REVIEW ARTICLE ON MEDICINAL PROPERTIES AMRITA OR TIPPA TEEGA

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Abstract

Medicinal plants plays crucial role in the curing of diseases. Microbial diseases are becoming more powerful than antibiotics.The natural extraction techniques of Ayurveda and homeopathy are became effective tools to cure the dreadly diseases in 21st century. Folk medicine gaining importance in the curing of diseases. Tippa teega (*Tinospora cordiflora*) is effective medicinal plant to cure various type of respiratory diseases and diabetics.The current objective of research is that review studies on *Tinospora cordiflora* isolation phytochemical,characterization and quantification of Nutrients, Antinutrients and Antioxidants molecules and various types of bioactivites studied previously and gaps observed in analyzing the studies of plant in current secanario for applications for plant tissue cuture and Medicinal,Pharmaceutical and drug industries.

KEY WORDS :Medicinal plant,Tinospora cordiflora, Medicinal, pharmaceutical, drug industry

Introduction

The medicinal and aromatic plants among economically significant plants have been essential in easing human suffering. Plants have been used as healing agents for ages, in both organised (Ayurveda, Uani) and unorganised (folk, tribal, local) forms.Both in developing and wealthy nations, there is a rising need for therapeutic herbs.One of the top topics of research worldwide is on medicinal plants. The creation of numerous medications and chemotherapy drugs from medicinal plants, as well as the traditional usage of herbal remedies in rural areas, have led to the use of these plants in industrialised countries. Amrita (willd.) Hook.F. & Thomson is one of the numerous significant medicinal herbs in the Menispermeaceae family(0)

Amrita is a significant resource for pharmacology and chemical components. In tropical low land areas, the Menispermeaceae plant family, which has roughly 70 genera and 450 species, is present. In most cases, they are bushes that twine or climb. The petite, cymose flowers, alternate, orlobed leaves, and hooked or reniform seeds are the norm. Terpenes and alkaloids are abundant in this family.Genus Tinospora A significant member of the family with roughly 15 species, Tinospora is one of its major genera. *T.cordifolia, T. malabarica, T. tomentosa, T. crispa, and T. uliginosa* are a few species that are significant in medicine.

Graphical Abstract:

TAXONOMY CLASSIFICATION

Kingdom: Plantae

Clade: Tracheophytes

Clade: Angiosperms

Clade: Eudicots

Order: Ranunculales

Family: Menispermaceae

Genus: Tinospora

Species *T cordifolia*

DESCRIPTION

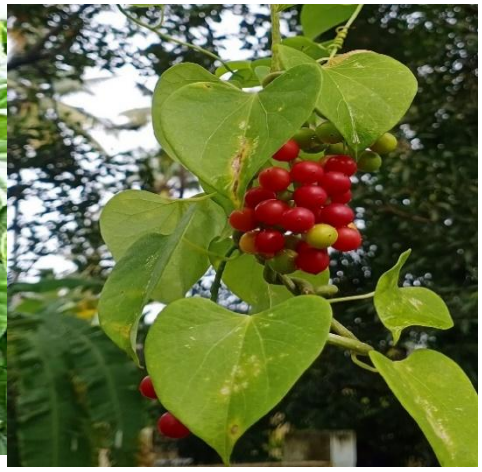
Large, glabrous, climbing, deciduous shrub *T.cordifolia*. The stem is fibrous, and the transverse slice reveals a yellowish wood with wedge-shaped bundles of wood that contain big vessels and are spaced apart by narrow medullary rays. The stem has lenticles that resemble rosette-like growths, and the bark is creamy white to grey and deeply spiralled. The leaves have a membranous structure and a cordate form. Unisexual, tiny, and yellow in colour, the flowers occur in an axillary position and are a 2–9 cm long raceme on leaflet branches. The majority of female flowers are solitary, while male blooms are grouped. The seed shapes are bent. The single seeded fruits are fleshy.

DISTRUBUTION

The plant exist in the places of tropical region of India,kartanataka,decccan,kerala,assam,westbengal,bihars.it is mostly exist in dry and dedicdicous forest.According to past scientists fruits and flowers both thrive in the winter. Biological description: T.cordifolia is a member of the family Ranunculaceae and is classified as a Magnoliopsid in the Class Magnoliopsida.Order- Ranunculaceae and belongs to the family – Menispermeaceae.(1) The species is widelydistributed in India, extending from the Himalayas down to the southern part of PeninsularIndia. It is also found in neighbouring countries like Bangladesh, Pakistan and Srilanka. Theplant is also reported from South East Asian continent such as Malaysia, Indonesia andTamilnadu etc.

AMRITA is an important herbal plant in indian avuryveda.the scientific name of amrita is *tinospora cordiflora.*

a) leaf



b)fruits

STUDY METHODS

The objective of my research is to review on the medicinal activity of plants.The review on nutritional activity of the plant,pharmological activities on the plant helps in pharmaceutical industry,drug and chemical industries.

PLANT DESCRIPTION

LEAVES: it is simple long petioles upto 15cm long with basal one and twisted. Simple, heart-shaped, exstipulate leaves with a multi-coated reticulate venation and a bottom half that is pale and an upper section that is glaucous (2). The lamina are ovate. According to past studies (3) leaves from the Giloy tree provide good calf feed.

STEM: stem is knowned with bicaollateral vascular bundles Its stems are green and succulent with bark having colour appearance of cream white to gray with rosette like lenticels. Long filliform aerial roots having tetra to pentaarch primary structure (3) arises from the long dirty greyish white branches (4). Stems extracts of Amrita seem to possess nutritional activity and immunoboostersetc (5).

FLOWERS:flowers are unisexual,greeenishy yellow on axillary and terminal racemes.petals are smaller than sepals.sepals are in two series of 3 each. According to Chaudary, Amrita is dioecious since it produces separate male and female blooms.(6)The male flowers are typically grouped and the female flowers are tiny and yellowish-green in colour. They bloom in the summer from the months of March to June (7).

FRUITS:it is agreetagate of 1-3 ovoid and smooothwith thick stalk or scarlet or organic coloured.

ROOTS:roots are aerial which are teraor pentarch primary structure,cortex of roots is divided into outer thick walled and inner parenchyma zone.

USES IN AYURVEDA AND PHARMACEUTICAL INDUSTRY USES IN COASTAL COMMUNITIES

Tinospora's nutraceutical qualities imply that it is a rich source of nutrients (macro and micro), phytochemicals, and antioxidants for general nutrition as well as having the ability to strengthen the body's immune system.Tinospora is a beneficial dietary element that can aid in nutrition, overall health, and the avoidance of many ailments, especially those affecting the elderly. Tinospora stems and leaves should be included in the diet since they are good for preserving and enhancing health. Tinospora can be viewed as an essential dietary supplement and as a potential source of natural antioxidants. Tinospora may be a valuable source of nutrition for enhancing the immune systems of both people and animals and for bodybuilding. A possible source of novel natural antioxidants for medicinal use and potential applications in the food industry is the stem of *T.cordifo*lia and act as a source of food for animals and people residing in the coastal community.

CHEMICAL CONSTITUENTS

Parts of the plants	Chemical constitutents
stem	Alkaloids: berberine, palmatine Gl ycosides: cordifoliside A, B, C, D, E, tinocordiside, furanoid diterpene glucoside, 18-norclerodane glucoside, tinocordifolioside, cordioside, palmatosides F, syringin, palmatosides C St eroids: hydroxy ecdysone, ecdysterone, makisterone A, giloinsterol Sesquiterpenoid: tinocordifolin
roots	Al kaloids: tembetarine, magnofl orine, choline, tinosporin, isocolumbin, palmatine, tetrahydropalmatine
Whole plant	uranolactone, clerodane derivatives, tinosporon, tinosporides, jateorine, columbin heptacosanol and octacosanol

NUTRIENT ASPECTS IN TINOSPORA

Tradationally the crude part of plant is helps in treatments of several diseases. All the parts of the plant leaves,stem,fruits and roots are rich sources of nutrients.the palnt rich source of macroelements and micro elments act as dietary element for humans and animal fodder.the active compounds in the plants helps in increasing the immunity,antipyretic,immunoboosters,heapatic activity. (8,9,10)

The table 2 reprsenting the nutritional aspect of tinospora cordiflora with reference(11)

Nutrient tinospora	Nutrient content
Stem core	
Dietary content	0.16g
Fat	0.14g
Proteins	0.64g
calicum	70 mg
Energy content	288.8 cal
iron	9.7mg

MEDICINAL PROPERTIES

ANTIOXIDANT ACTIVITY

Strains of Amrita with high antioxidant capability Erythrocyte membrane lipid peroxide and catalase activity after oral methanol extract. Additionally, it reduced the activities of GPx and SOD. Diabetes-induced rats via alloxan (12,13,14) Aldose reductase and antioxidants may be inhibited by Amrita Willd. (Menispermaceae) extract.(15)free radicals' ability to lessen the toxicity of chemicals.(16)Superoxide anion (O2), hydroxyl radical (OH), NO radical, and peroxynitrite anion (ONOO-), four potent free radicals, have all been linked to TCE.Also discovered to be an extract was (16).(17,18) CP's toxic side effects in mice are caused by the production of free radicals. With greater levels of GSH and total thiols, Amrita reduces malondialdehyde levels and ROS. Or Amrita's protective effects might be seen. high antioxidant levels, even in the environment of the foetus

ANTIDIABETIC ACTIVITY:

The stem of Amrita is widely used in Indian traditional folk medicine to treat diabetes by controlling blood glucose levels(19). It has been suggested that it exerts its anti-diabetic effects via reducing oxidative stress (OS), promoting insulin production, as well as by blocking gluconeogenesis and glycogenolysis and so controlling blood sugar.(19) Alkaloids, tannins, cardiac glycosides, flavonoids, saponins, and steroids were listed as Amrita's main phytoconstituents and were said to have antidiabetic properties(20). The isoquinoline alkaloid-rich stem fraction has been linked to both insulin-mimicking and insulin-liberating effects both in vitro and in vivo. Examples include palmatine, jatrorrhizine, and magnoflorine.(21) Root extracts used orally have been claimed to lower blood pressure.

IMMUNOMODULATORY ACTIVITY and HEPATOPROTECTIVE ACTIVITY

Increased levels of aspartate aminotransferase (AST), alanine Aminotransferase (ALT), ALPextras fromYouvraj R. Sohni et al.'s investigations on experimental amoebic liver abscess in golden hamsters and immunomodulatory effects are the basis for the crude extract formulation's activity. These 5 plants are included in the formulation. Boerhavia diffusa, Zingiber officinale, Berberis aristata, Amrita, and Terminalia chebula. Or Formulation exhibited cure rates of up to 73% for hepatic amebiasis with a single dosage of 800 mg/kg/day (ADI) to 1.3 and 4.2 Sham-treated controls. Hemagglutination titer investigations have shown that humoral immunity has been improved. T cell numbers were kept. Not impacted in animals treated with the formulation Leukocyte migration inhibition (LMI) testing, however, revealed that this also increased the cell-mediated immune response. (22)

ANTIRHEUMATIC ACTIVITY

Amrita have been used in single or synergistic formulations for the treatment of rheumatoid arthritis in traditional medicine(23).According to studies done in vitro, Amrita is capable of acting as an anti-osteoporotic agent by influencing the proliferation, differentiation, and mineralization of bone-like matrix on osteoblast model structures. It has been demonstrated that an alcohol extract of Amrita increases the differentiation of cells into osteoblastic lineage, the number of osteoblasts produced, and the mineralization of bone-like matrix.(24)

TOXICITY

Amrita extracts have been said to eliminate. (25)liberated radicals brought on by aflatoxinosis. Exhibited GSH, ascorbic acid, protein, and antioxidant activity enzymes like SOD, CAT, GPx, glutathione-S-transferase (GST), and glutathione reductase (GR) in the kidney all have a protective impact. Thiobarbituric acid reactivity increased substances (TBARS) and GSH are also reduced, alkaloid choline, tinosporin, isocolumbin, palmatine, and Tetrahydropalmatine Amrita shown defence against the production of aflatoxin.(25) leafy Amrita extract showed hepatoprotective properties (26) for lead nitrate-induced toxicity in male Swiss albino mice. orally administering prevents lead nitrate from appearing in plant extracts (27)provoked liverdamage. SOD, CAT, and Increased levels of aspartate aminotransferase (AST), alanine Aminotransferase (ALT), ALP

HIV

HIV, also known as the human immunodeficiency virus, is a retrovirus that severely impairs the immune system. A study involving 20 HIV patients was carried out. wherein for three months, half of them had ART treatment while the other half received ART+ Shilajatu Rasayana (a 500mg tablet). One of the key immune system cells, CD4+ cells, were seen to

undergo a considerable alteration, and symptoms including fever, nausea, and weight loss were also seen to improve(28).

ANTIALLERGIC ACTIVITY

Amrita has been explored for its anti-allergic effects. Sneezing, runny nose, and nasal congestion were reported to be significantly reduced by *T.cordifolia*. Compared to a persistent placebo, nasal itching nasal mucosa swab testing is being improved. [14]-29

ANTIMICROBIAL ACTIVITY

Effective antibacterial activity against microorganisms is demonstrated by *T.cordifolia*.(30) Secondary metabolites and phytochemicals include quinones, polyphenols, alkaloids (berberine, palmatine), flavonoids, tannins, coumarins, terpenoids, lectins, and polypeptides are contained in *T.cordifolia* stem extract.(31) where as novel titanium dodecylamino phosphate is also exhibit high antimicrobial activity (34).Microbial potency is more in pushakaram water in godavari and tippa teega extract may be effective in decreasing the microbial activity(36)

ANTIVIRAL ACTIVITY

The primary component of *T.cordifolia*, berberine, was once employed as a natural dye. This ingredient aids in the labelling of heparin in mast cells. Although berberine is used orally to treat a variety of parasite and fungus illnesses, it is parenterally somewhat hazardous. The SARS-CoV-2 virus is resistant to the antiviral properties of berberine, -sitosterol, tetrahydropalmatine, octacosanol, and coline.(32,33) Fe3O4 Nanorods- RGO- ionic Liquid Nanocomposite is also exhibits good electrochemical properties where as iron nanocomposite of tippa tegga may have chance to exhibit similar properties(35)

CONCLUSION:

Tinospora's reveals that it is a rich source of nutrients phytochemicals, and antioxidants for general nutrition as well as having the ability to impr**o**ve the body's immune system.Tinospora is a beneficial dietary element that can aid in nutrition, overall health, and the avoidance of many ailments, especially those affecting the elderly.Tinospora stems and leaves should be included in the diet since they are good for preserving and enhancing health. Tinospora can be viewed as an essential dietary supplement and as a potential source of natural antioxidants. Tinospora may be a valuable source of nutrition for enhancing the immune systems of both people and animals and for bodybuilding. A possible source of novel natural antioxidants for medicinal use and potential applications in the food industry is the stem of T.cordifolia.

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CONFLICT OF INTEREST

There is no conflict of interest with authors

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