Original Research Article

J. Funct. Mater. Biomol. 6(2) (2022) pp 578 – 582

SACRED HEART RESEARCH PUBLICATIONS

Journal of Functional Materials and Biomolecules

Journal homepage: www.shcpub.edu.in

ISSN: 2456-9429

ANTI-INFLAMMATORY POTENTIAL MEDICINAL PLANTS IN YELAGIRI HILLS, TIRUPATTUR DISTRICT

Prabu K [1*] And Niyas Ahamed I [1].

Received on 10 November2022, accepted on 28 November 2022,
Published online on December 2022

Abstract

The evolution of human culture has depended greatly on the use of medicinal herbs. Medicinal plants have historically been a major source of medicine for almost all cultures and civilizations. Many of the current medicines are made from medicinal plants, which are regarded as rich sources of traditional remedies. Any plant that contains compounds that can be utilised therapeutically or that serve as precursors for the semi-synthesis of chemo-pharmaceuticals is considered a medicinal plant. A plant's usage as a medicine, therapeutic agent, or active component of a medicinal preparation is inferred when it is given the designation "medicinal." Due to their extensive biological and therapeutic activity, higher safety margins, and lower costs, herbal medicines are much sought after for primary healthcare in both developed and developing nations.

Keywords: Medicinal plants, Herbal medicines, chemo-pharmaceutical.

1 Introduction

Throughout history, medicinal plants have been crucial in the treatment of various diseases. The term "medical plants" refers to a variety of plant species employed in herbalism, some of which have medicinal properties. These medicinal plants are regarded as a rich source of components for the creation and synthesis of medications. Additionally, these plants are essential to the growth of human cultures all across the world. Additionally, some plants are regarded as significant sources of nutrition, and as a result, these plants are suggested for their medicinal benefits. These plants include walnuts, ginger, green tea, and a few others. Other plants and their derivatives are regarded as key sources of the active compounds used in toothpaste and aspirin [1]. Around 13,000 plant species are thought to have been used as traditional remedies by various civilizations around the world for at least a century. A list of more than 20,000 therapeutic plants has been made public, but there are probably many more.

With a total area of 29.2 km and an elevation of 1048.5 m above mean sea level, Yelagiri is a hill station in the Tirupattur district of Tamil Nadu. It is situated between the cities of Vaniyambadi and Jolarpettai. Orchards, rose gardens, and lush valleys surround it. The summertime maximum temperature is 310 °C, and the wintertime low is 110 °C. This hill's circular base is surrounded by sheer rock walls on all sides. On its north and north-east slopes, there are evergreen trees. Evergreen forest can be found on the hill's summit [2-4]. The current inquiry provides a description of the local medicinal plants that can be found in this hilly terrain [5-7].

FUTURE OPPORTUNITIES FOR MEDICAL PLANT

The future of medicinal plants is bright because there are around 500,000 plants in the globe, the majority of which have not yet been studied for their potential medical benefits. These untapped resources could play a significant role in the treatment of current and future studies [8]. Religions and other rites, as well as therapeutic herbs, have all played important roles in the formation of human society [9]. Many of the various modern medications, like aspirin, are made inadvertently from therapeutic plants. Many food crops, like garlic, have therapeutic properties. Understanding plant toxicity and defending people and animals against natural poisons are two benefits of studying medicinal plants. The synthesis of secondary metabolites by plants is what gives them their therapeutic properties. With this in mind, the field of research in natural product chemistry has seen an increase in attention. Therapeutic needs, the remarkable diversity of chemical structure and biological activities of naturally occurring secondary metabolites, the use of novel bioactive natural compounds as biochemical probes, the development of novel and sensitive methods to detect biologically active natural products, improved methods to isolate, purify, and structurally characterise these active constituents, and advanced techniques to characterise these active constitu-

1* Corresponding author: e-mail kprabu.cas@gmail.com,
Phone: +91 9894387994,
PG and Research Department of Biochemistry, Sacred Heart College (Autonomous), Tirupattur - 635 601, Tamilnadu, India.

ents are some of the reasons for this interest. The World Health Organization (WHO) has developed policies, guidelines, and standards for botanical medicines in recognition of the value of traditional medicine. Agro-industrial technology must be used for the growth, processing, and production of medicinal plants and herbal medicines [11]. Many modern medicines are created indirectly from medicinal plants, which are sources of novel pharmaceuticals.

ANTI-INFLAMMATORY MEDICINAL PLANTS IN YELAGIRI HILLS

The yelagiri hills are home to the following medicinal plants that have anti-inflammatory properties.

Table: 1 List of anti-inflammatory potential medicinal Plants found in Yelagiri Hills, Tirupattur District.

S.No.	Scientific Name	Local Name	Parts used
1	*Eclipta alba (Asteraceae)*	Vringraj	Leaf
2	*Plumbago indica*	Rakta Chitrak	Root
3	*Terminalia chebula*	Harida	Seed
4	*Centella asiatica*	Mandukparni/ Indianpennywort	Whole Plant
5	*Mimosa pudica*	Thottachinigi	Whole Plant, Root

Eclipta alba

Eclipta alba (Asteraceae Family) is a plant that may grow up to 2000 metres above sea level in tropical and subtropical regions. In Tamil, it is frequently referred to as Karishalenganni. The plant is used in Ayurveda to treat "Kapha" and "Vata" and has a bitter, fiery, harsh, and dry flavour. The fresh plant is used to cure numerous chronic skin disorders as well as liver and spleen enlargement. The herb is utilised in numerous Ayurvedic formulations for anaemia, pain alleviation, antihelmintic and anti-inflammatory properties, as well as for eye problems, asthma, and inflammation [12–14]. To encourage hair development, the freshly squeezed juice from the leaves is applied to the shaven scalp. Wedelolactone is one of the coumestan derivatives found in the herb, and the first one has been identified as one of the main anti-hepatotoxic chemicals of this plant [15]. Additionally, triterpenoidal saponin (Eclalbatin) is said to be a component of this plant [16].

Figure 1: *Eclipta alba*

Plumbago indica

Plumbago zeylanica L., of the Plumbaginaceae family, is a multifunctional medicinal herb. It has the chromosomal number 2n=24. The most often utilised plant in Indian traditional medicine is P. zeylanica. The plant, which is endemic to South Asia, is found in most of the tropics and subtropics; it grows in deciduous woodland, savannas, and scrub lands from sea level to a height of 2000 m. [17-19]. The root is used to treat dysentery and as a laxative, expectorant, astringent, and abortifacient. Root bark tincture is used as an antiperiodic. The caustic leaves are used to treat scabies. The chemical components of plumbago include naphthoquinones, flavonoids, terpenoids, and steroids, many of which are involved in a number of biodynamic processes. Lead wort is a common name for Plumbago zylanica. In many regions of the world, this plant is also known by a number of other names. Its popular name in India is "Chitrak."

Figure 2: *Plumbago indica*

Terminalia chebula

Many traditional medicines were examined for their ability to reduce inflammation. Due to its phytoconstituents, Terminalia chebula (T. chebula) was discovered to possess a wide range of therapeutic characteristics. Its fruit is utilised for a variety of human illnesses and is considered to have numerous health advantages. T. chebula was also frequently cited in literature on Ayurveda, Unani, and homoeopathy [20]. Its aqueous extract was discovered to have anti-inflammatory effects that prevented the production of inducible nitric oxide [21]. Even earlier research demonstrated that the chebulagic acid found in these fruits could prevent mice from developing arthritis and progressing along its course. Additionally discovered to be a powerful anti-inflammatory, T. chebula is used in [22].

Figure3: *Terminalia chebula*

Centella asiatica

The excellent medical herb Centella asiatica is a perennial creeper that is found in many tropical and subtropical parts of the world, including India, China, Nepal, Madagascar, Sri Lanka, Indonesia, and Eastern South America[23]. Centella asiatica has historically been used to treat leprosy, ulcers, asthma, bronchitis, elephantiasis, eczemas, anxiety, and urethritis in ayurvedic medicine[24]. In India, it is primarily recognised as a "Brain food" or "Memory enchancer" [25] since it treats conditions including cataract, eye problems, childhood diarrhoea, skin illnesses, wound healing, and revitalises the nerves and brain cells. The existence of different biochemical substances, including alkaloids, flavonoids, glycosides, triterpenoids, saponins, amino acids, inorganic acids, vitamins, sterols, and lipid compounds, was discovered through phytochemical study of Centella asiatica plant extracts. Triterpenoids and flavonoids exhibit exceptional anti-inflammatory properties.

Figure 4: *Centella asiatica*

Mimosa pudica

The Mimosa pudica plant is indigenous to most of the New World Tropics and was initially described from Brazil. [32]. It is widespread in damp areas, open plantations, and weedy thickets and is now thought to be a pantropical weed. [32]. The Greek word mimos, which refers to a mimic and relates to the sensitivity of the leaves, and the Latin word pudica, which means timid, retiring, or shrinking, are combined to form the scientific name of this plant, Mimosa pudica [33–35]. The plant develops into a wildly expanding shrub. When touched, the fern-like leaves droop and close before quickly opening again. Alkaloids such mimosine, crocetin, tubulin, turgorines, flavanoids, tannin, and sitisine have been found in plants, according to phytochemical research [36, 37]. Charaka and Sushruta were the first to employ the herb medicinally[38, 39]. Traditional uses of the herb include treating convulsions, anxiety, tension, and sadness. Menorrhagia, bloody and mucusy dysentery, piles, and fistula are other conditions it is used to treat. It works well to treat the signs and symptoms of rheumatoid arthritis, spasms, and muscular pain [40]. M. pudica roots are used to cure ulcers, inflammations, asthma, and diarrhoea. They are bitter, astringent, and cooling. The plant also possesses a number of therapeutic properties, including immunomodulatory, antihistaminic, depressive, hyperglycemic, muscle relaxant, hemostatic, antifertility, antibacterial, anticonvulsant, antisnake venom, antifungal, antimalarial, and anticancer properties [41, 42]. It is used to treat a number of inflammatory disorders in conventional medicine.

Figure 5: *Mimosa pudica*

CONCLUSION

Due to their use in medicine, cosmetics, and food, medicinal plants are part of a large plant family that attracts a lot of interest. They also offer a substitute for conventional crops with species that are in high demand on the current global market. There is a wide variety of flora in the Yelagiri hills that may offer therapeutic benefits. Given the increased risk of losing medicinal plants, efforts must be made to protect them through conservation programmes and broad public education campaigns about preventing forest fires and overgrazing from endangering or eradicating the therapeutic flora. One of the conservative program's strategies should be the cultivation of some significant medicinal plants because Yelagiri Hills' climate is ideal for this use. To safeguard medicinal plants, it's also essential to monitor herbicide growth. This review compiled a wide range of data on the medicinal plants that the residents of the Tirupattur district use. The younger tribal age is not interested, thus traditional and conventional wisdom cannot be passed on to them. The current review article has shown that medicinal plants are still essential to people's basic health care.

References

1. Subban Ravi, A. Veerakumar, R. Manimaran, K. M. Hashim. and Balachandra Indira., J. Nat.Med., 62, 369,2008.
2. Bassam A. Clinical Pharmacy Discipline, School of Pharmaceutical Sciences, University of Sains Malaysia. Pharmaceut Anal Acta, 3,10, 2012.
3. Viswanathan MB,Ethnobotanicallly important plants, In: Tamil Nadu biodiversity strategyand action plant, wild plant biodiversity, by R Annamalai (Ed), Tamil NaduForestDepartment Chennai, 148;103-105,2004.

4. Rajshekharan PE, Herbalmedicine, In world of Science, Employement News,November (21-27),3; 2002.
5. Ganesan S, "Traditionaloral care medicinal plants survey of India". Natural product radiance vol 7(2); 166-172, 2008.
6. Singh R. Medicinal Plants: A Review. Journal of Plant Sciences. Special Issue: Medicinal Plants. Vol. 3, No. 1-1, 50-55,2015.
7. Hosseinzadeh, S., Jafarikukhdan, A., Hosseini, A. and Armand, R. The application of Medicinal Plants in Traditional and Modern Medicine: A Re view of Thymus vulgaris. International Journal of Clinical Medicine, 6, 635-642, 2015.
8. Clark, A.M. Natural Products as a Source for New Drugs. Pharmaceutical Research, 13, 1133-1141, 1996.
9. WHO, Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicines. Manila, 1993.
10. The Wealth of India – Raw Materials Publications And Information Directorate, CSIR, New Delhi, India,127-128, 1952.
11. Kritikar, K.R. and Basu, B.D. Indian Medicinal Plants, 2nd edn, Vol II. Bishen Singh Mahendra Pal Singh, Dehradun, 1361-63, 1975.
12. Indian Herbal pharmacopoeia Indian Drugs Manufactures Association, Worli, Mumbai, volpp. 81-88, 1998.
13. Chopra R.N, Glossary Of Indian Medicinal Plant, Council Of Scientific and Industrial Research, New Delhi, India.258, 1956.
14. Wong, S.M. Antus, S., Gottsegen, A, Fessler, B., Rao, G.C., Sonenbichler, J and Wagner, H. Arzeim-Forsch/Drug – Res., 38,661-665, 1988.
15. Upadhyay, R.K., Pandey, M.B., Jha R.N. and Pandey, VB Asain Nat Prod Res., 3,213- 217, 2001.
16. K. K Kakkar, Indian Drug, 26, 92,1988.
17. L. Suguna, P. Sivakumar and G. Chandrakas , Indian J. Exp. Biol., 34, 1208,1996.
18. K. Nalini, A.R. Aroor, K. S. Karanth and Rao A., Fitoterapia, 63, 232, 1992.
19. R. N. Chopra, S. L. Nayar and C I. Chopra, Glossary of Indian Medicinal Plants, pp. 58,1956.
20. R. P. Rastogi and B. N.Mehrotr, Compedium of Indian Medicinal Plants, 1, 96,1963.
21. C. L. Malhotra, P. K. Das, M. S. Sastry and N. S. Dhalla., Indian J Pharm., 23, 6 1961.
22. L. D. Kapoor., CRC Handbook of Ayurvedic Medicinal Plants, 208, 2005.
23. Tiwari Nath Kavindra, Sharma Chandra Nilesh, Tiwari Vaibhav and Singh Deo Brahma., Plant Cell, Tissue and Organ Culture, 63, 179, 2000.
24. R. Srivastava, Y. N. Shukla and S. Kumar, J. Med. Arom. Pl. Sci., 19, 1049, 1997.
25. Vijver, LM, Antibacterial Activity In Roots of Plumbago zeylanica, Planta Med, 20, 8-13, 1971.
26. Aditi G, Medicinal plants used in traditional medicine in Jimma zone, South West Ethopia, Pharm. Biol., 37, 321-323, 1999.
27. Vishnukanta, Evaluation of anticonvulasant activity of Plumbago zeylanica Linn leaf extract, Asian Journal of Pharmaceutical and Clinical Research 3(1), 76-78, 2010.
28. Stolina, M., Sharma, S., Lin, Y., Dohadwala, M., Gardner, B., Luo, J., et al. Specific inhibition of cyclooxygenase 2 restores antitumor reactivity by altering the balance of IL-10 and IL-12 synthesis. J. Immunol, 164, 361 370, 2000.
29. Anwesa Bag, Subir Kumar Bhattacharyya, Rabi-Ranjan Chattopadhyay. The development of Terminalia chebula Retz. (Combretaceae) in clinical research. Asian Pac J Trop Biomed, 3(3): 244-252, 2013.
30. Moeslinger T, Friedl R, Volf I, Brunner M, Koller E, Spieckermann PG. Inhibition of inducible nitric oxide synthesis by the herbal preparation Padma 28 in macrophage cell line. Can J Physiol Pharmacol, 78(11): 861-866, 2000.
31. Nadkarni.KM. Indian Materia Medica. 3rd ed. Vol1. Bombay: Popular Prakashan pvt Ltd; 799-800, 1976.
32. HowardRA.Flora of the Lesser Antilles, Leeward sand Windward Islands in Dicotyledonea, Part1, Jamaica Plain MA: Arnold Arboretum, Harvard University; 4:673, 1988.
33. SatyavatiG, Gupta, AK, Tandon N. Medicinal plants of India. 3rd ed.Vol2. Bombay: Popular Prakashan pvtLtd; 2546, 1987.
34. Kirtikar KR, Basu, BD. Indian medicinal plants. 2nd ed. Vol 2. Dehradun: Bishen Singh Mahendrapal Singh; 915-17, 1935.
35. Warrier PK, Nambiar VPK, Ramankutty C. Indian Medicinal Plants, a compendium of 500 species. 1st ed. Vol5. Madras: Orient Longman Ltd, :263, 1997.
36. Tamilarasi T, Ananthi T. Phytochemical analysis and antimicrobial activity of Mimosa pudica Linn. Res J Chem Sci. 2:72-4, 2012.
37. Hafsa A, Sakshi S, Anurag M, Rajiv G. Mimosa pudica L. (Laajvanthi): An overview. Pharmacogn Rev. 6:115-24, 2012.
38. Sengupta KNN. The Ayurvedic system of Medicine. 2nd ed. Vol1. New Delhi: Sri Satguru Publications; 374-5, 1987.
39. Tirtha SSS. The Ayurvedic Encyclopedia: Natural secrets for healing, prevention and longevity. 1st ed. New Delhi: Sri Satguru Publications; 214, 1976.
40. Chopra RN, Nayar SL, Chopra IC. Glossary of Indian medicinal plants. New Delhi: CSIR; 1988:167. 16. Bahekar PC, Shaikh HY, Nigade PB, Ghaisas MM. Antihistaminic activity of aqueous extract of Mimosa pudica Linn. J Pharm Research. 63:134-8, 2007.

41. Nair PV, Nair B. Muscle relaxant activity of hydro-alcoholic extract of Mimosa pudica whole plant in mice. Natl J Physiol Pharm Pharmacol. 7, 2017.

42. Vejayan J, Ibrahim H, Othman I. The potential of Mimosa pudica against snake envenomation. J Trop Forest Sci. 19:189-97, 2007.