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Exploration of ethanomedical and pharmacological values of weeds as a traditional medicinal plant of Southern Tamil Nadu, India

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Abstract
India is one of the treasure houses of medicinal plants in the world. These medicinal plants were used to treat various diseases and ailments. The survey of medicinal plants in particular area is important to conserve the traditionally important plants of such landscape. This paper revealed that the traditional medicinal plants of Agriculture College and Research Institute, Kudumiyanmalai and their importance. To document the available traditional medicinal plants of Agriculture College and Research Institute, Kudumiyanmali, Pudukkottai District, Tamil Nadu, South India for the first time as well as the ethanomedical and pharmacological usage of these medicinal plants to remediate the diseases among the peoples. The study was made in Agriculture College and Research Institute, Kudumiyanmalaifor six months from Jan 2022 -Jun 2022 to identified, collected, catalogued and explore the weeds that heals in college campus. For this research paper medicinal plants were taken into account for pharmacological values. From this study, 60 species of valuable medicinal plants belonging to 31 families were recorded and their ethnomedicinal values were collected from kudumiyanmalai and nearby village peoples. This study focuses the importance, utilization, conservation and ethanomedical and pharmacological values of weeds as a traditional medicinal plants.

Keywords: Weeds, medicinal plants, herbal drugs, conservation, phytochemicals

Introduction

India boasts a diverse and abundant flora with an estimated 45,000 plant species, including many medicinal plant species found in a wide range of climatic and geographic zones. Numerous species have been employed in Ayurvedic, Unani, and other traditional medical systems [1]. In India, the usage of traditional medicinal plants dates back around 4,000 years. Ever since the beginning of time, people have used medicinal plants to heal a variety of illnesses. In India, the usage of herbal weeds as therapeutic plants dates back around 4,000 years. Throughout history, all cultures have utilized herbs. It played a crucial role in the evolution. Approximately 80% of people in developing countriesg0et their medical care from traditional medicines [2]. Eighty percent of people in less industrialized and developing nations still only utilize traditional medicine made from local weed plants, and eighty-five percent of traditional medicine uses plant extracts [3]. Approximately 90% of industrially utilized medicinal herbs are harvested from the wild. Because elements including roots, bark, wood, stems, and, in the case of herbs, the entire plant are used, destructive harvesting accounts for more than 70% of plant collections. Nearly 200 plant species have been designated as threatened as a result of the assessments completed thus far for the prioritized native medicinal species [4]. Numerous plants and herbs are losing their natural home. Many of them are in danger of being extinct.According to the Red list of threatened species 44 plant species are critically endangered, 113 endangered and 87 vulnerable in India alone [5]. Of the nearly 1800 species of higher plants listed in the Red data book 171 are know from Tamil Nadu [6]. Most if these species are restricted to southern peninsula. Several workers were reported the utility of plants for the treatment of various diseases by the different tribal and rural people inhabiting in various regions of Tamil Nadu [7-13].

Materials and Methods
Description of the study area
An extensive study was carried out at the Agricultural College and Research Institute, Tamil Nadu Agricultural University, Kudumiyanmalai, Pudukkotai district, South India, over six months, from January to June 2022, in order to identify, collect, and catalog weeds as medicinal plants (Figure 1). The college is situated at an elevation of 119 (390 feet) above mean sea level, between latitudes 10º 24'N and longitudes 78º 40' E. The college occupies around 110 acres and is bordered by Kudumiyanmalai on the west, Visalur village on the south and southeast, and Vayalogam village on the north and northeast.Temperature scarcely fluctuates in the year, with the mean monthly minimum and maximum temperatures of 18.6 °C and 40.1 °Crespectively and annual average rainfall reaches 960mm.

Collection of plants
The plants, both in floral and fruiting stages, were first gathered for the purpose of identifying weeds before being classified as medical herbs. Plant twigs with a few leaves were gathered for accurate identification in the event that there were no flowering or fruiting circumstances at the time of collection. Herbarium preparation was done after the gathered plant twigs were appropriately tagged with the appropriate accession number.

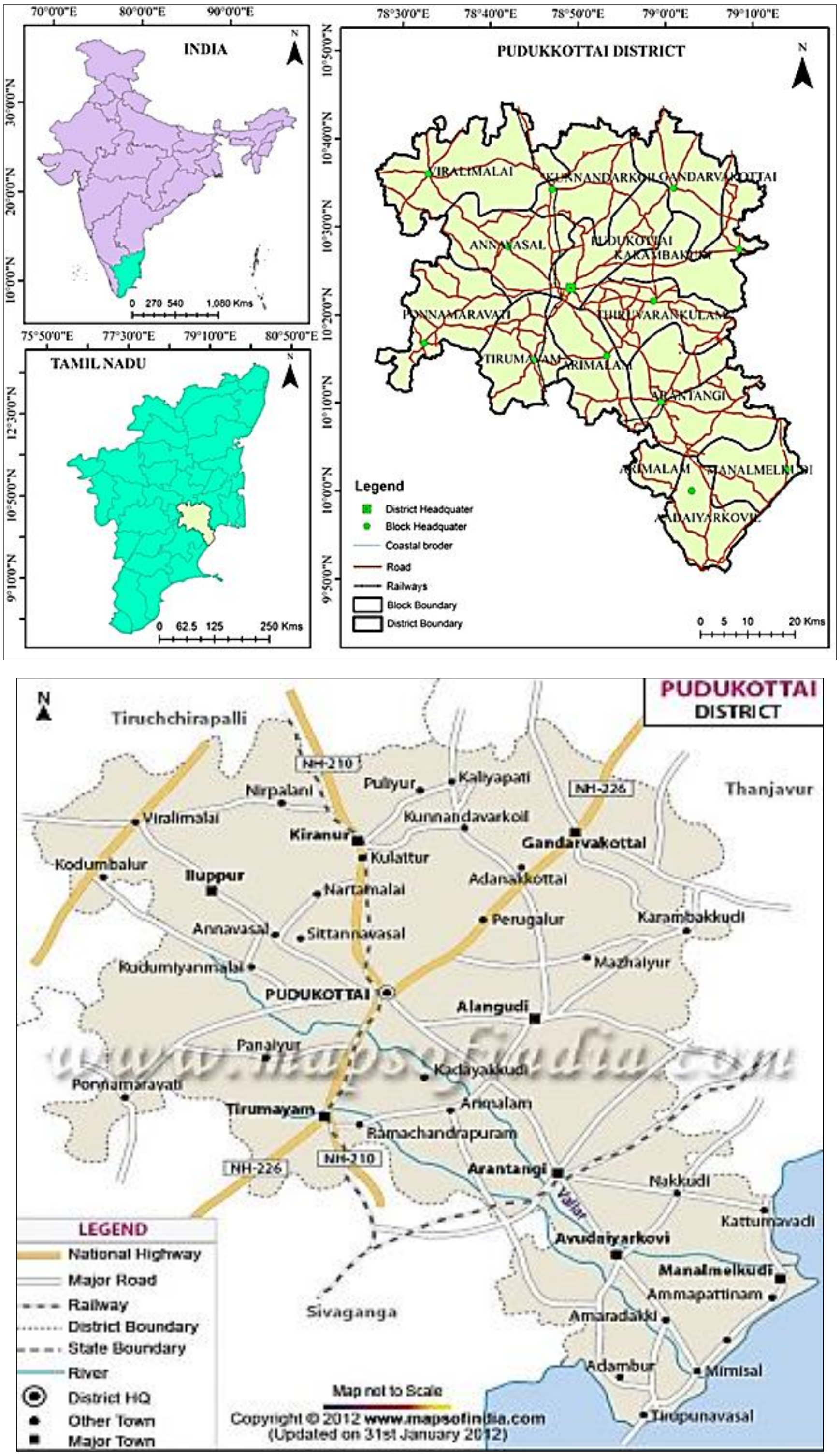

Fig 1: Location area studied in Pudukkottai District, Tamil Nadu, India

Field observation and records

For the weeds considered as medicinal plants, which were used by the healers and households by the local, their vernacular names in Tamil were recorded. The plants were all tagged, their details were accurately documented, and all specimens from the field work were identified using the Flora of Presidency of Madras and the Flora of Palani Hills. The nomenclature was then determined and deposited as a herbarium in the Department of Agronomy, Agricultural College and Research Institute, Tamil Nadu Agricultural University, Kudumiyanmalai, Pudukkottai District, Tamil Nadu, South India [14–22].

Results

Important Medicinal plants

In the present study, there are 60 medicinally important weed species belonging to 31families were collected from the college premises and their botanical name, family name, common or vernacular name, parts used and their medicinal properties were given in Table 1.

Among the medicinal weeds family, Amaranthaceae (6), Fabaceae (5), Euphorbiaceae(4), Solanaceae (4) and Lamiaceae (4) were represented by the highest number of species followed byAcanthaceae, Asteraceae, Malvaceae and Rubiaceae(3 species), three families were represented by 2 species and 19 families represented by a single species.

Table 1: List of traditionally important medicinal weeds in college campus

Local Name	Botanical Name	Parts used	Family	Medicinal uses
Adatodai	*Adathodavasica* Nees.	Leaves	Acanthaceae	Used in bronchial troubles
Aavaram poo	*Cassia auriculata* (L.)	Flower	Caesalpiniaceae	Reduce the abdomen heat
Amman paccharisi	*Euphorbia hirta*	Flower and leaves	Euphorbiaceae	Used for respiratory ailments
Arugampul	*Cynodondactylon*	Leaves and stem	Poaceae	Used for piles, skin and eye problems
Aruvamooku poondu	*Sida acuta*	Leaves and root	Malvaceae	Used for diabetic malaria and other fevers
Auvri	*Indigofera caerulea*	Leaves	Fabaceae	To cure asthma
Chakravarthi keerai	*Chenapodium album*	Leaves	Amaranthaceae	To reduce body heat
Chayaver	*Oldenlandiadiffusa*	Whole plant	Rubiaceae	Cure urinary tract infections
Chiriyanangai	*Andrographis paniculata* Nees.	Whole plant	Acanthaceae	Used for Snake bite
Chotthukathalai	*Aloe Vera* (Mill.)	Leaves	Aloaceae	Keep our body cool and hair conditioning also
Kaatunochchi	*Vitex negundo* (L.)	Leaves	Verbenaceae	To cure headache
Kandankaththiri	*Solanum surattense* (Burm.f.)	Unripedfriut	Solanaceae	To control tooth sensitive
Kannankeerai	*Commelinabenghalensis* (L.)	Leaves	Commelinaceae	It gives mother liquos vitamin
Karisalankanni	*Ecliptaprostrata*	Leaves	Asteraceae	It helps for treat all kinds of hair problems
Keelanelli	*Phyllanthus amarus*	Leaves	Euphorbiaceae	To cure jaundice
Kolinchi	*Tephrosia purpurea*	Whole plant	Fabacea	It is used to cure tumors
Kovamapalam	Coccinia grandis (L.) Voigt	Fruit	Cucurbitaceae	It helps to purify the blood
Kuppameni	*Acalypha indica* (L.)	Leaves	Euphorbiaceae	To cures skin allergy and itch
Mookuthi poo	*Vernonia cinerea*Less.	Leaves	Asteraceae	To control eye irritation
Mudakathan	*Cardiospermum halicacabum*	Leaves	Sapindaceae	Knee Joint pain relief, remove gas trouble
Mukurattai	*Boerhaeviadiffusa*	Whole plant	Nyctaginaceae	Used for pain relief
Naikadug	*Cleome viscosa*, L.	Leaves	Capparidaceae	Used for Menstrual problem
Nathaisuri	*Spermacoce hispida*, L.	Whole plant	Rubiaceae	Cure Diarrhoea
Naayurivi	*Achyranthes aspera*(L.)	Leaves	Amaranthaceae	It helps to cure left injuries
Netti	*Aeschynomene indica*	Aerial parts	Fabaceae	It is used for wound healing
NilaNelli	*Phyllanthus maderaspatensis*	Leaves	Phyllanthaceae	used to treat headache
Nilavaembu	*Andrographis paniculata*	Leaves	Acanthaceae	Used as a bitter tonic and febrifuge
Oomathai	*Datura metal*(L.)	Leaves	Solanaceae	Cure cold
Panipayer	*Phaseolus trilobus* Ait	Leaves and fruits	Fabaceae	It is used for piles, dysentery, cough, and gout
Pannaikeerai	*Celosia argentea*	Leaves	Amaranthaceae	It used for eye diseases
Pasalikeerai	*Portulaca oleracea* (L.)	Leaves	Portulaceae	It used to control nerves weakness
Periyamookuthi	*Parthenium hysterophorus*	Leaves	Orchidaceaea	To control eye irritation
Peyaverai	*Cassia occidentalis*	Leaves	Fabaceae	It is used for laxative
Pirandai	*Cissus quadrangularis* (L.)	Stems	Vitaceae	It is used to control sugar
Poduthala	*Phyla nodiflora*. Greene.	Leaves and fruits	Verbenaceae	It is used for ulcers, wounds and asthma
Pongapoo	*Aerva lanata*	Whole plant	Amaranthaceae	Used for treating kidney stones
Pumpillu	*Ageratum conyzoides* L.	Leaves	Asteraceae	It is used as a blood coagulant and to heel the wounds rapidly
Puthina	*Mentha piperata* (L.)	Leaves	Lamiaceae	It minds helps to keep our tooth whitening and refreshing
Rail poondu	*Croton sparsiflorus*	Leaves	Euphorbiaceae	Cure for fever
Rathasoori	*Borreria hispida*	Leaves	Rubiaceae	Remedy for cough and malaria
Saaruvalai	*Trianthemaportulacastrum*, L	Whole plant	Aizoaceae	It used for edima
Sirunerunji	*Tribulusterrestris*, L	Whole plant	Zygophyllaceae	Cure kidney stone
Siruthumbai	*Leucus aspera* (Willd.) Link	Flowers & leaves	Lamiaceae	It helps to reduce cold effect

Sodakkuthakkali	*Physalis minima* (L.)	Leaves	Solanaceae	It helps to control haemorrhage
Sundakai	*Solanum nigrum* L	Fruit	Solanaceae	Used as laxative and diuretic
Sunnambukeerai	*Digera arvensis*	Leaves	Amaranthaceae	It helps for digestion
Talakkaipoondu	*Corchorus trilocularis*	Leaves	Tiliaceae	To reduce swellings
Thaivailai	*Gynandropsis pentaphylla*	Leaves	Capparaceae	It is used to prevent ear problem
Thandankeerai	*Amaranthus spinosus* (L.)	Leaves	Amaranthaceae	It keeps our industine very clean
Thatha poo chedi	*Tridax procumbens* (L.)	Leaves	Trapaceae	It is used to cure the wounds
Thottalsiniki	*Mimosa pudica*, L.	Whole plant	Mimosaceae	It is used for headache
Thulasi	*Ocimumbasilium* (L.)	Leaves	Lamiaceae	To cure nasal related troubles
Thumbai	*Leucus aspera*	Leaves and flower	Labiatae	Cure cough and skin disorder
Thuthi	*Abutilon indicum (*Link) Sweet	Leaves	Malvaceae	Relieve leg pain and cure piles
Vallarai	*Centella asiatica*, Urb.	Leaves	Umbelliferae	Increase memory power
Varttilaikasturi	*Abelmoschus moschatus*. Medik.	Whole plant	Malvaceae	It is used as antiseptic, stimulant, cooling tonic and carminative
Veliparuthi	*Pergulariadaemia* (Forssk.) Chiov.	Leaves	Asclepiadoideae	Relieve headache &treatment of diarrhea
Vethupadakki	*Anisomelesmalabrica*	Leaves	Lamiaceae	Used for management of diabetes mellitus
YaanaiNerunji	*Pedalium murex*	Leaves	Pedaliaceae	It is used for prevention of kidney stone formation
Yerukku	*Calotropis procera* (L.)	Flower	Asclepiadaceae	It helps to maintain youth hood in our body

Diseases cured by medicinal weeds

The peoples in Kudumiyanmalai, Visalur, Vayalogam and near by the college campus of Pudukkottai Districtuses a variety of medicinal weeds to treat a wide range of illnesses and ailments, including diarrhea, diabetes, asthma, fever, jaundice, rheumatism, wounds, cuts, stomach pain, cough, cold, poisonous bites, body heat, body pain, bowl complaint, bronchitis, dysentery, earache, edima, eye problems, hair growth, intestinal worms, jaundice, leprosy, menstrual problems, piles, pimples, ulcer, toothache, urinary problems, vomiting, and more.

Parts of medicinal weeds used

The peoples in Kudumiyanmalai, Visalur, Vayalogam and near by the college campus of Pudukkottai District used diverse parts of the medicinal weeds based on their ability to cure disease such parts includes leaf, roots, bark, seed, fruit, flower, stem, etc. Mostly leaves and some people used all parts of the plants by the village peoples, it accounts for 68% of leaves, next predominantly used parts are whole plants, it contributes 17% followed by flower 7%, fruit 5% and stem 2%.

Discussion

At the Agriculture College and Research Institute of Kudumiyanmalai, Pudukkottai district, Tamil Nadu, India, the project work for the identification and cataloguing of medicinal weeds was completed. Sixty significant medicinal plants were identified and documented throughout this examination. This is the first study on medicinal weeds conducted in a Tamil Nadu Agricultural University constituent college. The plants were described along with their family, popular or colloquial name, part morphology, and commercial or medicinal qualities. For their medicinal purposes, the gathered medicinal weeds use many morphologically beneficial sections, including leaves, flowers, seeds, fruit, and stems. Numerous illnesses, including dengue fever, skin conditions, knee discomfort, kidney stones, digestive issues, hemorrhage, etc., are treated with these gathered medicinal plants.

Therefore, there is a great deal of potential for tribal remedies made from plant materials that have not yet been investigated, examined, or recorded. Over the past ten years, the conservation of medicinal plants has been the subject of several formal and informal conversations at national and international forums, conferences, workshops, seminars, and congresses. Numerous authors have previously highlighted a variety of conservation techniques, which are currently being used again. Among these techniques are public awareness campaigns, in-situ conservation of wild species, cultivation in botanical gardens, and germplasm collection for the creation of germplasm banks.

Since there are no negative effects or toxicity associated with the herbal medications, the current study is crucial. Since ancient times, herbal medications have also been utilized as a home cure for common illnesses. The significance, use, and preservation of medicinal plants are also the primary subjects of this study. There are several potential uses for this work, including treating a variety of illnesses in rural populations. These herbs have been used by the villagers for many years to treat both infectious and non-infectious illnesses. In addition, raising awareness of traditional medicinal weed plants among rural residents is a significant use of this research.

Conclusion

The project at the Agriculture College and Research Institute, Kudumiyanmalai, identified and catalogued 60 significant medicinal weeds, marking the first study of its kind at Tamil Nadu Agricultural University. The documented plants, with their medicinal properties, treat a variety of ailments, including dengue, skin conditions, and digestive issues. The research highlights the untapped potential of tribal remedies and emphasizes the need for conservation of medicinal plants. By raising awareness and preserving these plants, the study can benefit rural populations, promoting the use of herbal medicine as a safe, effective alternative for treating various health conditions.

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References

1. Pal DC, Jain SK. Tribal Medicine. Calcutta, India: Naya Prokash; c1998. p. 316.
2. Ghosh A. Herbal folk remedies of Bankura and Medinipur districts, West Bengal. Indian J Tradit Knowl. 2003;2:393-6.
3. Farnsworth N, Akerele AO, Binge AS, Soerjarto DD, Guo Z. Medicinal plants in therapy. Bull World Health Organ. 1985;63:965-81.
4. Ved DK, Kinhal GA, Ravikumar K, Vijaya Shankar R, Haridasan K. Conservation assessment and management prioritization (CAMP) for the wild medicinal plants of North-East India. Med Plant Conserv. 2005;11:40-4.
5. McNeely GA, Miller KR, Reid WV, Mittermeier RA, Werner TR. Conserving the world's biological diversity. Michigan: IUCN; c2001.
6. Botanical Survey of India. Red Data Book of India Plants, Vol II. Nayer MP, Shastry ARK, editors. Michigan: Botanical Survey of India; c1988.
7. Shanmugam S, Kalaiselvan M, Selvakumar P, Suresh K, Rajendran K. Ethnomedicinal plants used to cure diarrhoea and dysentery in Sivagangai district of Tamil Nadu, India. Int J Res Ayur Pharm. 2011;2(5):991-4.
8. Nandagopalan V, Anandh SP, Lakshmi Prabha A, Selvakumar U. An ethnobotanical study in the Pudukkottai district, South India. Asian J Exp Biol Sci. 2011;2(3):412-21.
9. Maruthupandian A, Mohan VR. Observations of ethnomedicinal plants from Sirumalai hills in Western Ghats of Tamil Nadu, India. J Herbal Med Toxicol. 2010;4(2):89-92.
10. Ayyanar M, Sankarasivaraman K, Ignacimuthu S, Sekar T. Plant species with ethnobotanical importance other than medicinal in Theni district of Tamil Nadu, Southern India. Asian J Exp Biol Sci. 2010;1(4):765-71.
11. Shanmugam S, Manikandan K, Rajendran K. Ethnomedicinal survey of medicinal plants used for the treatment of diabetes and jaundice among the villagers of Sivagangai district, Tamil Nadu. Ethnobot Leaflets. 2009;13:186-93.
12. Arunachalam G, Karunanithi M, Subramanian N, Ravichandran V, Selvamuthukumar S. Ethnomedicines of Kolli hills at Namakkal district in Tamil Nadu and its significance in Indian systems of medicine. J Pharm Sci Res. 2009;1(1):1-15.
13. Ayyanar M, Sankarasivaraman K, Ignacimuthu S. Traditional herbal medicines used for the treatment of diabetes among two major tribal groups in South Tamil Nadu, India. Ethnobot Leaflets. 2008;12:276-80.
14. Gamble JS, Dunn ST, Fischer CEF. Flora of the Presidency of Madras, Vol. 3. New York: Adlard & Son Limited; c1957.
15. Mathew KM. The flora of the Tamil Nadu Carnatic, Vol. III. Pennsylvania: Rapinat Herbarium St. Joseph College; c1983.
16. Matthew KM. An excursion flora of central Tamil Nadu, India. New Delhi: Oxford and IBH Publishing Company; c1995.
17. Nair NC, Hendry AN. Flora of Tamil Nadu Series I, Vol. 2. Coimbatore: Botanical Survey of India; c1983.
18. Nayar MP, Thotharthr K, Sanjappa M. Flora of India, Fascicles 19. Calcutta: Botanical Survey of India; c1988.
19. Nayar MP, Thotharthri K, Sanjappa M. Flora of India, Fascicles 20. Calcutta: Botanical Survey of India; c1988.
20. Sharma BD, Balakrishnan NP. Flora of India, Vol. 1. Calcutta: Botanical Survey of India; c1993.
21. Sharma BD, Sanjappa M. Flora of India, Vol. 3. Calcutta: Botanical Survey of India; c1993.
22. Sharma BD, Sanjappa M. Flora of India, Vol. 4. Calcutta: Botanical Survey of India; c1993.
23. Nadkarni AK. Dr. K.M. Nadkarni's Indian Materia Medica, Vol. 1. 4th ed. Bombay: Popular Prakashan; c1976. p. 719-21.
24. Sayed Nudrat Z, Usha M. Medicinal and aromatic plants of India, Part I. Khan IA, Khanum A, editors. Hyderabad: Ukaaz Publication; c2005. p. 35.