrine, norepinephrine) are notably Martian in their biochemical effects.

But what else does the adrenals produce? Cortisol, the body’s most potent anti-inflammatory molecule. So the adrenals have attributes that *stimulate* Mars (fight/flight response) as well as qualities that *decrease* Mars by reducing inflammation. We oftentimes think of our adrenal glands constantly being triggered by stress, which is true, but not in the way we often think of it. It’s not just stress like having a deadline and being stuck in traffic and feeling stressed out. **It’s physiological stress**, much of which can be happening beneath the level of our conscious awareness. And one of the biggest ones here is again, inflammation. The adrenals are responsible for counterbalancing that excess of chronic systemic inflammation by secreting cortisol. And what happens to our system when the adrenals are constantly stimulated and secreting? We get endocrine burnout and a deep level of exhaustion, fatigue...

**We can think of this as a Mars excess (stress, inflammation, immunological and adrenal activity) as ultimately leading to a Mars deficiency (endocrine burnout, chronic fatigue).**

This shows how there is one archetypal component that governs a fully integrated system within the body. From a strictly physiological perspective, we would say there are multiple systems at work here: immune, endocrine, circulatory etc. But when we look at it through the astrological lens, we say that this is actually one functional system we refer to as Mars.

The energetics is also an important consideration in terms of medical astrology. From this orientation, we see that Mars has a temperature quality of **heating** and a moisture quality of **drying**. Its general nature is stimulating. It is hot, while the Sun is gently warming. It is dry primarily because it is so heating. In excess we would say it generates the heat/excitation and/or dry/atrophy tissue states, an excess of the pitta dosha. The pathological patterns of Mars tend to follow these general patterns (diseases of heat): excessive sweating, fever, stress, inflammatory diseases, headache (hot and tense), restlessness, autoimmune conditions (which are often co-ruled by other archetypes) acute pain, injury, first aid situations (accidents, blood spilled). In TCM, many of the hot liver patterns are quite Martian in nature, particularly “Liver Fire Rising...” it’s a textbook Mars pattern. The pulse is typically rapid and superficial. The tongue is often red in color, pointed or “flame shaped,” with red raised papillae and a yellow coating/fur/moss. These are some of the general patterns, of course Mars can afflict many different organ systems in the body, many of which end in “itis.”

### **A Few Quick Patterns**

Mars governs two signs of the zodiac: Aries and Scorpio. We can understand an archetype in more depth by looking at how it relates to other signs of the zodiac and the relationships they make to other systems, cycles, and functions in the body. These patterns are similar to how TCM has controlling and generating cycles of the Five Elements and will be discussed more in the lecture if there’s time.

- **The Aries Pattern:** Squares Cancer/Moon- relationship to food, digestion and absorption (IE food intolerance); Squares Capricorn/Saturn- longer term deterioration of the bones, teeth, connective tissues from systemic inflammation; Opposes Libra/Venus- blood sugar regulation and the acid-alkaline balance of the system
- **The Scorpio Pattern:** Squares Leo/Sun- longer term influence on the heart and cardiovascular system; Squares Aquarius/Saturn/Uranus- the impact on the health of the nervous system; Opposes Taurus/Venus- ingestion of food, anabolic pathway in contrast to catabolic pathway, effects on the thyroid gland

### **Some Herb Notes**

If only I had a few more pages to lay out how the astrological pattern also relates to plants... Some plants treat a planet by sympathy, others by antipathy. Some alleviate excesses, some nourish deficiencies, some counterbalance through opposition. The art of astro-herbal therapeutics is as complex, refined, and individualized as any other tradition of herbal medicine. Below are a few herbs that are particularly notable in their relationship to Mars, either by *being* a Mars ruled plant, or by *treating Mars patterns* via other planetary influences, along with a few brief notes as to the nature of the correspondences.

- **Echinacea (*Echinacea purpurea*)-** Mars. Stimulates immunity, blood alterative (sepsis, the classic red streak sign = Mars), circulatory stimulant, cools excess heat.
- **Nettle leaf (*Urtica dioica*)-** Mars. Cools and builds the blood, iron rich, sedates irritation in the tissues (yet creates irritation topically), Aries-Libra axis (head/allergies = aries, diuretic = libra who rules kidneys), root = prostate which is also ruled by Mars

- **Devil's Club (*Oplopanax horridus*)**- Mars. Stimulates blood circulation, warming adaptogen for endocrine burnout, balances excess Venus conditions of blood sugar/insulin resistance, morphology notably martian (warrior anyone?!), used for spiritual protection, Mars deficiency.
- **Prickly Ash (*Zanthoxylum clava-herculitis*)**- Mars. sharp thorn morphology notably martian, pungent, diffusive circulatory stimulant, nerve stimulant, relieves Mars deficiency.
- **Cayenne (*Capsicum annuum*)**- Mars. bright red fruit, hot, pungent, circulatory stimulant, antiseptic, relieves pain due to stagnation, flushes the face red
- **Plantain (*Plantago major*)**- Venus, Opposes. Soothes heat and irritation in the tissues, draws out poison/venom,
- **Rose (*Rosa spp.*)**- Venus, Opposes. Sour flavor cools excess heat, inflammation, and irritation in the tissues. Cools the blood, heals damaged capillary beds from oxidation/inflammation
- **Marshmallow (*Althea officinalis*)**- Moon, Squares. Moistens the dryness generated from excess Mars heat, soothes/cools heat, irritation, excitation, and inflammation in mucosa (ruled by Moon), nourishes tissues degraded from long term inflammatory damage
- **Violet (*Viola odorata/tricolor*)**- Venus/Opposes. Moistens the dryness generated from excess Mars heat, inflammation modulating (phenolics, flavonoids), for when Mars “attacks” Venus or Mercury (hot irritated inflamed UTI's or respiratory infections), capillary fragility
- **Reishi (*Ganoderma lucidum*)**- Sun, Squares. For Mars and Sun deficiency (low immunity and vitality), excellent for when Mars has burned the system out, can also be amphoteric for excess Mars as in autoimmunity/hypersensitivity/allergy situations, weakness in the self.
- **Astragalus (*Astragalus membranaceus*)**- Sun, Squares. Mars/immunity amphoteric- for when Mars lacks direction of Sun and runs rampant (excess, deficient, or both swinging), lack of physical protection/leaky boundary (wei qi), dryness and inflammation in the lung, fatigue.
- **Solomon's Seal (*Polygonatum spp.*)**- Moon/Saturn, Squares. For when Mars attacks Saturn: inflammation and dryness in the joints, degradation of structural tissues. Demulcent yin tonic for tendon, ligament, and connective tissue.
- **Horsetail (*Equisetum arvense*)**- Saturn, Squares. Chronic inflammation wearing down the connective tissues and bones, mineral deficiencies, Mars attacking Saturn, mildly cools heat

# *The Physiology of Pain*

Tammi Sweet

**Pain:** a biopsychosocial phenomenon of an unpleasant sensory & emotional experience associated with actual or potential tissue damage or described in terms of such damage.

## **Facts:**

- 80 million suffer from chronic disabling pain syndrome.
- 31 million at one time suffer from low back pain resulting in \$50 billion/yr. in lost wages.
- Over \$8 billion/yr. spent on pain meds.
- Headaches are 40% of PC visits
- Clinical depression 4X more likely in chronic pain sufferers
- 90% of chronic pain cases have no structural impairment

## **Children:** *do feel pain.*

- Week 7 embryologically nociceptors formed.
- Week 20 fetal brain developed
- Week 35-37 fetus able to differentiate pain and touch
- 2-6 yr. olds clear drugs faster = more frequent dosing
- Always use non-opioid interventions anyway.
- Sugar increases endorphins
- Skin contact, familiar scents, mom's voice increase endorphins.

## **Women:** *it's not in your head.*

- More likely to get painful conditions and report greater pain levels.
- More sensitive to other signals of danger, ie. smell changes, visual cues. Makes sense they would feel more pain. (Child rearing aid)
- Systemically under medicated: coronary bypass study: 30 men, 30 women. Women given sedatives, men given pain medication.
- 79% of all research done on male mice.
- Testosterone protects against pain, Estrogens not so clear-cut.
- Transsexual study: male to female 1/3 developed chronic pain...especially headaches. Female to male, chronic pain decreased.

## **Types of General Pain:**

**1. Acute (fast):** rapid after stimulus applied, superficial, not deeper regions, sharp, pricking, short lasting (medium A-delta fibers)

**2. Chronic (slow):** increase intensity over second-minutes, skin or deeper, excruciating, burning, throbbing, and aching. (C-fibers). Disease of nervous system, not just a symptom. Pain lasts 3-6 months or longer.

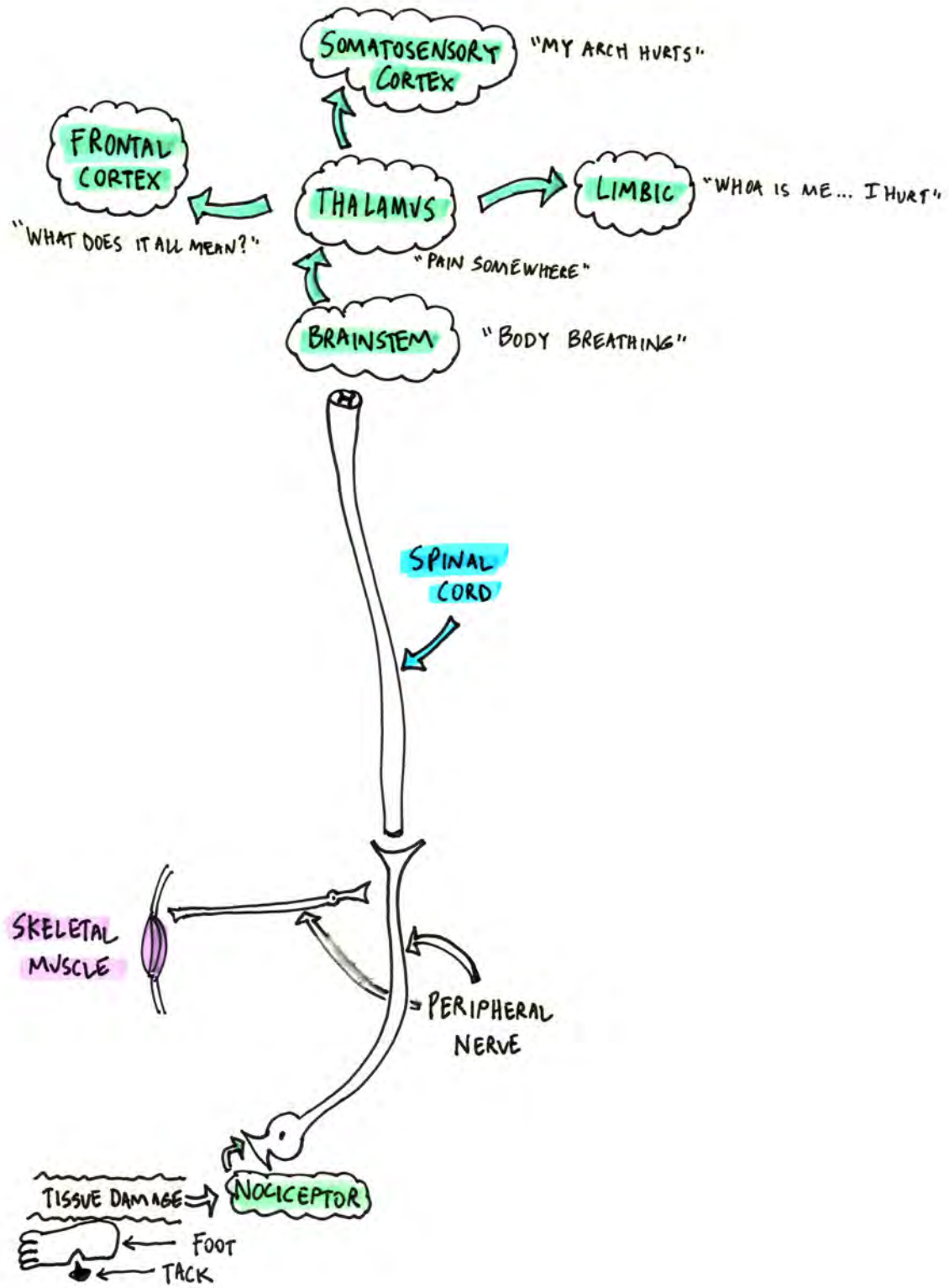
**3. Referred Pain**

**4. Phantom Pain**

**Pain Threshold:** Enough stimuli to initiate firing of nociceptors to perceive pain. The same for everyone.

**Pain Tolerance:** Duration of intensity of pain endured before acknowledging and seeking help. Varies according to culture, age, sex, and emotional state.

# The Pain Pathway





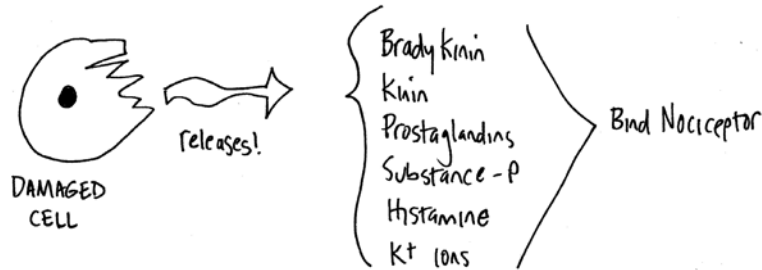
## Types of Chronic Pain: Nociceptive, Inflammatory, Dysfunctional, And Neuropathic.

**A. Nociceptive:** instant and intense, adaptive, alerts us.

**Stimuli:** mechanical force (bone on bone, heart injury, acute injury) or increased heat or cold.

**B. Inflammatory:** adaptive or nonadaptive (pro-inflammatory cytokines keep releasing, making individual hypersensitive). Immune cells release cytokines (TNF alpha, IL-1B) or pain messengers (BK, PG-E2, NGF)

**Stimuli:** tissue damage & swelling



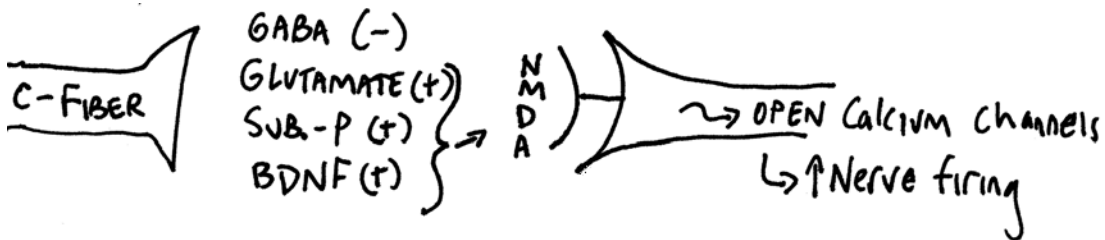
**C. Dysfunctional:** maladaptive, no damage to nervous system or inflammation, (Fibromyalgia, Irritable Bowel Syndrome, some headaches)

**Stimuli:** amplification of nerve signals in CNS & PNS

**D. Neuropathic:** alters the way nerves function, amps up, not necessarily from an external stimulus.

**Causes:** trauma to nerves (surgery), pressure on nerves (herniated discs, sciatica), chemotherapy (injury from toxic chemicals), infection from neurotropic viruses (*Herpes zoster*).

**Stimuli:** damage to the nervous system



### Synapse Physiology of Neuropathic Pain

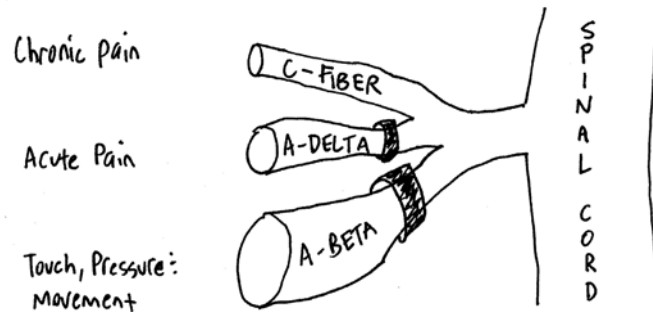
- Sometimes nerve cells can start making more NMDA receptors making the neuron more sensitive.
- Surrounding nerve cells start firing for no good reason.
- Nerve cells can alter gene expression and start making more pain neurotransmitters (Substance P, BDNF, NP-Y).
- GABA & Glycine, neurotransmitters normally inhibitory, become excitatory.
- Some GABA neurons die off (too tired from all the work?).

## Spinal Nerve:

**C-Fibers:** unmyelinated, 15X slower than A-Delta fibers, Chronic pain.

**A-Delta Fibers:** myelinated, medium speed, acute pain.

**A-Beta Fibers:** myelinated, fastest, from skin, muscle, fascia, ligaments, touch, pressure, and movement.



## The Brain and Pain

*"We are feeling creatures who think." – Jill Bolte Taylor, PhD.*

- All sensory stimuli arrive at the limbic brain first and then travel to the cerebral cortex.
- Anticipation of pain primes the brain to feel it.
- Anger and sadness increase pain perception.
- Falling in love and being in healthy relationships decreases pain perception.
- Lonely people get sicker and have more overactive inflammatory diseases (cancer, heart disease, neurodegeneration).
- Depression follows onset of chronic pain (4X increase in depression in chronic pain sufferers)
- Opioids don't work as well in depression and anxiety sufferers.

**Catastrophizing:** maladaptive cognitive & emotional habit that leads to focusing obsessively on pain.

- Pain endless, life wrecking, horrible and unfixable.
- Accounts for differences in men and women and pain, not depression.
- Amplifies the nervous system's processing of pain.
- Increases IL-6 levels.

## Changes in Brain from Acute to Chronic

- Decrease in **neuroplasticity**. Chronic pain decreases gray matter in the prefrontal cortex & thalamus (ages 20 yrs).
- Increases in **Sensitization**. Nerve cells become more responsive to weaker signals. Self-perpetuating.
- **Allodynia**: the brain becomes so over reactive it responds to benign input with pain (feather touch feels like a blow torch).

## Neuroglia

- 100 billion neurons in the brain.
- Neuroglia outnumber neurons 10:1
- In developing brain, they guide neurons to correct place to form the 100 trillion connections with each other.

- Always believed just for support. Wrong.
- Form a **glial network** of information that sometimes bypasses neurons altogether.
- **Can contribute to chronic pain.**
- **Astrocytes, oligodendrocytes, microglia** are all neuroglia.

#### Astrocytes:

- Come from nerve cell progenitors but act like immune cells (make cytokines).
- Form barrier between blood and neurons (*blood brain barrier*) for nutrients and wastes.
- Mediate communication between neurons.
- Increase CB2 receptor numbers when activated.
- **Produce cytokines that signal chronic pain.**

#### Oligodendrocytes:

- From nerve cell progenitors
- Make myelin in CNS (*speed up nerve transmission...possibly of pain*)

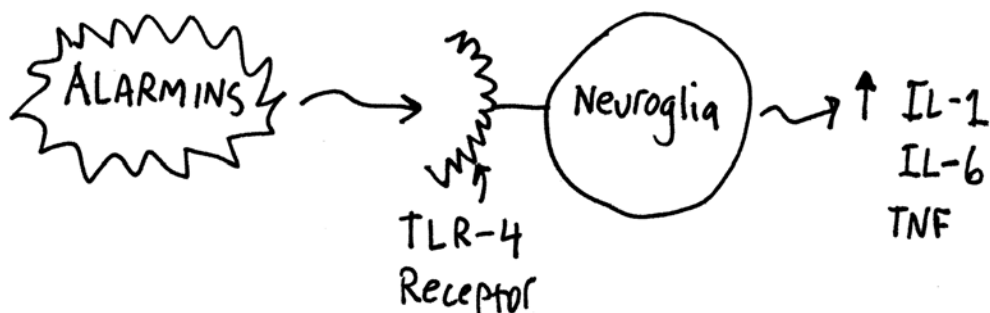
#### Microglia:

- From immune cell progenitors.
- Fight infection, repair damaged cells, crucial to brain function.
- Increase CB2 receptor numbers when activated.

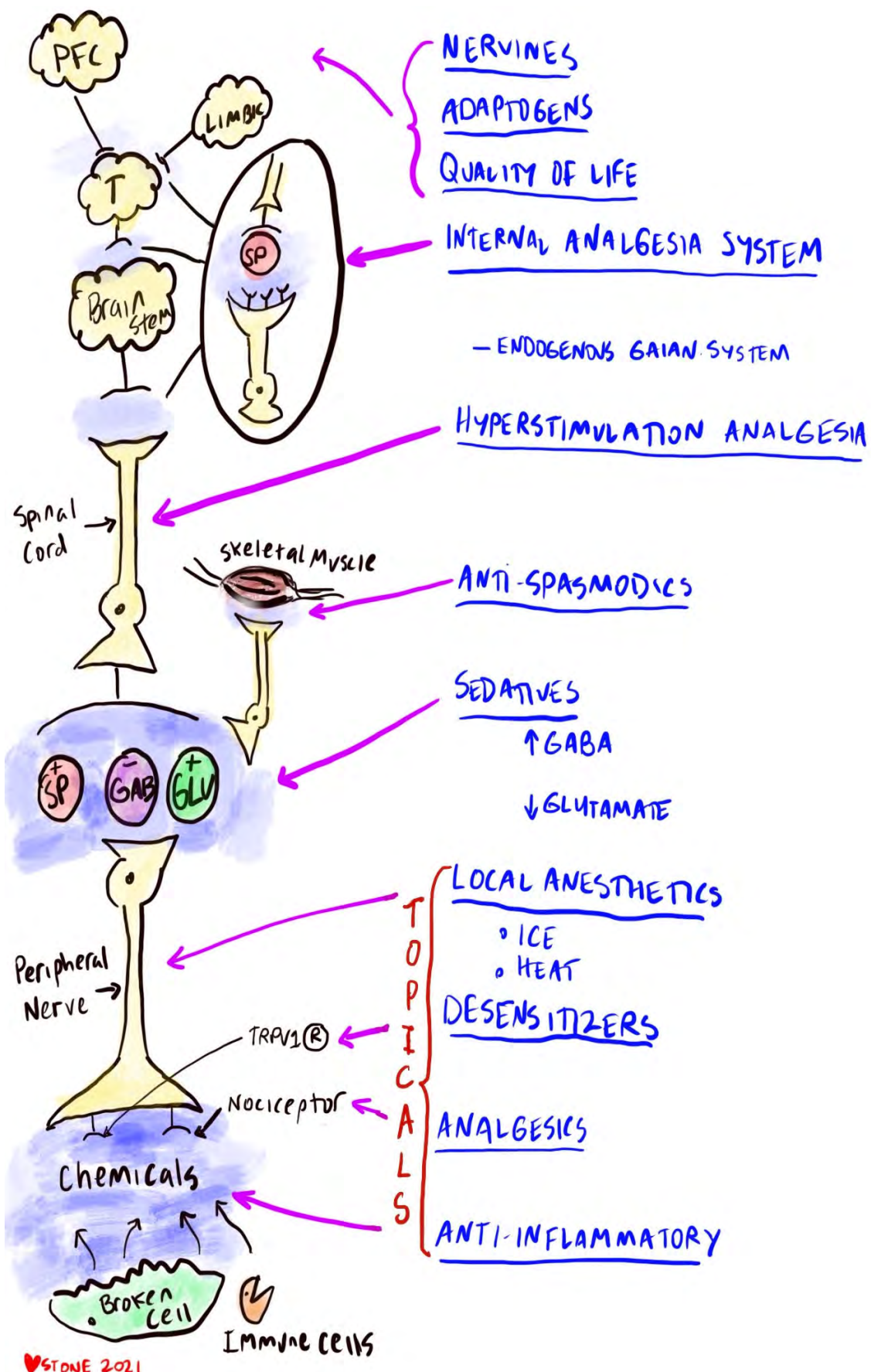
If cells of the body are activated by pain signals from neurons or physical trauma, chemotherapy, Diabetes mellitus, nerve damage, inflammation or blood leaking out of vessels, they release substances called **alarmins**. Alarmins then travel to the brain and activate glial cells. Neuroglia then release cytokine chemicals that can excite the surrounding area in the brain and travel back to the body. They are:

- **IL-1:** WBC flock to site of infection. Neuroexcitatory.
- **IL-6:** Immune stimulant, fever. Neuroexcitatory.
- **TNF:** Immune stimulant

\*Chemicals can travel to the CSF around the spinal cord and excite ascending nerves to fire faster, therefore **increasing** the incoming pain signal.



- Experiments show that blocking glial cell production of these chemicals with naltrexone decreases pain.
- Classically we know, Morphine binds the *mu receptor* on nerve cells **decreasing** pain.
- New evidence also shows that Morphine binds *TLR-4 receptor* (like Alarmins) on glial cells **increasing** pain in some cases



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## Interrupting the Pain Pathway: Mechanism of Action

### 1. @ Nociceptor

**Analgesics:** decrease pain without eliminating other sensations.

- Decrease Substance P, Prostaglandins & Histamine in the tissue.
- *Methylsalicylate* and *salicylic acid* on the epidermis.
- *Cannabis*: THC, CBD, Myrcene, Linalool, Caryophyllene

**Anti-inflammatories:** decrease pain from:

- Increased pressure of edema.
- Physical or chemical injury of nerve fiber.
- Irritation of nerve endings from toxic microbes.
- Decreases Prostaglandins and Kinins.
- *Willow, Filapendula, Cannabis* (THC, THCA, CBD, CBC, Myrcene, Pinene, Caryophyllene)

### NSAIDS

- Bleeding in stomach and small intestine
- 100,000/yr. hospitalized for G.I. bleeds
- 7,000-10,000 deaths/yr.
- *Ibuprofen, Motrin, Advil*
- All increase risk of heart disease

### Acetaminophen

- Leading cause of liver failure.
- 30,000 hospitalizations/yr due to overdose.
- Especially combined with alcohol.
- *Tylenol, Vicodin, Percoset, Darvocet, Lortab* and more.
- 325 mg/dose, daily max 3500 mg

### 2. @ Vanilloid Receptor sensitizers

- Increases firing in faster, A-Beta fibers
- Stimulates heat receptors.
- Increases Endorphins.
- **Rubefacients**- to make red, to bring blood to tissue.
- *Capsaicin*
- *Cannabis* (CBD) – capsaicin-like but non-irritating, increases endogenous cannabinoids, anti-inflammatory.
- *Cannabis* (THC, THCV, CBN, CBC, CBG)
- Endocannabinoids, OEA, PEA

### 3. @ Nerve.... Nerve Impulse Transmission

**Local Anesthetics:** reversible loss of all sensation.

- Blocks Calcium channels reversibly in small diameter fibers.
- *Lidocaine, kava, clove e.o., yarrow root*

## Ice

- Decreases nerve fiber firing.

## Heat

- Increases blood flow, which removes pain-causing chemicals.
- Increases Endorphins.
- Increases firing of A-Beta fibers.
- Closes small, C-fibers carrying pain.

## 4. @ Spinal Cord:

### A. Muscle Spasm

**Anti-spasmodics:** @level of synapse decreases neurotransmitter conduction to muscle.

- *Piper methysticum*, kava kava
- *Cannabis* (CBD, myrcene, CBG)

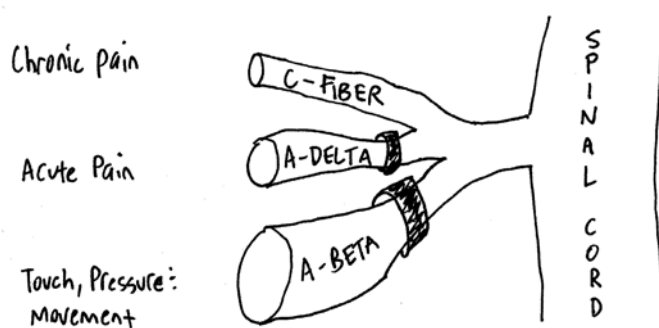
**Sedatives:** @ CNS decreases nerve excitability of spinal motor neuron.

- Anti-anxiety
- Anti-convulsants
- Act by increasing GABA (inhibitory NT)
- *Benzodiazapenes*, *Cannabis* (THC, Myrcene, CBN), *Hops*, *California Poppy*, *Jamaican Dogwood*.
- *Lavender Essential Oil* inhibits Glutamate (excitatory NT) comparative to Phenobarbital.

### B. Hyper stimulation Analgesia

**Touch:** flood system with touch information.

- Gate control theory
- Heat will close small C-fiber (pain).



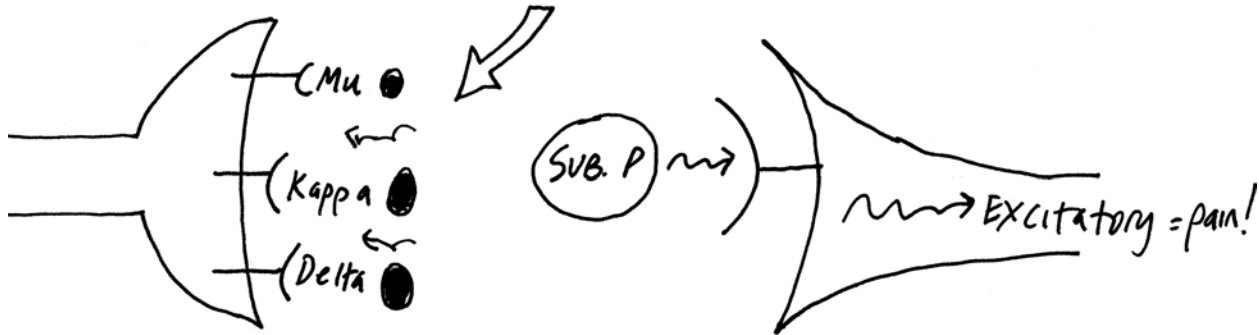
### Transcutaneous Electric Nerve Stimulation (TENS)

- Low voltage electric current stimulates large fibers.
- Gate control theory
- Increases Endorphins and Enkephalins.

## C. Central Level Transmission

**1. Internal Analgesia System:** descending sensory signals that *blocks* incoming pain before it ascends.

- Neurotransmitters that block the release of Substance P. (*Endorphins, Enkephalins, Dynorphins, Endogenous Cannabinoids, Opioids*).



### Endorphins

- Bind all three receptors
- Released by touch, enjoyment activities, and connection.

### Enkephalins

- 200X stronger than Endorphins.

### Dynorphins

- Similar to Enkephalins but lower concentrations.

### Endogenous Cannabinoids

- 2AG (*Arachedonyl-glycerol*)
- Anandamide

### Cannabinoids

- THC, CBN, Myrcene (*increases endorphins*)

### Opioids

- *Morphine*
- *Fentanyl* – 100X stronger than morphine but more side effects. Only binds *mu receptor*.
- *Codeine* (weak) converted to morphine in body (strong).
- 10% Caucasians born with defective gene for converting codeine to morphine. No pain relief and all the side effects.
- Increased *mu receptors* in PAG region in male rats (2X as many as female). Why morphine could be more effective in males.

## 2. Injections

- Nerve blocks into epidural space – mixed results
- Steroids injected into knee joints – hyaluronic acid longer lasting results.

### 3. Nerve Killing (Ablations)

- Not if pain is from neuropathy.

### 4. Surgery

- Small to moderate benefit.

## 5. @ Brain

### A. Descending Sensory Pathway (*see 5A*)

### B. Endogenous Gaian System (Gaia-cebo)

- Works in 30-60% to decrease pain, anxiety, nausea and sleeplessness.

#### For Pain

- Lowers anticipation
- Changes perception of pain
- Changes pain ratings after treatment
- Lowers heart rate

#### How it works:

- Increases Endorphins – lowers pain pathway. (Naloxone blocks)
- Increases Endogenous Cannabinoids (Rimonabant blocks)

### C. Endogenous Cannabinoids

- They function as synaptic circuit breakers: relax, eat, sleep, forget, protect, decrease pain, runners high.
- CB1 receptors found in CNS & PNS. Responsible for Gaia-cebo, decreased attachment to emotional aspect of pain and distraction.
- CB2 receptors found on Immune cells, microglia and not much in CNS. Responsible for decreasing inflammation, decreased activity of spinal cord in pain, and protecting nerves from oxidative damage.
- People deficient in Endogenous Cannabinoids more susceptible to migraines, Irritable bowel, fibromyalgia.
- CBD & NSAIDS decrease the breakdown of Endogenous Cannabinoids.
- Mice with decreased receptors for ECs have increased anxiety and depression, decreased appetite and lose weight.
- CBD potentiates THC analgesia

#### Cannabis (*THC, CBD, Terpenes and 100's more constituents*)

- Migraine treatment in ancient China, India, Rome, Greece, Egypt.
- Recommended for: nausea, vomiting, glaucoma, decreased appetite, IBD, Migraines, muscle spasticity of MS, muscle spasms, Tourette's, epilepsy, ALS and pain.
- As effective as opioids for chronic pain.
- Decreases chronic pain by 30%
- Makes opioids more effective by decreasing tolerance, so lower dose required.
- Better for chronic pain, not acute.
- THC 20X stronger than aspirin.
- THC 2X stronger than hydrocortisone.
- CBD 200x more anti-inflammatory than aspirin



## Exogenous endorphins: Opiates

- 1/3 chronic pain patients who need them don't get them.
- 12,000,000 abusers/200,000,000 prescriptions = 12%
- 16,651 deaths/yr.
- 30% opiates only = 5,000 deaths/yr
- 443,000 deaths/yr from cigarettes
- 80,000 deaths/yr from alcohol
- 7,000-10,000 deaths/yr from NSAIDS
- **Peshawar Poppy** (*Paper somniferum var. album*)

## D. Nervines

- Help with sleep.
- Substance P levels decrease with sleep.
- Depression & decreased sleep lowers **Serotonin**. Decreased Serotonin increases pain sensitivity.
- **Somatostatin** increases during sleep. Decreased Somatostatin decreases pain threshold.

## E. Adaptogens

- Adaptogens help the body respond to stress better.
- Pain induces the stress response, which causes chronic inflammatory changes at nociceptors (chronically in excited state), which leads to more pain.
- *Ashwaganda, Rhodiola, Siberian Ginseng, Tulsi, Nettles, Milky Oats....*

## 6. Overall

### Massage

- Lowers Cortisol, pain, inflammatory cytokines, Vasopressin (causes a lowering of blood pressure). Increases A-beta firing, Endorphins and blood flow.

**Acupuncture** - Increases Endorphins.

### Diet

- Anti-inflammatory diet.
- Increase omega-3's.
- Vitamin D
  - Baby: 400-1000 IU's
  - 1-18: 600-1000 IU's
  - >18: 1500-2000 IU's

### Exercise

- #1 for managing chronic pain.
- High dose @ least 20 minutes/day.
- Especially low back pain.

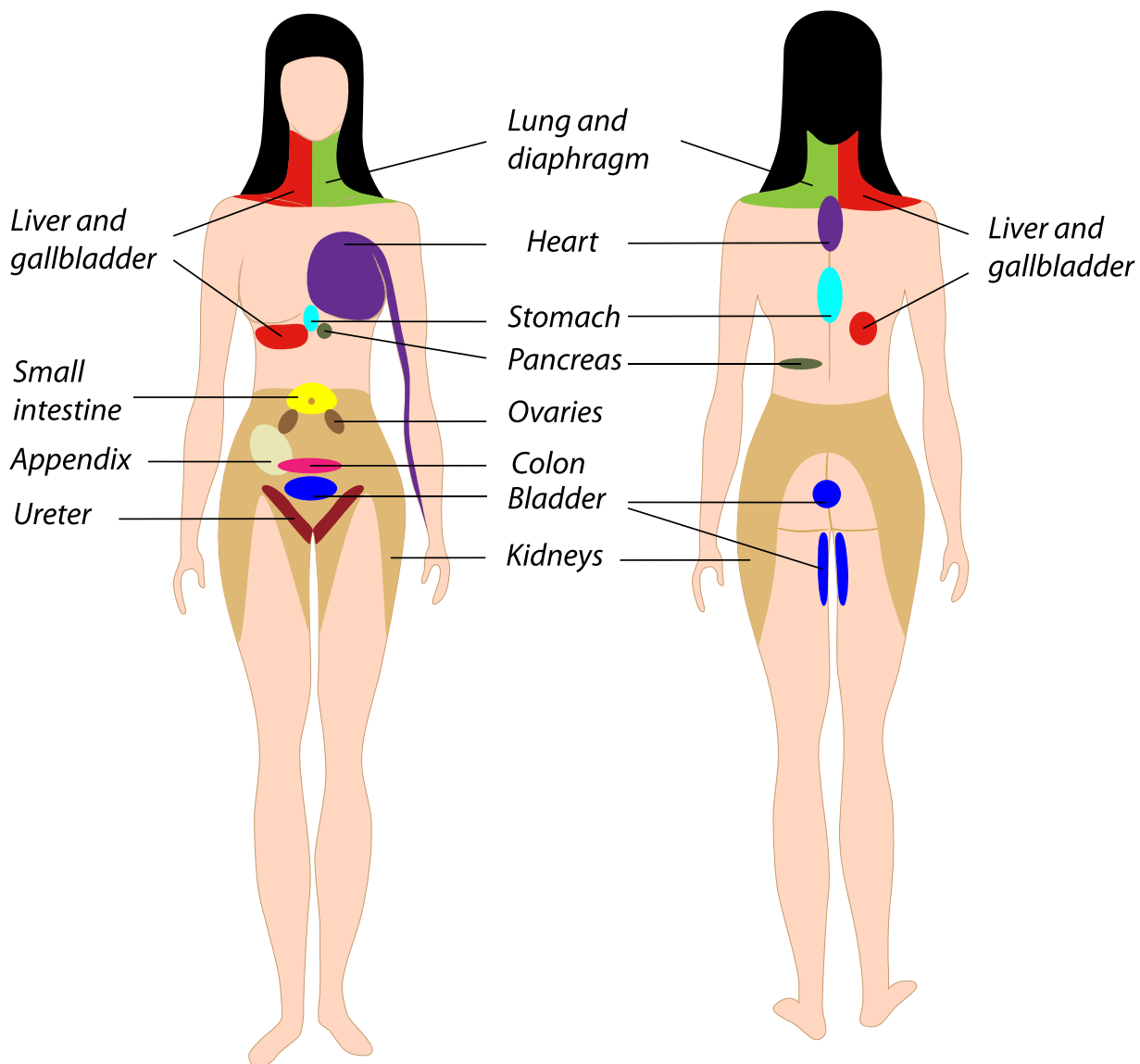
### Yoga

## **Self-Care for Chronic Pain**

1. Understand how pain works.
2. Progressive Relaxation. Relaxation Response by Herbert Benson
3. Increase adaptive responses and decrease maladaptive responses.
4. Set realistic goals.
5. Acceptance.
6. Add pleasure activities to every day.
7. Cognitive Behavioral Therapy. Feeling Good and the New Mood Therapy by David Burns.
8. Distraction
9. Biofeedback
10. Meditation
11. Hypnosis

Based on the book, A Nation in Pain by Judy Foreman.

## Referred pain chart



# A Deep Dive Into Cannabis & Pain Relief

Tammi Sweet

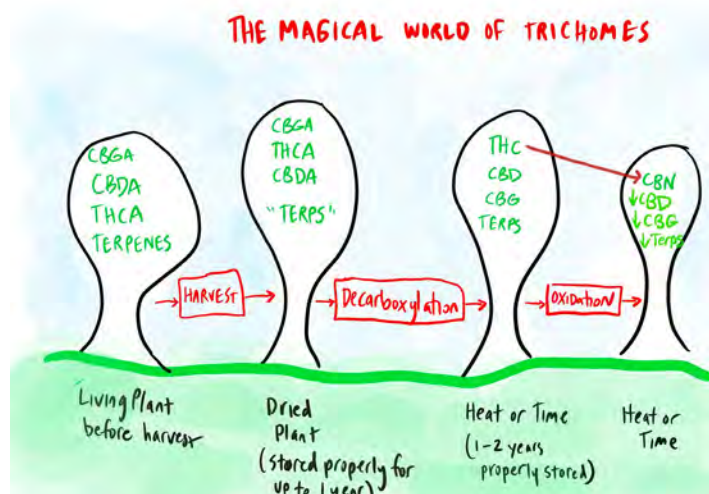
**Cannabis** *Cannabis sativa/indica (afghanica), ruderalis*

Used for fiber, food & medicine by Chinese and then onto India and beyond!

**Parts Used:** female flower, calyx, bracts & petioles...anything containing the trichomes.

## Capitate stalked trichomes

- Trap insects
- Trap air: prevents desiccation & keeps the plant warmer
- Reflects UV and infrared
- Contain cannabinoids ~ UV protectant and cause leaf necrosis
- Contain terpenes ~ insecticides, anti-fungal, anti-bacterial.
  - Secretory cells make both cannabinoids and terpenes via same precursor.



## Properties

### Chemically

500+ chemicals so far.

100 Cannabinoids: (THC, THV, CBD, CBN, CBG, CBC)

Acids: (THCA, CBDA, CBGA, CBCA, THVA)

120 Terpenes

20 Flavonoids

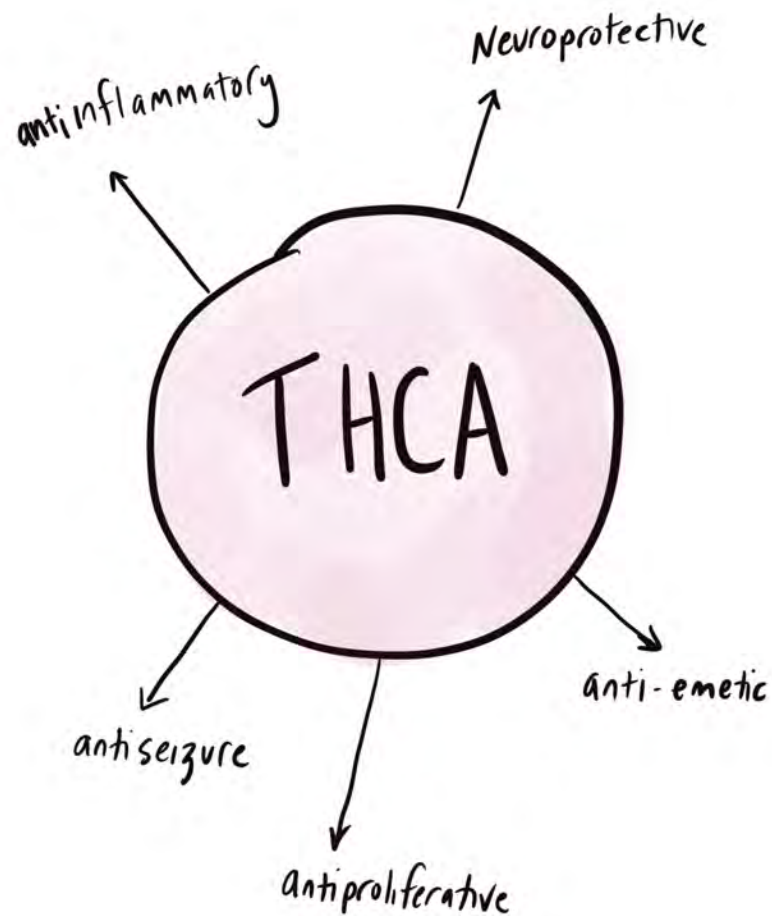
\* Pharma calls it the “entourage effect” ...we call it herbalism.

- @ Use the whole plant
- @ Studies using whole plant extracts 4-330X more effective.

@ Pharma studies using:

- Marinol (Dronabinol) ~ synthetic THC (11-OH) in sesame oil
- Sativex (plant based) ~ THC + CBD 1:1
- Nabilone (Cesamet) ~ synthetic THC capsules, more powerful than Marinol

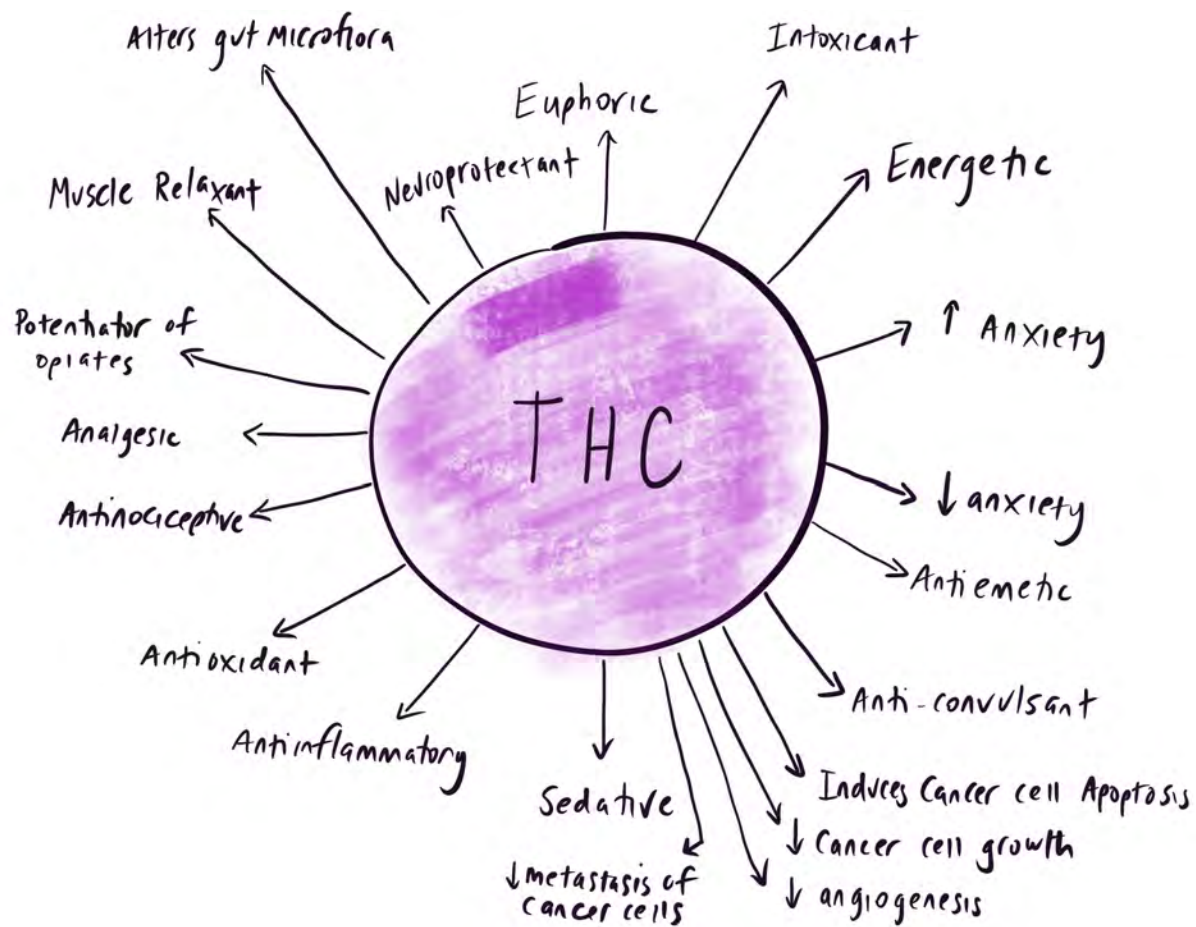
### **THCA** *Tetrahydrocannabinolic Acid*



### **THC** *Tetrahydrocannabinol*

Functions in Plant:

- Necrosis in plant cells ~ prunes leaves @ senescence for increased fertility.
- Insecticide
- Anti-fungal
- Increases with more light.

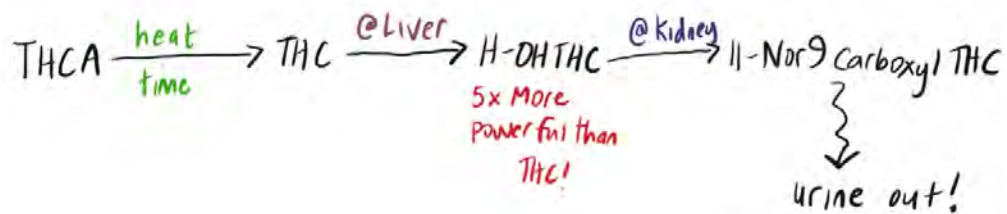


### Functions in us:

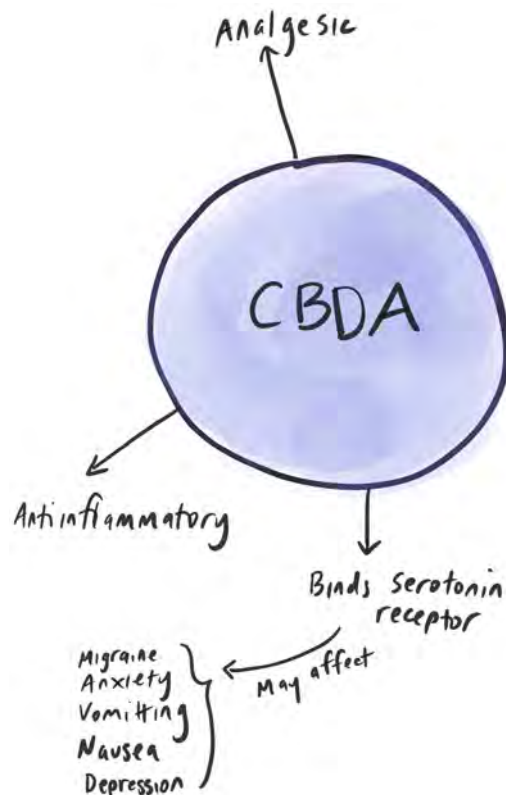
- Binds CB1 & CB2 & CB3, PPAR, TRPV receptors.
- Hydrophobic so travels in plasma bound to lipoproteins and albumin.
- Stored in adipose tissue.
- ½ life of 1-3 days in blood.
- Broken down in liver by CP450
- Boils at 314 degrees Fahrenheit
- Vaporizes at 365 degrees Fahrenheit
- More volatile than CBD
- Analgesic ~ decreases Substance P
- Helps with opiate addiction by potentiating opiate analgesia and reducing withdrawal. IL-1 antagonizes morphine and underlies tolerance; THC & CBD suppress IL-1.
- Intoxicant
- short-term memory loss
- muscle relaxant
- anti-inflammatory (20x greater than aspirin, 2x greater than hydrocortisone)
- immunomodulatory

- anti-anorectic ~ 20 % of cancer deaths due to cachexia (*energy wasting & decreased food intake*), THC helps with both.
- anti-spasmodic
- bone stimulant
- anti-convulsant
- anti-nociceptive
- sedative
- protection against cancer
  - cytotoxic
  - anti-angiogenic
  - anti-proliferative
- Potentiates chemo meds

### A little metabolic chemistry



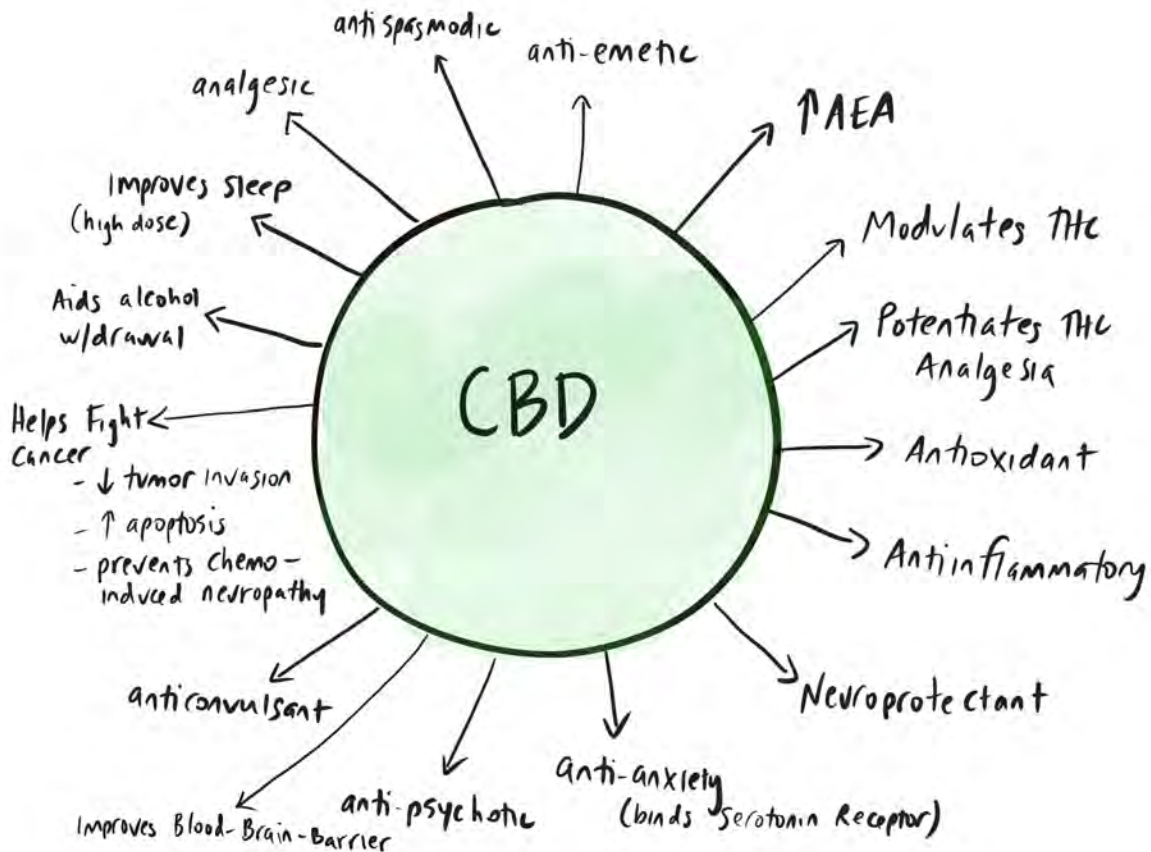
### CBDA *Cannabidiolic Acid*



## CBD Cannabidiol

Functions in plant:

- UV protectant
- Animal/insect deterrent



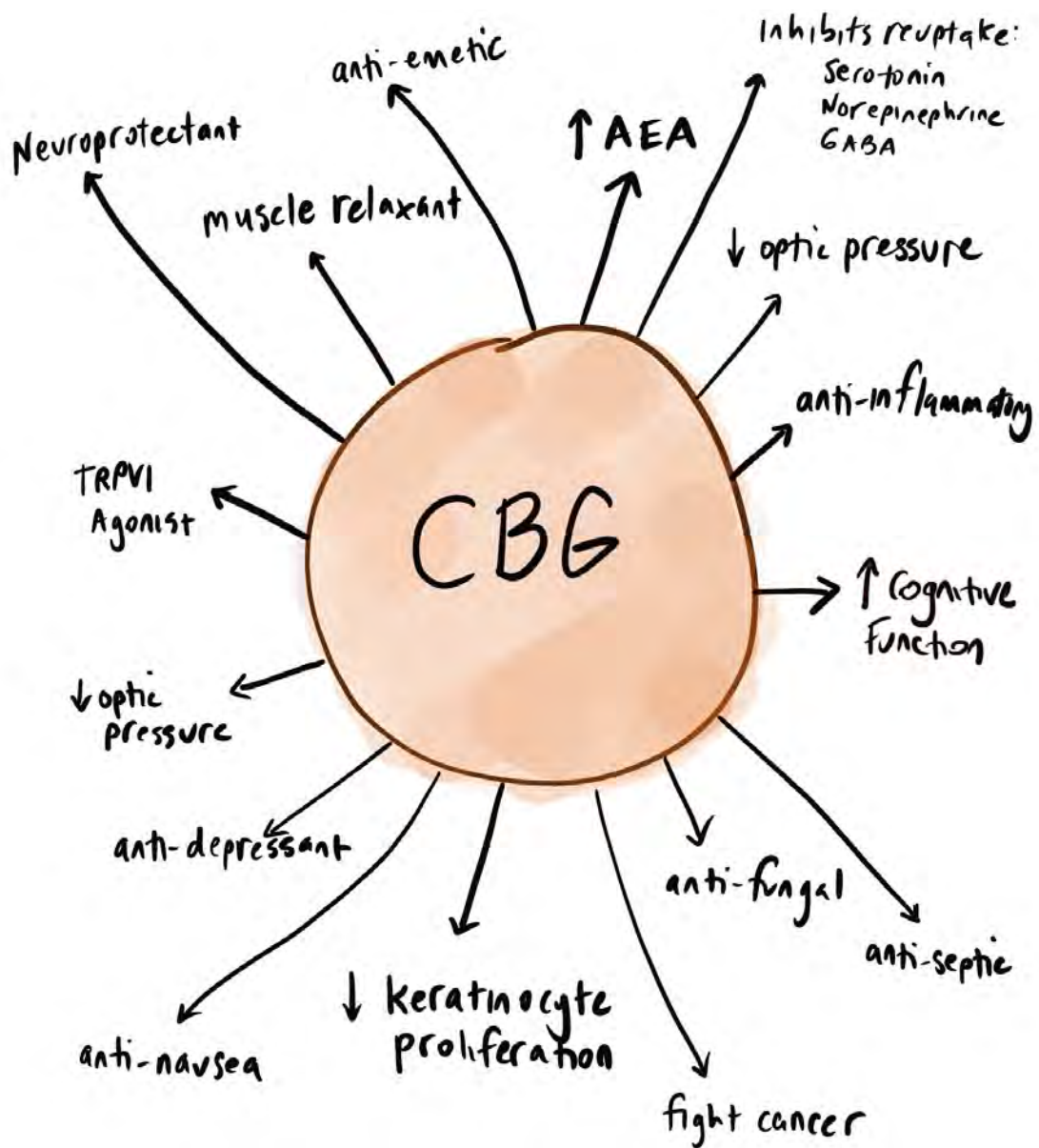
Functions in us:

- Binds TRPV, PPAR, 5HT (serotonin), Adenosine, Glycine receptors.
- Anti-anxiety
- Anti-psychotic ~ as effective as pharma with no side effects
- Anti-convulsant ~ ECS regulates seizure threshold
- Modulates ECS ~ inhibits reuptake of AEA & hydrolysis by FAAH and potentiates AEA
- Anti-emetic @ brainstem where vomit reflex is and at the GI lining
- Anti-inflammatory not at COX
- Anti-bacterial
- Immune modulator
- Anti-oxidant ~ more than tocopherol and ascorbate
- Neuroprotectant ~ prevents glutamate excitotoxicity. Reverses binge ethanol-induced toxicity. Alzheimer's, stroke.

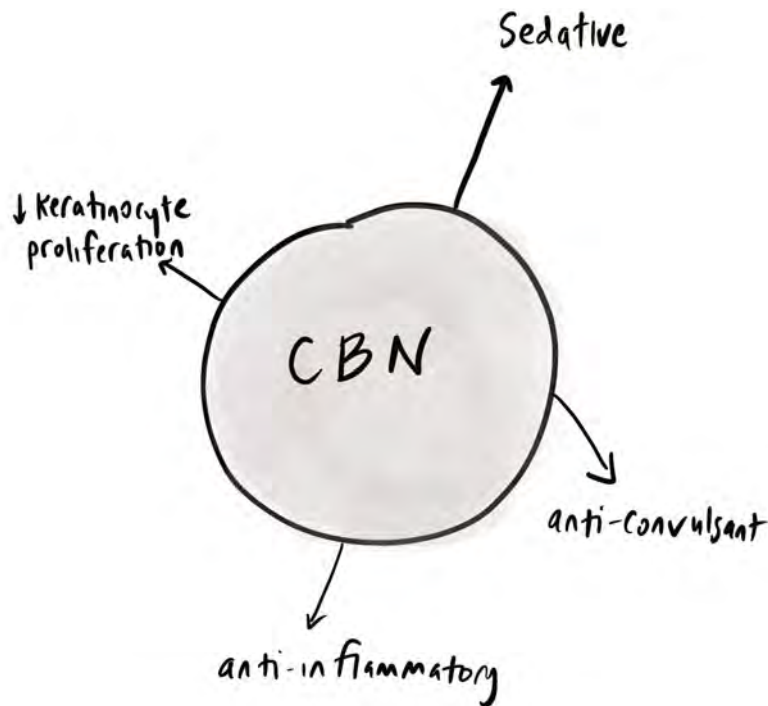


- Neurogenic ~ especially in hippocampus and hypothalamus. Alzheimer's.
- Neoplastic ~ cytotoxic & cytostatic especially in gliomas. Inhibits cell migration leading to tumor invasion. Decreases oxygen to the mitochondria of cancer cells, which decreases cell survival and leads to apoptosis.
- Possible help with migration in endometriosis
- Analgesic at the vanilloid receptor (*capsaicin receptor*), not as noxious.
- Anti-spasmodic ~ MS spasticity
- Migraine relief
- Improves sleep but not hypnotic
- Modulates THC
  - blocks 11-OH-THC
  - inhibits anxiety & tachycardia
  - by doing the above two, more pleasure
  - potentiates analgesia of THC
  - prolongs the effects of THC
- less chemo meds required.
- Helps with opiate addiction by potentiating opiate analgesia and reducing withdrawal. IL-1 antagonizes morphine and underlies tolerance; THC & CBD suppress IL-1.

**CBG** *Cannabigerol*



- AEA uptake inhibitor
- Antidepressant
- Decreases optic pressure
- Muscle relaxant
- GABA uptake inhibitor



- Oxidation metabolite of CBD & THC
- binds CB1 weakly, CB2 & TRPV
- affects immune system more than nervous system
- sedative
- anticonvulsant
- anti-inflammatory
- decreases keratinocyte proliferation

### Terpenes.... "the terps"

"Essential oils are the quintessential 5<sup>th</sup> element .... life force or spirit."

They are also made in the trichrome from the same precursor as phytocannabinoids, **Geranyl phosphate**. Their production increases with light, but decreases with soil fertility.

### In the Plant:

- Insecticide
- Bitters ~ anti-feedents
- Antibiotic
- Antifungal
- Gives the plant the characteristic resinous/stickiness
- 200 different terpenes present in cannabis (*not all in one particular strain*)
- Make up 10% of trichrome

***\*The terpene makeup is the major differentiator in plant strains.***

## In General, in us:

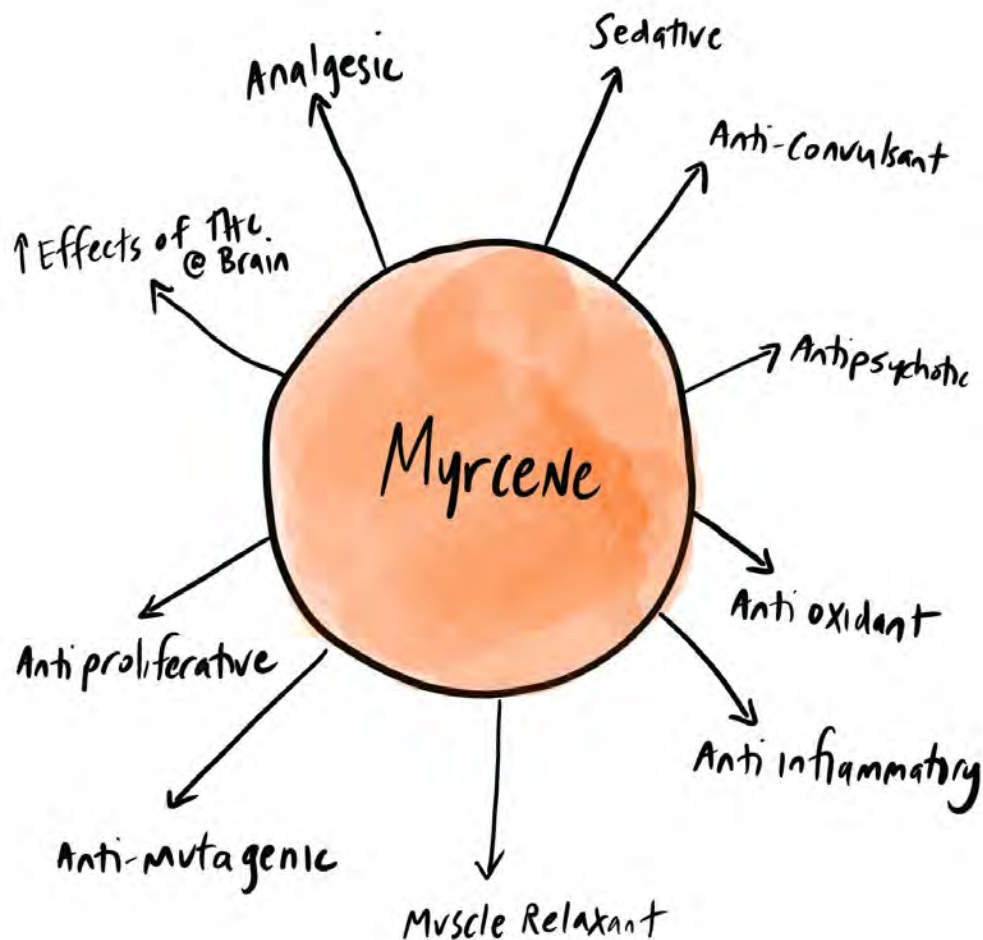
In general, terpenes in cannabis:

- Analgesia, anti-inflammatory, antidepressant
- Increase THC pharmacokinetics by increasing vasodilation at alveolar capillaries which increases THC absorption.
- Increase blood-brain-barrier permeability of THC

## I. Predominate Monoterpenes

### Beta Myrcene (*Earthy, fruity, clove-like*)

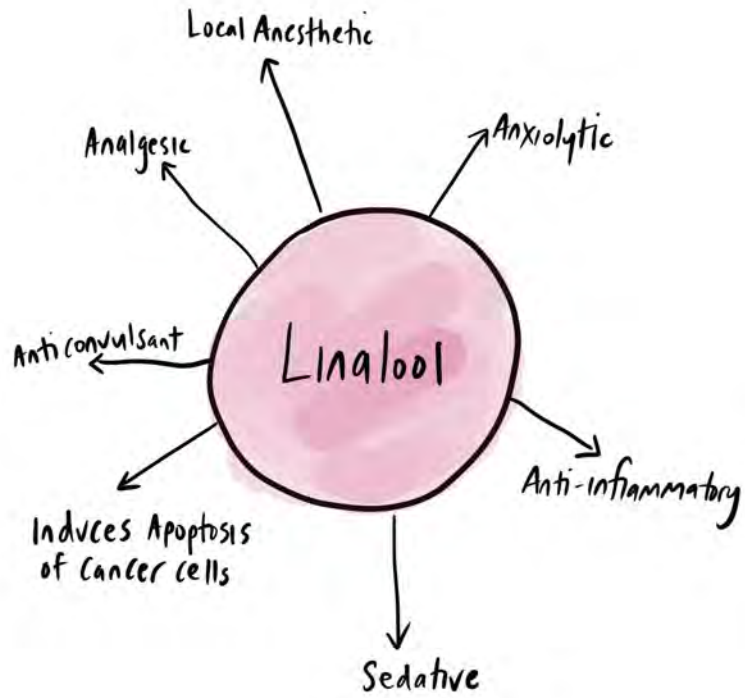
- Most abundant EO in dried cannabis
- Also in Hops, mangos and Lemongrass



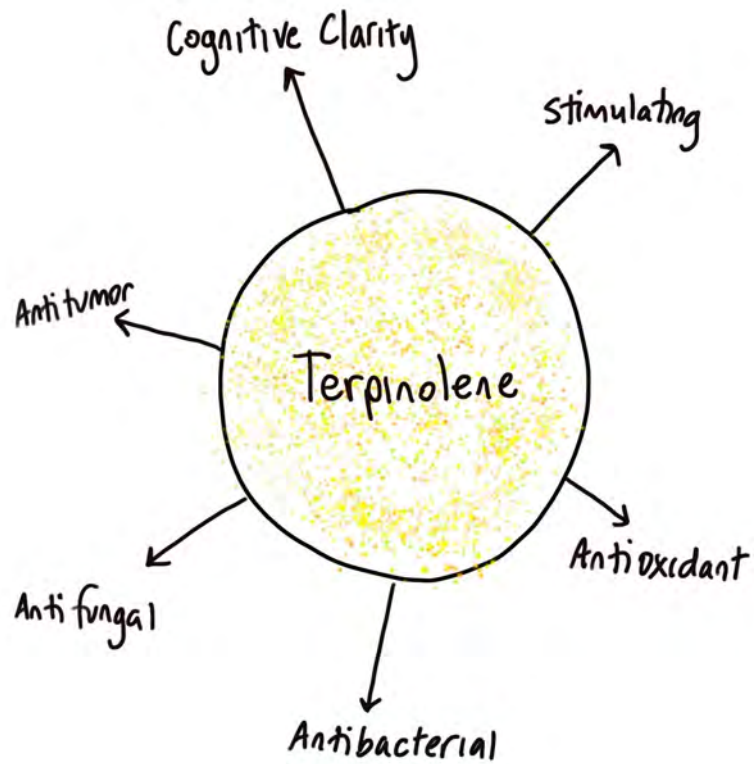
### Limonene (*Lemon*)

- 2<sup>nd</sup> most abundant terpene in cannabis

## Linalool (Floral)

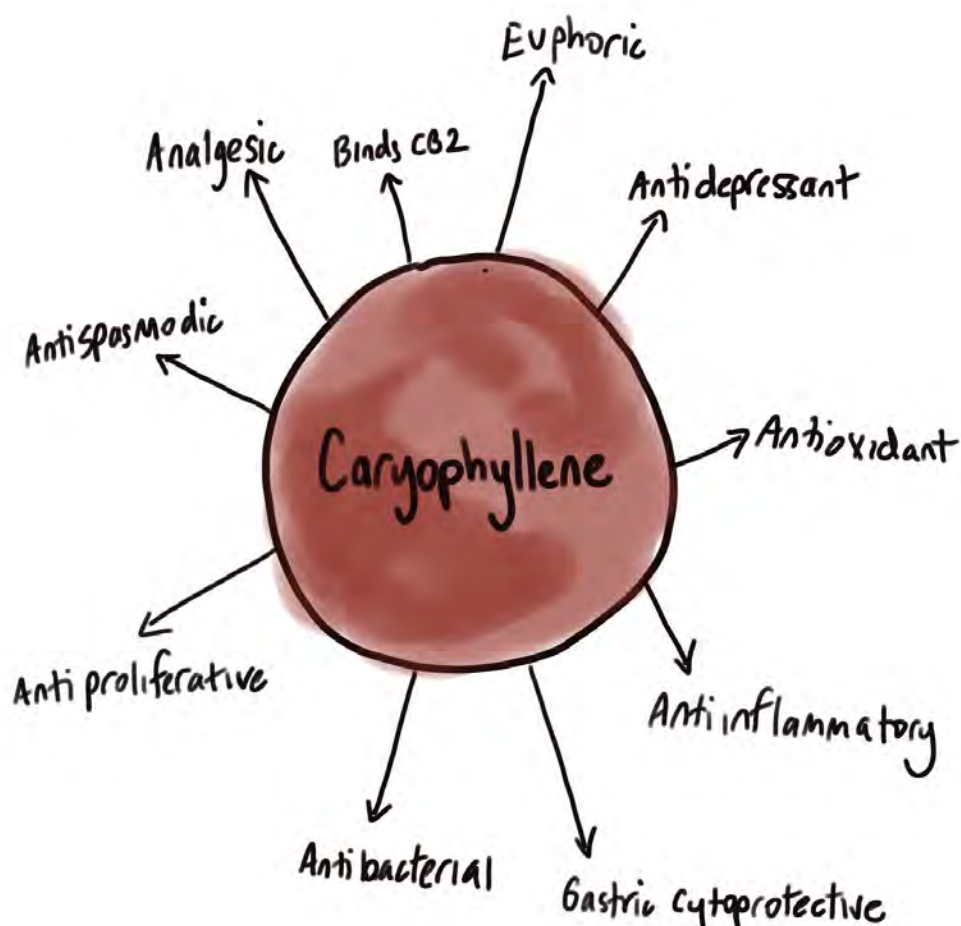


## Terpinolene



## II. Sesquiterpenes ~ Bitters/anti-feedents

## Caryophyllene (*Black pepper*)



### Contraindications:

- Addiction ~ 9% addiction rate. Will go up as more use of concentrated forms
- Anxiety ~ increased THC (*especially unopposed by CBD*) causes anxiety. Harvested too early or low levels of myrcene can also cause anxiety.
- Insomnia ~ high THC strains and/or low Myrcene strains
- Heart Issues ~ initially raises heart rate and lowers blood pressure.
- CYP450 metabolism
- Thinking outside the box 😊
- Psychosis/Schizophrenia ~ previous history, family history, other substance abuse.
- Drying constitutionally
- Depletion of vital reserves
- Unregulated pesticide/fungicide use in growing in almost ALL states.
- Cancerous solvent contamination during extraction
- Hyperemesis
- Pregnancy and lactation considerations

## **Preparation & Dosage:**

*\*Always use minimum effective dose.*

1:1 CBD:THC most situations ~ dependent on person's experience with THC

18-20:1 seizure

## **Delivery System:**

- **Inhalation:** Combustion vs. vaporizing. Minimum effective dose! No flavonoid effects. Good for breakthrough symptoms. Faster & better regulation.
- **Oral:** longer lasting, harder regulation/standardization. No terpene effects, yes to flavonoids. Better for chronic conditions & mood management.

## **Oral**

- @ 6-20% bioavailable
- @ THC levels 200-600 nm within 10 minutes in the blood
- @ 2 ½ hours after ingestion peak concentration
- @ ½ life 20-30 hours

## **Inhalation**

- @ Easier to dose
- @ Not for consistent management of conditions
- @ Best for breakthrough symptoms

## **Preparation of plant material:**

- Dried or fresh plant
- Tincture
- Hash
- Butter
- Resin Extract

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<https://www.ncbi.nlm.nih.gov/pubmed/18618522>

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*“May the tree of our life be firmly rooted in the soil of Love.  
May good deeds be the fruit on that tree,  
may words of kindness form its flowers  
and may peace be its fruits.  
Let us grow and unfold as one family united in Love.”*

— AMMA

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