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Some medicinally important plants with their uses from Yamuna River, Agra Uttar Pradesh (India)

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Abstract
Medicinal plants play major role in living from all over the world as Ayurveda medicine. India is the largest producer of medicinal plant, also rich in medicinal flora. This study was conducted in 2022 with the survey of medicinal plants at Agra district, UP (India). Today, in the high-tech world, the lifestyle and food style have changed tremendously. Humans are trying to return towards traditional medicines and therapy and prefer herbal medicines instead of allopathic treatment. In this paper new mirror medicinal plant has been brought into the light occurred nearby river bank of Yamuna, Agra. Previous studies on traditional medicine as scientific outputs having traditional claims of effectiveness which are helpful to manage various ailments. Many native medicinal plants listed in this article are significantly utilized by the local people. We try to document of some medicinal plants with their families, medicinal properties and bioactive compounds.

Keywords: Ethnobotanical study, medicinal plants, Yamuna, Agra

Introduction
However there is a long list of medicinally important plants occurred adjacent to river bank of Yamuna but in this paper individual certain important plants have been described with their medicinal uses. Human beings are using various parts of the plants to generate phytomedicine and could not be fully treated by conventional pharmaceutical are numerous (Redzič, 2007) [59]. For this reason, there is an increasing tendency in use of herbal preparations. Almost 80% of the world's population depends on medicinal plants with different remedies for its primary health care needs and modern cultures, civilizations and humanities (Ullah, *et al*., 2010) [81]. The local Indian peoples of the rural areas have good knowledge about the uses of medicinal plants from prehistoric period (Singh, 2010) [70] and they prefer these plants due to their easy availability and cheap therapy as compared to costly pharmaceuticals. Plants are the main basis of our daily life and wild edible plants are extensively used in medicine (Mondal, 2022) [48]. 80,000 plants are used for medicine, like as treat diabetes, skin treatment, diabetes, Stomach disease, Asthma, cough, Breast pain, jaundice etc. According to an estimate of WHO, approximately 80% people of developing countries rely essentially on traditional medicine for primary healthcare (Mondal, 2022) [48]. It means medicinal plants are the backbone of traditional or folkloric medicines. In the primary healthcare system medicinal plants are the main components for human beings that depend upon the availability, acceptability, compatibility and affordability (Hossain, *et al.*, 2014) [46]. Medicinal and aromatic plants are the vital and valuable resources of primary and secondary metabolites which are used as templates for lead optimization programs and are considered to make safe and effective herbal formulations (Nidavani *et al*., 2014) [57]. In India approximately 2000 species are used for medicinal product and vegetables. Number of studies have been reported from the world on medicinal uses of plants among various indigenous communities (Kargoglu, *et al*., 2008; Ratnam and Raju, 2008; Jamila and Mostafa, 2014) [33, 58, 31].
As reported by the World Health Organization (WHO), approximately 80% of the human population relies on traditional botanical medicines worldwide. Around 40,000 to 70,000 medicinal plant species are utilised across the world as traditional medicines (Anand, *et al*., 2022) [10]. Currently, the world trade in medicinal plants and derived products is evaluated at 100 billion US dollar with an annual growth rate of 15% Khan and Ahmad, (2018) [44].

Some studies were carried out by researchers previously, (Purkayastha. *et al*., 2005) [55] they have reported that the ethnopharmacological use of the rhizome of L. spinosa for the treatment of piles (decoction) and the use of D. thalictrifolia for the treatment of diarrhoea (decoction). The phytochemistry of both of these species is poorly known and identifying new bioactive compounds deserves further study. Similar with the research of (Dwivedi, *et al*., 2019) [22] reported that the manuscript and underlines the importance of traditional knowledge used for the treatment of different diseases in the Himalayan state Uttarakhand, India. Medicinal plants of U.K on this basis authors focused on some important highlights of native medicinal plants which need to conservation and cultivation because these plants are naturally grown in abundance and fast depleting can help the natives to earn their livelihood to some extent. For future perspectives this study, will be helpful to pharmacologist, phytochemist and researcher of this field. Also similar (Bibi *et al*., 2014) [16] provides basis for the conservation of the local flora, its use as food and medicine. It also provides various socio-economic dimensions associated with the common people. (Manzoor, *et al*., 2013) [45] reported the uses of fruits, vegetables and herbs for the treatment of diabetes by the people of Quetta city, but in all these studies no quantitative ethnobotanical work has been undertaken in this province generally and District Mastung particularly. Findings showed that (Kareti, and Rajpoot 2022) [32] to identify and record the medicinal plants used by the indigenous tribal communities living in the Amarkantak region of central India. A descriptive statistical analysis was applied to describe the data. More than 100 practitioners were interviewed in this research, and a total of 118 plant species from 63 families and 108 genera were identified. (Sharma, *et al*., 2022) [65] reported that the study areas have present rich diversity of medicinal plants species with extensive ethno medicinal properties used in curing various diseases. (Prabhu *et al*., 2022) [52] to identify plants used by tribal people in the Pachamalai hills located in Tiruchirappalli district of Tamil Nadu, India and to document the local names, medicinal uses, methods of preparation and other applications of the collected plants. Similarly (Revathi *et al*., 2013) [60] reported that the fabaceae family had the highest number of plant species from a study carried out in Tami Nadu, Western Ghats. The Fabaceae family is also known to comprise the highest number of plant species in the world.

In this regard, the present investigation was considered as the first one that focuses with an ethnobotanical study on medicinal plants in this area since the study area has never been studied ethnobotanically before. District Agra has also got importance for its topography as well, desert and forest habitats and having rich diversity of medicinal plants. The rural areas of the district still depend on these wild plants for the cure of diseases and having a good ethnobotanical knowledge about medicinal plants. But currently the ethnobotanical knowledge is disappearing very fast from the urban areas of the district because of being closer to and bounded with the capital city of province 'Quetta' having health and other facilities. Due to this, it was felt worthwhile to record the folk knowledge of medicinal plants used by the inhabitants of District Agra the aim of this study was to document medicinal uses, bioactive compound of plants.

Collection and identification of medicinal plants

The plants were collected during (2022) adjacent to the river bank covering nearly all medicinal plants in this area. The collected of medicinal plants specimens were dried and preserved processed as per routine herbarium techniques (Bibi *et al*., 2014) [16].

Socio-economic conditions of the area

Agra region is located in the western Uttar Pradesh state, northern India. The district has been blessed with diverse flora including a great number of medicinal plants. The rural areas of the district are still dependent on medicinal plants for their health care because of lack of health centres in the area. Agriculture is the major earning means of the people in the region. Nearly 50% of the population of Agra depends on agriculture. The local inhabitants collect medicinal plants from forests, deserts, mountains and plains and sell them to the local traditional herb sellers in very cheap prices. Local traditional herb sellers then supply these plants to the pharmaceutical companies in good prices. If the sustainable use of wild flora and cultivation of medicinal plants are promoted in the area, this will strongly effect on the socio economic condition of the local inhabitants.

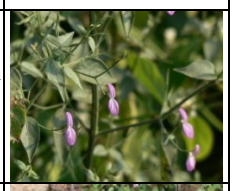
Fig 3: Map of Yamuna River along Agra city

Table 1: 1 List of medicinal plants with their bioactive compounds and medicinal values

S. No	Scientific names	Families	Common names	Bioactive components	Medicinal values	Images
1.	*Acalypha Lanceolata Hook*	Euhporbiaceae	Toothed bract Indian copperleaf	Tannins, flavonoids, phenolics, saponins, alkaloids, terpenoids, coumarins, anthocyanins (Seebaluck, *et al*., 2015) [62].	Diabetes, hypertension, liver inflammation, schistosomiasis, dysentery, respiratory problems including bronchitis, and pneumonia (Seebaluck, *et al*., 2015) [62].	
2.	*Ageratum Conyzoides Linn.*	Asteraceae	Billy goat weed	Phytochemical substances; terpenoid, sterol, flavonoid, chromene, pyrrolizidine alkaloid, coumarin, pyrrolon, and lignan. (Kotta, *et al*., 2020) [39].	Antimicrobe, arthrosis, headache, dyspnea and as antipneumonia, pain killer, anti-inflammatory agent, antiasthma, antispasmodic, haemostatic, gastrointestinal (Kotta, *et al*., 2020) [39].	
3.	*Alteranthera sessilis (L) DC*	Amaranthaceae	Sessile joyweed	Epigallocatechin, catechin, chlorogenic acid, 4-hydroxybenzoic, apigenin, vanillic acid, ferulic acid, ethyl gallate, and daidzein. (Muniandy, *et al*., 2018) [49].	Antibacterial, antioxidant, and antiallergic properties, other uses headaches, heal burns, wash eyes, and deal with snakebites. Also (Muniandy, *et al*., 2018) [49].	
4.	*Amaranthus viridis Hook f.*	Amaranthaceae	Slender amaranth	β-cyanin, β-xanthin, betalain, and other pigments, carotenoids, anthocyanin, chlorophylls, antioxidant phytochemicals, β-carotene, vitamin C, and flavonoids. (Sarker, and Oba, 2019) [61].	Antioxidant, antimicrobial, hepatoprotective, anti- nociceptive, anti-inflammatory, hypolipidemic, antihyperglycemic, anthelmintic, anti-phytopathogenic, and antidiabetic activity (Sarker, and Oba, 2019) [61].	
5.	*Ammania baccifera Linn.*	Lythraceae	Monarch redstem	Phenolic compounds flavonoids, phenolic acid, and tannins possess diverse biological activities (Loganayaki, *et al*., 2012) [43].	It possesses anti-typhoid, anti-tubercular and anti-tumor properties (Loganayaki, *et al*., 2012) [43].	
6.	*Anagallis arvesnsis Linn.*	Primulaceae	Scarlet pimpernel	Active constituents; glycosides, saponin, flavonoid, alkaloids, aempferol, oleanane triterpenoids, anagalligenin, anagalligenone, stigmasterol, arvenin I, arvenin II, cucurbitacin B, hexosamine, β-amyrin, sterols carbohydrates, lacceric acid. (Yasmeen, *et al*., 2020) [83].	Anti-mycotic, antimicrobial, molluscicidal, antioxidant, anti-inflammatory, anti-leishmania, antiviral, cytotoxic, and spermatogenesis (Yasmeen, *et al*., 2020) [83].	
7.	*Arenaria serpyllifolia Linn.*	Caryophyllaceae	Thyme-leaf sandwort	Caryophyllaceae are saponins, Phytoecdysteroids, benzenoids, phenylpropanoids, and nitrogen compounds. (Chandra, and Rawat, 2015) [21].	Used as ailments as cold, cough, fever, diarrhea, throat infection, and gastrointestinal infection etc. (Chandra, and Rawat, 2015) [21].	
8.	*Argemone Mexicana*	papaveraceae	Mexican prickly poppy	Several alkaloids, *viz*., protopine, berberine, sanguinarine, optisine, chelerythrine etc. While, the seed oil has fatty acids, *viz*., palmitic, myristic, oleic, linoleic acids, etc. (Alam, and Khan, 2020) [5].	Antimalarial, antibacterial, antiplasmodial, antiasthmatic, antiallergic, anti-HIV Properties. (Alam, and Khan, 2020) [5].	

9.	*Calotropis procera*	Asclepiadaceae	Apple of Sodom	Metabolites; flavonoids, tannins, terpenoids, saponins, alkaloids, steroids, and cardiac glycosides (Kaur, *e. al*., 2021) [34, 35].	Used as cold, fever, leprosy, asthma, rheumatism, eczema, indigestion, diarrhea, elephantiasis, skin diseases, and dysentery (Kaur, *et al.*, 2021) [34, 35].	
10.	*Cannabis*	Cannabaceae	Ganja	Flavonoids, phenolics, glucosinolates, terpenoids, and alkaloids (Braich, *et al*., 2019) [19].	Antibacterial, anti-inflammatory, analgesic, anti-anxiety, anxiolytic and sedative effects (Braich, *et al*., 2019) [19].	
11.	*Chenopodium ambrosides linn*	Chenopodiaceae	Mexican tea	α-terpinene, ascaridole, *p*-cymene,neral, geraniol, iso ascaridole and 2-carene (Brahim, *et al*., 2015) [18].	Folk medicine as analgesic, antipyretic, antioxidant and cure gastrointestinal disease, typhoid and dysentery (Brahim, *et al*., 2015) [18].	
12.	*Cleome viscosa Linn*	Capparidaceae	Asian spiderflower	Phenols, flavonoids, alkaloids and terpenoids (Lakshmanan, *et al*., 2018) [42].	The treatment of jaundice in the Indian folklore medicines (Lakshmanan, *et al*., 2018) [42].	
13.	*Commelina benghalen sis Linn*. .	Commelinaceae	Wandering jew	Polyphenols, salicylic acid, p-coumaric acid, 8- hydroxyquinoline, caffeic acid, quinolones, catechol, resorcinol, tannic acid, chlorogenic acid, flavonoids, astringents, saponins (Ghosh, *et al*., 2019) [26].	Anti-microbial, anticancer, anti-inflammatory, anti-oxidant, anti-diarrheal, anthelmintic, fertility inducing, anti-viral, anxiolytic, hepato- protective, anti-urolithiasis, analgesic, thrombolytic, sedative and larvicidal properties (Ghosh, *et al*., 2019) [26].	
14.	*Corchorus depressus (L.) Stocks*	Tiliaceae	Cham ghans	Alkaloids, anthraquinones, cardiac glycosides, tannins, and saponins (Afzal, *et al*., 2017) [2].	Traditional medicine for the ailment of aches, dysentery, enteritis, fever, and tumors (Afzal, *et al*., 2017) [2].	
15.	*Croton bonplandianum* Bail.	Euphorbiaceae	Ban tulsi	Alkaloids, Flavonoids, Glycosides, Steroids, Phenols, Tannins, Saponins (Ghosh, *et al*., 2018) [27].	Treatment of cancer, constipation, diabetes, digestive problems, dysentery, fever, hypercholesterolemia, hypertension, inflammation, and ulcers (Ghosh, *et al*., 2018) [27].	
16.	*Cyondom dactylon* (L.) Pwrs.	Poaceae	Bermuda grass	Glycerin, 9,12-Octadecadienoyl chloride, hexadecanoic acid, ethyl -d-glucopyranoside, linoleic acid, and phytol (Shendye, and Gurav, 2014) [68].	Antipyretic, analgesic, Anthelmintic, Anticataleptic, Anti-inflammatory, Anticonvulsant, Cardio-protective Antidiarrheal activity (Shendye, and Gurav, 2014) [68].	
17.	*Cyperus niveus Retz.*	Cyperaceae	Snowwhite sedge	Flavonoids,phenols, alkaloids,tannins, saponins and glycosides (Aleem, and Janbaz, 2018) [6].	Used as an anti-diarrheal, antiemetic, anti-cancer and also decrease inflammation (Aleem, and Janbaz, 2018) [6].	

18.	*Cyperus rotundus* Linn.	Cyperaceae	Coco grass	Alkaloids, flavonoids, tannins, starch, glycosides, furochromones, monoterpenes, sesquiterpenes, sitosterol, fatty oil containing a neutral waxy substance, glycerol, linolenic, myristic and stearic acids (Sivapalan, 2013) [73].	Considered astringent, diaphoretic, diuretic, analgesic, antispasmodic, aromatic, carminative, antitussive, emmenagogue, litholytic, sedative, stimulant, stomachic, vermifuge, tonic and antibacterial (Sivapalan, 2013) [73].	
19.	*Dactyloctenium aegyptium* Linn. (Beau)	Poaceae	Egyptian crowfoot grass	Amino acids, terpenoids, alkaloids, saponins, tannins, flavonoids, steroids, and phenols (Ahmed, *et al*., 2020) [3].	Antioxidant, anti-inflammatory, anticancer, anti-diabetic and antipyretic properties (Ahmed, *et al*., 2020) [3].	
20.	*Dichanthium annulatum Stapf*	Poaceae	Marvel grass	Tricin 4`-O-(threo-βguaiacylglyceryl) ether (Salcolin A) and tricin 4`-O-(erythro-β-guaiacylglyceryl) ether (Salcolin B) and an epimer of tricin 4`-O-[threo-β-guaiacyl-(7``-O-methyl-9``-O-acetyl)-glyceryl] ether and tricin 4`-O-[erythro-βguaiacyl-(7``-O-methyl-9``-O-acetyl)-glyceryl] ether, one flavone; tricin, two flavone glycosides; tricin 7-O-β-D-glucopyranoside and tricin 7-O-neohesperidoside, one flavone C-glucoside; isoorientin, one phenolic acid; p-coumaric acid , one lignan; 4-ketopinoresinol and two sterols; stigmasterol and β-sitosterol-3-O-β-D-glucoside (Awad, *et al*., 2015) [12].	It has antiviral, antimicrobial and cytotoxic activities (Awad, *et al*., 2015) [12].	
21.	*Eclipta alba Hassk.*	Asteraceae	Trailing Eclipta plant	Coumestan terpenoids and their glycosides, Sterol, Alkaloids Flavonoids, Sesquiterpene lactones, terthienyl agelate, (Jahan, *et al*., 2014) [30].	Used for treatment of urinary problems, jaundice, asthma, and coughs (Jahan, *et al*., 2014) [30].	
22.	*Gnaphalium indicum Linn.*	Asteraceae	Cudweeds	Flavonoids, sesquiterpenes, diterpenes, triterpenes, phytosterols, anthraquinones, caffeoylquinic acid derivatives, and other compounds (Sharmila, *et al*., 2014) [67].	Used as jaundice, ulcer, fever and antiseptic (Sharmila, *et al*., 2014) [67].	
23.	*Gnaphalium leutoalbum Linn.*	Asteraceae	Jersey cudweeds	Alkaloids, carbohydrates, phenols, flavonoids, saponins, tannins, glucoside resins, phytosterins, terpenoids and fixed oils (Khan, *et al.*, 2009) [36].	Gnaphalium luteoalbum possessed antibacterial, antifungal, antioxidant anti-inflammatory and cytotoxic effects (Khan, *et al.*, 2009) [36].	
24.	*Grangea maderaspatana Linn.*	Asteraceae	Madras carpet	Mixture of monoterpenes and sesquiterpenes hydrocarbons represented by myrecene, α-humulene, and germacrene D. (Hoi, *et al*., 2021) [29].	Anti-inflammatory and antiarthritic activities, Estrogenicity, anti-fertility, antioxidant, antimicrobial, hepatoprotective and diuretic activities (Hoi, *et al*., 2021) [29].	
25.	*Heliotropium aichwaldi Dc.*	Boraginaceae	Heliotropes	Pyrrolizidine alkaloids, flavonoids, and terpenoids (Fayed, 2021) [25].	Antimicrobial, antiviral, antitumor, anti-inflammatory, cytotoxicity, phytotoxicity, and biochemically active constituents of various species of the *Heliotropium* genus (Fayed, 2021) [25].	
26.	*Heliotropium supinum Linn.*	Boraginaceae	Dwarf heliotrope	Pyrrolizidine alkaloids, flavonoids, and terpenoids (Fayed, 2021) [25].	Inflammation, skin disorders, menstrual dysfunction, rheumatism, and noxious bites (Fayed, 2021) [25].	

27.	*Leucas aspera Willd.n*	Asteraceae	Thumbai	Triterpenoids, oleanolic acid, α-sitosterol and β-sitosterol, nicotine, ursolic acid, glucoside, novel phenolic compounds (4-(24-hydroxy-1-oxo-5-n-propyltetracosanyl)-phenol) and diterpenes (Kurian, *et al*., 2021) [41].	Anti-inflammatory, analgesic, antipyretic, antioxidant, antibacterial and fungicidal properties (Kurian, *et al*., 2021) [41].	
28.	*Maerua arenaria Hook. F.& Thoms*	Capparaceae	Desert caper	Phytochemical: phytosterols, alkaloids, saponins, glycosides, carbohydrates and aminoacids (Thirupathi, *et al.*, 2019) [78]	Used for bleeding piles, as alternative in fevers; as a tonic in muscular debility (Khare, 2007) [37].	
29.	*Melothria maderaspstsns (L.) Cogn.*	Cucurbitaceae	Madras pea pumpkin	Caffeic, vanillic, ferulic, p-coumaric, coumarin, and gallic acid (Kumar, and Sivasudha, 2012) [56].	Antibacterial, antioxidant, larvicidal, antiulcerogenic, antidiabetic, hypolipidemic, antihypertensive, immunomodulatory and antihepatotoxic (Paramasivam, *et al*., 2017) [50].	
30.	*Mollugo nudicaulis Lamk.*	Molluginaceae	Naked-stem carpetweed	Alkaloid, steroids, flavonoids and reducing sugar (Kumar, and Sivasudha, 2012) [56].	Used to treat whooping cough and jaundice (Kumar and Sivasudha, 2012) [56].	
31.	*Nicotiana plumbaginifolia Viv.*	Solanaceae	Curl-leaved tobacco	Flavonoids, alkaloids, terpenoids, steroids, saponins, etc. (Kumari, *et al.*, 2017) [40].	Treatment of cuts, wounds, toothache, and rheumatic swelling (Shajib, *et al*., 2018) [64].	
32.	*Nothosaerva brachiate* Linn. Wight	Amaranthaceae	Minute amaranth	Active compounds; alkaloids, saponins, terpenoids, and various phenolic compounds (Pieczykolan, *et al.*, 2021) [51]	Treatment of urinary calculi (Sutar, *et al*., 2021) [76].	
33.	*Pergularia daemia* (Forsk.) Blatt & Mc C	Asclepiadaceae	Trellis vine	various pharmacological activities like hepatoprotective, antifertility, anti -diabetic, nalgesic, antipyretic and anti-inflammatory Phytochemically cardenolides, alkaloid and saponins (Chandak, *et al*., 2019) [20].	Anti-inflammation, analgesic, antipyretic, antioxidant, anticancer, antidiabetic, hepatoprotective, antibacterial, antifungal and central nervous system depressant activity (Chandak , *et al*., 2019) [20].	
34.	*Peristrophe bicalyculata* (Ritz.) Nees	Acanthaceae	Panicled foldwing	Gallic acid, dipeptides, diterpenoids and flavones (Abdulazeez, *et al*., 2022) [1].	Anticancer therapies for a variety of human cancers, including cervical cancer (Abdulazeez, *et al*., 2022) [1].	
35.	*Phyla nodiflora* (L.) Greene	Verbenaceae	Frog fruit	Anodyne, antibacterial, diuretic, parasiticide, refrigerant, febrifuge and cooling. P. nodiflora has plenty of bioactive compounds (Suky, *et al.*, 2019) [73]	Treat urinary disorder, lithiasis, knee joint pain, diuresis and swelling (Sharma, *et al*., 2020) [66].	

36.	*Pluchea lanceolata Cl.*	Asteraceae	Rasna	Anti-inflammatory activity, antigonadotrophic, immune osuppressive, analgesic, anti-neoplastic, anti-malarial and antioxidant (Singh, *et al*., 2021) [72].	Anti-inflammatory, antiarthritic, and analgesic properties and is extensively employed in treating rheumatoid arthritis, cough, neurological diseases, edema, sciatica, psoriasis, bronchitis, dyspepsia, and piles (Singh, *et al*., 2021) [72].	
37.	*Ploygonum plebium R. Br.*	Polygonaceae	Small knotweed	Anti-inflammatory, essential oils, alkaloids tannins, and flavonoids (Ahsan, *et al*., *2021*) [4].	Liver disease, inflammation, dysentery, eczema and ringworms (Ahsan, *et al*., *2021*) [4].	
38.	*Ploypogon monspleniensis Desf.*	Poaceae	Annual beard grass	Anti-inflammatory, 'Withanolides, antibiotics and antitumor and anxiolytic antidepressant activities (Fatima, *et al*., 2019) [24].	Used to treat hypertension, anti-inflammatory, anthelmintic,\ diuretic and antioxidant (Fatima, *et al*., 2019) [24].	
39.	*Potentilla supine Linn.*	Rosaceae	Spreading cinquefoil	Flavonoids, tannins, triterpenes and phenolic compounds (Augustynowicz, *et al*., 2021) [11].	Anti-anthelmintic effects on the cardiovascular system (Augustynowicz, *et al*., 2021) [11].	
40.	*Pulicaria crispa She. Bip*	Asteraceae	False fleabane	Monoterpenes, sesquiterpene acetylenes, flavonoids, isocomene, alkaloids, glycosides, comarins, and tannins (Mohamed, *et al*., 2020) [47]	Conventional medicine for the cure of heart diseases, inflammation, antimicrobial agent, as an insect repellent, for the treatment of colds, coughs, colic, excessive sweating, and as carminative (Mohamed, *et al*., 2020) [47]	
41.	*Ranunculus scleratus Linn.*	Ranunculaceae	Celery leaved buttercup	Therapeutic effect on cholestasis, higher efficiency and anti-inflammatory cytokines (Zhang, *et al*., 2020) [84]	Treat a variety of cholestasis related liver diseases including primary biliary cirrhosis, primary sclerosing cholangitis, intrahepatic cholestasis of pregnancy, drug induced liver injury, and cystic fibrosis (Zhang, *et al*., 2020) [84].	
42.	*Rumex dentatus L. (Roth)*	Polygonaceae	Toothed dock and Aegean dock	Flavonoids and anthraquinones as major chemical constituents of this genus (Batool, *et al*., 2017) [14]	It has anticancer properties (Batool, *et al*., 2017) [14]	
43.	*Solanum surattense Burm. F*	Solanaceae	Wild eggplant yellow berried nightshade	Alkaloids, flavonoids, phenols, and steroids (Tekuri, *et al*., 2019) [77].	Antimicrobial, anihelmenthic, antihyperglycemic, hypolipidemic, cardiovascular protective effect, antiulcer, wound healing, uriolithiatic, and antifertiltiy (Tekuri, *et al*., 2019) [77].	
44.	*Sonchus arvensis Linn*	Asteraceae	Sow thistle	Flavonoids, coumarin, taraxasterol, phenolic acids, ascorbic acid, and terpenoids are detected in this plant (Wahyuni, *et al*., 2021) [82].	Antioxidant, uric acid-lowering, anti-inflammatory, immuno modulatory and antibacterial activity. In addition, callus has antimalarial activity (Wahyuni, *et al*., 2021) [82].	

45.	*Sueda maritime Linn. Dumort*	Chenopodiaceae	Herbaceous seepweed	Tetradecanyl dihydro caffeate, n-nonanyl-n-octadec-9-enoate and n-hexadecanyl dihydrocaffeate. (Bilal, and Hossain, 2019) [17].	Antimicrobial activity, antiviral, hepatoprotective and antioxidant activity (Bilal, and Hossain, 2019) [17].	
46.	*Tamarix dioca Roxb.*	Tamaricaceae	Red tamarix	Phenolic acids, flavonoids, and tannins constitute the main phytochemicals of these plants. (Bahramsoltani, *et al*., 2020) [13].	It is used for gastrointestinal disorders, wounds, diabetes, and dental problems (Bahramsoltani, *et al*., 2020) [13].	
47.	*Tribulus terrestris Linn.*	Zygophyllaceae	Land-caltrops	Chemical constituents, such as flavonoids, flavonol glycosides, steroidal saponins, and alkaloids. (Tkachenko, *et al*., 2020) [79].	Used as a diuretic, aphrodisiac, antiurolithic, immunomodulatory, antihypertensive, antihyperlipidemic, antidiabetic, hepatoprotective, anticancer, anthelmintic, antibacterial, analgesic, and anti-inflammatory (Tkachenko, *et al*., 2020) [79].	
48.	*Tridax procumbens Linn.*	Asteraceae	Tridax daisy	Bioactive compounds glycosides, nitrogenous organic compounds, fat-soluble compounds, polyphenolic compounds, and minerals. (Beck, *et al*., 2018) [15].	Treat anemia, inflammation, and hepatopathies also an antibacterial, antifungal, and antiviral treatment as well as for vaginitis, stomach pain, diarrhea, mucosal inflammations, respiratory infections, high blood pressure, and diabetes, (Beck, *et al*., 2018) [15].	
49.	*Verbascum Thapsus Linn.*	Scrophulariaceae	Great mullein	Saponins, monoterpene glycosides, iridoids, phenylethanoid glycosides, neolignan glycosides, flavonoids, steroids, spermine alkaloids, phenolic acids, and fatty acids (Prakash, *et al., 2016*) [54].	Used to treat various respiratory problems such as bronchitis, dry coughs, whooping cough, tuberculosis, asthma and hoarseness (Prakash, *et al*., 2016) [54].	
50.	*Withania somnifera (L.) Dunal*	Solanaceae	Winter cherry	14 such elements are considered to influence the state of health and diseases of animals, plants and human beings. These elements are Fe, Cu, Co, Ni, Zn, Mg, Mn, Mo, Cr, V, Li, Se, F and I (Shirin, *et al*., 2016) [69].	Useful in vitiated conditions of vata, leucoderma, constipation, insomnia, tissue building and nervous breakdown (Shirin, *et al*., 2016) [69].	
51.	*Xanthium Strumarium Linn.*	Asteraceae	Rough cocklebur	*X. strumarium* contain Phenylpropanoids, lignanoids and coumarins, Sesquiterpenoids and Triterpenoids, Steroids, Glycosides, Flavonoids, Thiazides (Fan, *et al*., 2019) [23].	Ttreatment of nasal diseases itching diseases, and painful diseases (Fan, *et al*., 2019) [23].	

Result and Discussion

The information of medicinal plants was collected through personal observations by the experts. In total no. of 51 plant species belonging to 34 families were reported for the uses of medicinal purposes. Asteraceae was found to be dominant family in terms of species in the river bank area with 14 species, other families were also found in this area poaceae 5, Chenopodiaceae 3, Euphorbiaceae 3, Polygonaceae 3, Cyperaceae 3, Solanaceae 3, Euphorbiaceae 1, Papilionaceae 1, Amaranthaceae 2, Lythraceae 1, Primulaceae 1, Caryophyllaceae 1, papaveraceae 1, Elatinaceae 1, Asclepiadaceae 2, Cannabaceae 1, Vitaceae 1, Capparidaceae 1, Commelinaceae 1, Tiliaceae 1, Boraginaceae 2, Capparaceae 1, Scrophulariaceae 2, Cucurbitaceae 1, Convolvulaceae 1, Molluginaceae 1, Acanthaceae 1, Verbenaceae 1, Rosaceae 1, Ranunculaceae 1, Tamaricaceae 1, Araceae 1 and Zygophyllaceae1 were showed in fig: 1.

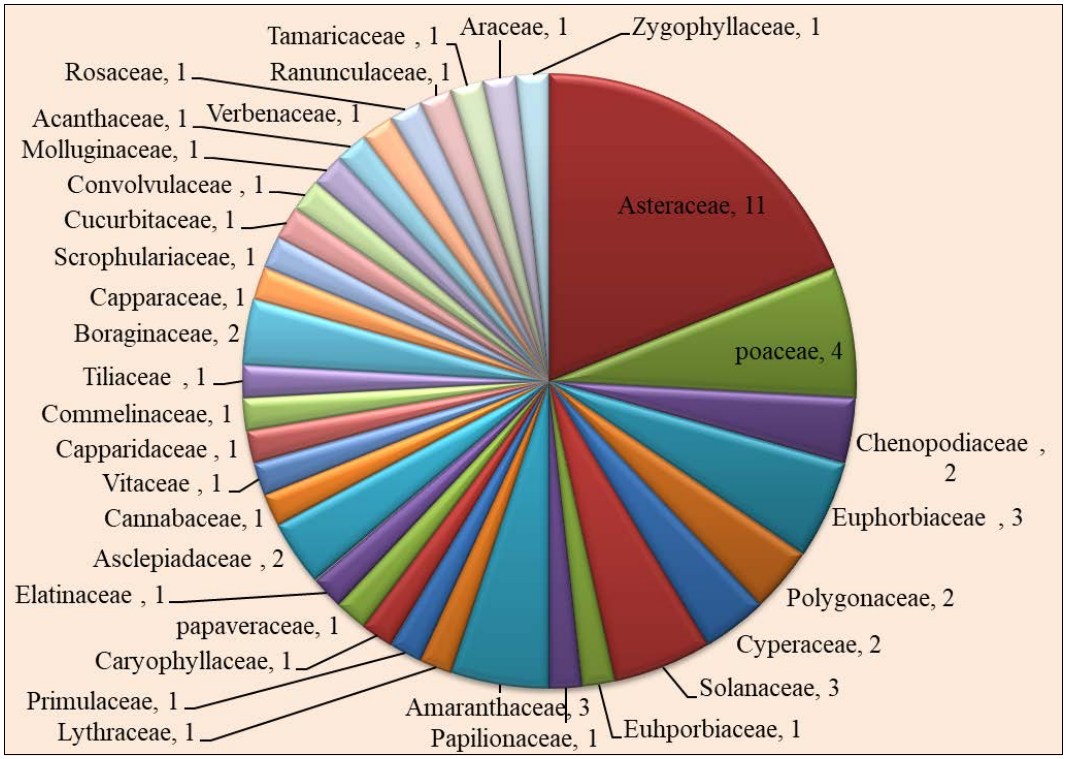


Fig 1: The total number of medicinal plant species was found in this Agra region

In this study a total of 52 plant species of medicinal plants and 34 families were collected from near Yamuna river. The most frequently utilized plant parts for the preparation of remedies were leaves (17%), followed by fruit (9%), seed (11%), root (2%) stem (1%), bark (4%), flower (2%) bulb (2%) and whole plant (7%). Familial groups global are using the leaves for the preparation of herbal medicine (Amri and Kisangau, 2012; Ullah *et al.*, 2013; Morvin *et al.*, 2015) [9, 80] because they are very easy to collect when compared to other plant parts (Giday *et al.*, 2009) [28] The scientific purpose is that the photosynthetic reaction and secondary metabolite production tends to be higher in leaves than other parts of the medicinal plant (Prabhu *et al.*, 2021) [52] showed in fig: 1

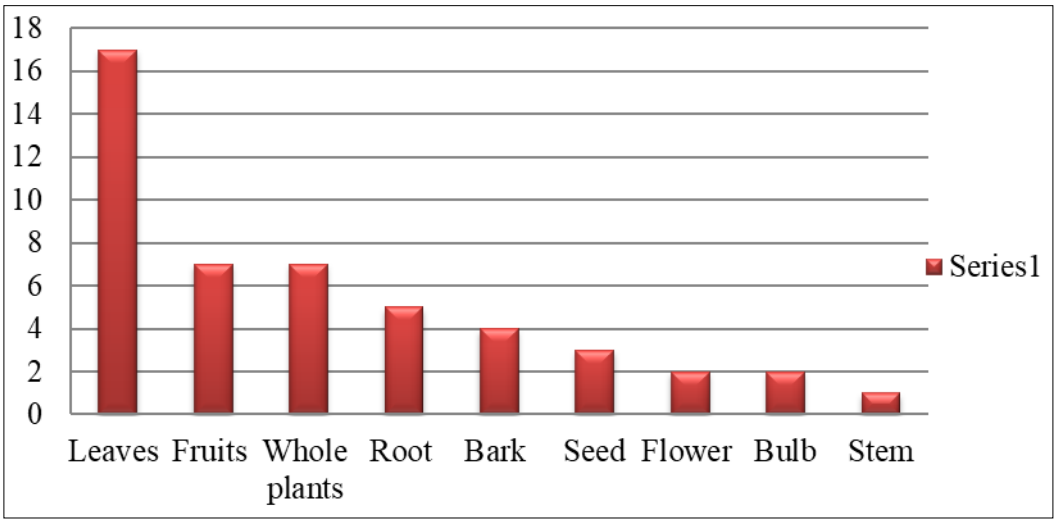


Fig 2: The total plant parts used in treatment of different disease **(**Singh *et al*., 2022)[71]

Conclusion

Medicinal plants are the natural strength care to the people. Their major therapy of diseases is based upon deep observation of nature and their understanding of traditional knowledge of medical practices. Native persons of Uttar Pradesh greatly use these habitually effortlessly available medicinal plants for health which are less expensive without side effects. The zone is rich in medicinal plants and these plants are still commonly used for medicinal purposes among the people in their daily lives. However, there is a gradual loss of traditional knowledge about these plants in new generation. This study provides basis for the conservation of the local flora, its use as food and medicine. It also provides various socio-economic dimensions associated with the common people.

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References

1. Abdulazeez MA, Jasim HA, Bashir M, Ross K, Fatokun AA. Peristrophe bicalyculata (Retz) Nees contains principles that are cytotoxic to cancer cells and induce caspase-mediated, intrinsic apoptotic death through oxidative stress, mitochondrial depolarisation and DNA damage. Biomedicine and Pharmacotherapy. 2022;147:112597.
2. Afzal S, Chaudhry BA, Ahmad A, Uzair M, Afzal K. Antioxidant, acetylcholinesterase, butyrylcholinesterase, and α-glucosidase inhibitory activities of Corchorus depressus. Pharmacogn mag. 2017;13(52):647.
3. Ahmed MI, Xu X, Sulieman AA, Mahdi AA, Na Y. Effect of extraction conditions on phenolic compounds and antioxidant properties of koreeb (*Dactyloctenium aegyptium*) seeds flour. Journal of Food Measurement and Characterization. 2020;14(2):799-808.
4. Ahsan H, Mushtaq MN, Anjum I, Fiaz M, Cheema AR, Haider SI, Hintsa G, *et al*. Preliminary research regarding chemical composition and anti-inflammatory effects of polygonum plebeium r. br. *farmacia*. 2021;69(5):954-959.
5. Alam A, Khan AA. Argemone mexicana L.: A weed with versatile medicinal and pharmacological applications. Ann. Phytomed. International. Journal. 2020;9:218-223.
6. Aleem A, Janbaz KH. Dual mechanisms of anti-muscarinic and Ca++ antagonistic activities to validate the folkloric uses of Cyperus niveus Retz. as antispasmodic and antidiarrheal. Journal of Ethnopharmacology. 2018;213:138-148.
7. Alminderej FM, Ammar C, El-Ghoul Y. Functionalization, characterization and microbiological performance of new biocompatible cellulosic dressing grafted chitosan and Suaeda fruticosa polysaccharide extract. Cellulose. 2021;28(15):9821-9835.
8. Al-Snafi AE. Medical benefit of Malva neglecta-A review. IOSR Journal of Pharmacy. 2019;9(6):60-67.
9. Amri E, Kisangau DP. Ethnomedicinal study of plants used in villages around Kimboza forest reserve in Morogoro, Tanzania. Journal of Ethnobiology and Ethnomedicine. 2012;8(1):1-9. https://doi.org/10.1186/1746-4269-8-1.
10. Anand U, Tudu CK, Nandy S, Sunita K, Tripathi V, Loake GJ, *et al*. Ethnodermatological use of medicinal plants in India: from ayurvedic formulations to clinical perspectives–a review. Journal of Ethnopharmacology. 2022;284:114744.
11. Augustynowicz D, Latté KP, Tomczyk M. Recent phytochemical and pharmacological advances in the genus Potentilla L. sensu lato–An update covering the period from 2009 to 2020. Journal of Ethnopharmacology. 2021;266:113412.
12. Awad MM, Ragab EA, Atef A. Phytochemical investigation and biological evaluation of *Dichanthium annulatum* (Forrsk). Journal of Science and Innovation. 2015;4(3):131-137.
13. Bahramsoltani R, Kalkhorani M, Zaidi SMA, Farzaei MH, Rahimi R. The genus Tamarix: Traditional uses, phytochemistry, and pharmacology. Journal of Ethnopharmacology. 2020;246:112245.
14. Batool R, Aziz E, Tan BKH, Mahmood T. Rumex dentatus inhibits cell proliferation, arrests cell cycle, and induces apoptosis in MDA-MB-231 cells through suppression of the NF-κB pathway. Front pharmacology. 2017;8:731.
15. Beck S, Mathison H, Todorov T, Calder E, Kopp OR. A review of medicinal uses and pharmacological activities of *Tridax procumbens* (L.). Journal of Plant Studied; c2018. p. 10.
16. Bibi T, Ahmad M, Tareen RB, Tareen NM, Jabeen R, Rehman SU, *et al*. Ethnobotany of medicinal plants in district Mastung of Balochistan province-Pakistan. Journal of Ethnopharmacology. 2014;157:79-89.
17. Bilal MAD, Hossain MA. Antibacterial activity of different crude extracts of Suaeda maritima used traditionally for the treatment of hepatitis. Biocatalysis and Agricultural Biotechnology. 2019;22:101383.
18. Brahim MAS, Fadli M, Hassani L, Boulay B, Markouk M, Bekkouche K, *et al.* Chenopodium ambrosioides var. Ambrosioides used in Moroccan traditional medicine can enhance the antimicrobial activity of conventional antibiotics. Indian Crop production. 2015;71:37-43.
19. Braich S, Baillie RC, Jewell LS, Spangenberg GC, Cogan NO. Generation of a comprehensive transcriptome atlas and transcriptome dynamics in medicinal cannabis. Scientific reports. 2019;9(1):1-12.
20. Chandak RR, Dighe NS. A Review on Phytochemical & Pharmacological Profile of Pergularia Daemia linn. Journal of Drug Delivery and Therapeutics. 2019;9(4-s):809-814.
21. Chandra S, Rawat DS. Medicinal plants of the family Caryophyllaceae: a review of ethno-medicinal uses and pharmacological properties. Integrative Medicine Research. 2015;4(3):123-131.
22. Dwivedi T, Kanta C, Singh LR, Prakash I. A list of some important medicinal plants with their medicinal uses from Himalayan State Uttarakhand, India. Journal of Medicinal Plants. 2019;7(2):106-116.
23. Fan W, Fan L, Peng C, Zhang Q, Wang L, Li L, *et al.* Traditional uses, botany, phytochemistry, pharmacology, pharmacokinetics and toxicology of *Xanthium strumarium* L.: A review. Molecules. 2019;24(2):359.
24. Fatima I, Kanwal S, Mahmood T. Microbiostatic, antioxidative and cytotoxic potentiation of some grasses of Bahawalpur, Pakistan. Journal of Traditional Chinese Medicine. 2019;39(4):482.
25. Fayed MA. Heliotropium; a genus rich in pyrrolizidine alkaloids: A systematic review following its phytochemistry and pharmacology. Phytomedicine Plus. 2021;1(2):100036.
26. Ghosh P, Dutta A, Biswas M, Biswas S, Hazra L, Nag SK, *et al*. Phytomorphological, chemical and pharmacological discussions about *Commelina benghalensis* Linn. (Commelinaceae): A review. The Pharma Innovation Journal. 2019;8(6):12-18.
27. Ghosh T, Biswas MK, Roy P, Guin C. A review on traditional and pharmacological uses of *Croton bonplandianum* with special reference to phytochemical aspect. European Journal of Medicinal Plants. 2018;22(4):1-10.
28. Giday M, Asfaw Z, Woldu Z. Medicinal plants of the Meinit ethnic group of Ethiopia: an ethnobotanical study. Journal of ethnopharmacology. 2009;124(3):513-521.
29. Hoi TM, Chung NT, Huong LT, Ogunwande IA. Studies on Asteraceae: Chemical compositions of essential oils and antimicrobial activity of the leaves of *Vernonia patula* (Dryand.) Merr. and *Grangea maderaspatana* (L.) Poir. from Vietnam. Journal of Essential Oil Bearing Plants. 2021;24(3):500-509.

30. Jahan R, Al-Nahain A, Majumder S, Rahmatullah M. Ethnopharmacological significance of *Eclipta alba* (L.) hassk. (Asteraceae). International scholarly research notices; c2014.
31. Jamila F, Mostafa E. Ethnobotanical survey of medicinal plants used by people in Oriental Morocco to manage various ailments. Journal of Ethnopharmacology. 2014;154:76-87
32. Kareti SR, Rajpoot VS. Ethnobotanical survey of folk medicinal plants used in tribal villages of Amarkantak Region of Central India. Plant Biosystems-An International Journal Dealing with all Aspects of Plant Biology. 2022;156(4):1019-1038.
33. Kargıoğlu M, Cenkci S, Serteser A, Evliyaoğlu N, Konuk M, Kök MŞ, *et al*. An ethnobotanical survey of inner-West Anatolia, Turkey. Human Ecology. 2008;36(5):763-777.
34. Kaur A, Batish DR, Kaur S, Chauhan BS. An overview of the characteristics and potential of Calotropis procera from botanical, ecological, and economic perspectives. Frontiers in Plant Science. 2021;12:1188.
35. Kaur L, Malhi DS, Cooper R, Kaur M, Sohal HS, Mutreja V, *et al.* Comprehensive review on ethnobotanical uses, phytochemistry, biological potential and toxicology of Parthenium Hysterophorus L.: A journey from noxious weed to a therapeutic medicinal plant. Journal of Ethnopharmacology. 2021;281:114525.
36. Khan M, Kumar S, Hamal IA. Medicinal plants of Sewa river catchment area in the Northwest Himalaya and its implication for conservation. Ethnobotanical Leaflets. 2009;9:5.
37. Khare C. Maerua arenaria Hook. f. and Thoms.. In: Khare C. (eds) Indian Medicinal Plants. Springer, New York, NY; c2007.
38. Kichu M, Malewska T, Akter K, Imchen I, Harrington D, Kohen J, *et al.* An ethnobotanical study of medicinal plants of Chungtia village, Nagaland, India. Journal of Ethnopharmacology. 2015;166:5-17.
39. Kotta JC, Lestari A, Candrasari DS, Hariono M. Medicinal effect, in silico bioactivity prediction, and pharmaceutical formulation of Ageratum conyzoides L.: A review. Scientifica; c2020.
40. Kumari P, Kumari C, Singh PS. Phytochemical screening of selected medicinal plants for secondary metabolites. International Journal of Life Sciences Scientific Research. 2017;3(4):1151-1157.
41. Kurian A, Lakshmi S, Fawole FJ, Faggio C, Elumalai P. Combined effects of Leucas aspera, oxy-cyclodextrin and bentonite on the growth, serum biochemistry, and the expression of immune-related gene in Nile tilapia (*Oreochromis niloticus*). Turkish Journal of Fisheries and Aquatic Sciences. 2021;21(3):147-158.
42. Lakshmanan G, Sathiyaseelan A, Kalaichelvan PT, Murugesan K. Plant-mediated synthesis of silver nanoparticles using fruit extract of *Cleome viscosa* L.: assessment of their antibacterial and anticancer activity. Karbala International Journal of Modern Science. 2018;4(1):61-68.
43. Loganayaki N, Siddhuraju P, Manian S. Antioxidant, anti-inflammatory and anti-nociceptive effects of *Ammannia baccifera* L. (Lythracceae), a folklore medicinal plant. Journal of Ethnopharmacology. 2012;140(2):230-233.
44. Ahmad Khan MS, Ahmad I. Herbal medicine: current trends and future prospects New Look to Phytomedicine: Advancements in Herbal Products as Novel Drug Leads; c2018. p. 3-3. 10.1016/B978-0-12-814619-4.00001-X
45. Manzoor M, Ayesha A, Durrani MJ. Uses of fruits, vegetables and herbs for the treatment of diabetes by the people of Quetta city. Science Technology and Development. 2013;32(1):24-27.
46. Md. Hossain S, Urbi Z, Sule A, Rahman KMH. Review Article *Andrographis paniculata* (Burm. f.) Wall. ex Nees. A Review of Ethnobotany, Phytochemistry, and Pharmacology. Science World Journal, 2014, 28.
47. Mohamed EAA, Muddathir AM, Osman MA. Antimicrobial activity, phytochemical screening of crude extracts, and essential oils constituents of two Pulicaria spp. growing in Sudan. Scientific reports. 2020;10(1):1-8.
48. Mondal AKA. Ethnobotanical use of plants in Birbhum district, West Bengal, India. Journal of Medicinal Plants. 2022;10(1):82-86.
49. Muniandy K, Gothai S, Tan WS, Kumar SS, Mohd Esa N, Chandramohan G, *et al*. *In vitro* wound healing potential of stem extract of Alternanthera sessilis. Evidence-based complementary and alternative medicine, 2018.
50. Paramasivam I, Sinsinwar S, Muthuraman MS. Phytopharmacological properties of Melothria maderaspatana: A review; c2017 July. p. 8-11.
51. Pieczykolan A, Pietrzak W, Gawlik-Dziki U, Nowak R. Antioxidant, Anti-Inflammatory, and Anti-Diabetic Activity of Phenolic Acids Fractions Obtained from *Aerva lanata* (L.) Juss. Molecules. 2021;26(12):3486.
52. Prabhu S, Vijayakumar S, Morvin Yabesh JE, Prakashbabu R, Murugan R. An ethnobotanical study of medicinal plants used in Pachamalai hills of Tamil Nadu, India. Journal of Herbal Medicinal; c2020. Doi: https://doi.org/10.1016/j.hermed.2020.100400
53. Prabhu S, Vijayakumar S, Yabesh JM, Prakashbabu R, Murugan R. An ethnobotanical study of medicinal plants used in pachamalai hills of Tamil Nadu, India. Journal of Herbal Medicinal. 2021;25:100400.
54. Prakash V, Rana S, Sagar A. Studies on antibacterial activity of *Verbascum thapsus*. Journal of Medicinal Plants Studied. 2016;4(3):101-113.
55. Purkayastha J, Nath SC, Islam M. Ethnobotany of medicinal plants from Dibru-Saikhowa biosphere reserve of Northeast India. Fitoterapia. 2005;76(1):121-127.
56. Ramesh Kumar A, Sivasudha T. *In vitro* antioxidant and antibacterial activity of aqueous and methanolic extract of Mollugo nudicaulis Lam. leaves. Asian Pacific Journal of Tropical Biomedical. 2012;2(2):S895-S900.
57. Ramesh Nidavani B, Mahalakshmi AM. Pharmacology of Tectona grandis Linn. Short Review. International Journal of Pharmacology and Phytochemical Research. 2014;6(1):86-90.
58. Ratnam F, Raju I. An ethnobotanical study of medicinal plants used by the Nandi people in Kenya. Journal of Ethnopharmacology. 2008;116:370-376
59. Redžic S. The ecological aspect of ethnobotany and ethnopharmacology of population in Bosnia and Herzegovina. Coll Antropol. 2007;31:869-890.
60. Revathi P, Parimelazhagan, Manian S. Ethnomedicinal plants and novel formulations used by Hooralis tribe in Sathyamangalam forests, Western Ghats of Tamil Nadu, India. Journal of Medicinal Plant Research; c2013. p. 2083-2097.
61. Sarker U, Oba S. Nutraceuticals, antioxidant pigments

and phytochemicals in the leaves of Amaranthus spinosus and Amaranthus viridis weedy species. Scientific Reports. 2019;9(1):1-10.
62. Seebaluck R, Gurib-Fakim A, Mahomoodally F. Medicinal plants from the genus Acalypha (Euphorbiaceae)–A review of their ethnopharmacology and phytochemistry. Journal of Ethnopharmacology. 2015;159:137-157.
63. Shah SRU, Gul H, Abdur R, Imtiaz A. Ethnobotanical studies of the flora of district Musakhel and Barkhan in Balochistan, Pakistan. Pakistan Journal of Weed Science Research. 2006;12(3):199-211.
64. Shajib MS, Rashid RB, Ming LC, Islam S, Sarker MMR, Nahar L, *et al.* Polymethoxyflavones from *Nicotiana plumbaginifolia* (Solanaceae) exert antinociceptive and neuropharmacological effects in mice. Frontiers in pharmacology; c2018. p. 9.
65. Sharma M, Bithel N, Sharma M. Ethnobotanical Study of Medicinal Plants among Local Tribes of Rajaji Tiger Reserve Haridwar. Indian Journal of Ecology. 2022;49(3):1197-1202.
66. Sharma S, Dixit P, Sairam K, Sahu AN. Amelioration of cisplatin induced nephrotoxicity by *Phyla nodiflora* (L.) Greene, 2020.
67. Sharmila S, Kalaichelvi K, Rajeswari M, Anjanadevi N. Received: 7th May-2014 Revised: 10th June-2014 Accepted: 11th June-2014 Research article Studies on the folklore medicinal uses of some indigenous plants among the tribes of Thiashola, Manjoor, Nilgiris south division, western ghats.
68. Shendye NV, Gurav SS. Cynodon dactylon: A systemic review of pharmacognosy, phytochemistry and pharmacology. International Journal of Pharm Science. 2014;6(8):7-12.
69. Shirin K, Imad S, Shafiq S, Fatima K. Determination of major and trace elements in the indigenous medicinal plant Withania somnifera and their possible correlation with therapeutic activity. Journal of Saudi Chemical Society. 2010;14(1):97-100.
70. Singh U, Lahiri N. Ancient India: New Research, Oxford University Press, New Delhi; c2010.
71. Singh S, Afshan G, Rehman F, Khan SJ. Survey of some medicinal plants of district Rampur (UP) India with special reference to their therapeutic value. Journal of Medicinal Plants. 2022;10(4):91-97.
72. Singh S, Mishra R, Agnihotri RK. *In-vitro* propagation of Pluchea lanceolata (DC) CB Clarke a potent antiarthritic medicinal herb through axillary bud. Trends in Phytochemical Research. 2021;5(1):24-30.
73. Sivapalan SR. Medicinal uses and pharmacological activities of Cyperus rotundus Linn-A Review. International Journal of Scientific and Research Publications. 2013;3(5):1-8.
74. Suky MG, Shanthi TP, Ruby RGD, Sowmiya S, Yasodha M. Isolation and identification of bioactive compounds in chloroform extract of *Phyla nodiflora* (L.) Greene. Journal of Emerging Technologies and Innovative Research. 2019;6(1):275-286.
75. Sultana T, Ahmed M, Akhtar N, Okla MK, Al-Hashimi A, Al-Qahtani WH, *et al.* Polarity Directed Appraisal of Pharmacological Potential and HPLC-DAD Based Phytochemical Profiling of *Polygonum glabrum* Willd. Molecules. 2022;27(2):474.
76. Sutar PM, Patil SC, Akre MR. Review of Dhaula Phindawri (*Nothosaerva brachiata* Linn. Wight.) A folklore drug used in management of urinary stones; c2021.
77. Tekuri SK, Pasupuleti SK, Konidala KK, Amuru SR, Bassaiahgari P, Pabbaraju N, *et al.* Phytochemical and pharmacological activities of *Solanum surattense* Burm. f.–A review. Journal of Applied Pharmaceutical Science. 2019;9(3):126-136.
78. Thirupathi K, Ghani M, Suresh V, Swamy TN, Rajender G, Mustafa M, *et al. In vitro* Conservation of Medicinally Important Climbing Shrub *Maerua Arenaria Hook*. F. and Thomson. International Journal of Sciences Research in Biology Science. 2019;6:1.
79. Tkachenko K, Frontasyeva M, Vasilev A, Avramov L, Shi L. Major and trace element content of *Tribulus terrestris* L. wildlife plants. Plants. 2020;9(12):1764.
80. Ullah M, Khan MU, Mahmood A, Malik RN, Hussain M, Wazir SM, *et al*. An ethnobotanical survey of indigenous medicinal plants in Wana district south Waziristan agency, Pakistan. Journal of Ethnopharmacology. 2013;150(3):918-924.
81. Ullah R, Hussain Z, Iqbal Z, Hussain J, Khan UF, Khan N, *et al*. Traditional uses of medicinal plants in Dara Adam Khel NWFP Pakistan. Journal of Medicinal Plants Research. 2010;17:1815-1821.
82. Wahyuni DK, Rahayu S, Zaidan AH, Ekasari W, Prasongsuk S, Purnobasuki H, *et al*. Growth, secondary metabolite production, and *in vitro* antiplasmodial activity of *Sonchus arvensis* L. callus under dolomite [CaMg (CO3) 2] treatment. Plos one. 2021;16(8):e0254804.
83. Yasmeen Z, Basit A, Tahir S. Traditional uses and pharmacological effects of Anagallis arvensis: a Review. International Journal of Frontiers Sciences. 2020;4:97-100.
84. Zhang Z, Miao Y, Xu M, Cheng W, Yang C, She X, *et al.* Tian Jiu therapy for α-naphthyl isothiocyanate-induced intrahepatic cholestasis in rats treated with fresh *Ranunculus sceleratus* L. Journal of Ethnopharmacology. 2020;248:112310.