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RESEARCH ARTICLE

Ethnobotanical Survey of traditional medicinal plants used for various treatments in the people of Sirkali taluk, Nagapattinam District, Tamilnadu, India.

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ABSTRACT

The present study aims to investigate the survey of ethno medicinal plant availability in the area of Sirkali Taluk, Nagapattinam District, Tamilnadu. The information was collected through interviews, a questionnaire, discussions, and field observations with local herbal healers and experienced elders of the study area. In the present investigation, we identified about 72 medicinal plants belonging to 47 families. The medicinal plants are traditionally used for various treatments like, jaundice, hepatic disease, diabetes, headaches, fever, etc. As a result, the current survey assisted in understanding the traditional medicinal plant knowledge of the Sirkali taluk people. These people are still dependent on indigenous knowledge for health care, which is influenced by culture and socioeconomic aspects. Nowadays, the conservation of traditional knowledge is greatly threatened by many factors related to the modernization of the region and the lack of interest among traditional healers in transferring traditional health knowledge and technology to the next generation. Moreover, it may enhance the practical use of medicinal plants, and the focus must be on their pharmacological importance.

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Introduction

Over the last several decades, there has been a revival in investigating the properties of medicinal herbs and their traditional applications in many regions of the world (Teixeira et al., 2020). Herbal medicines are said to be the earliest types of health care known to mankind. Prior to the establishment of modern medicine, conventional systems for treating illnesses that emerged over centuries

throughout many societies are still preserved as vast traditional knowledge focusing on herbal remedies (Najmi et al., 2022). Plants, through their traditional use, play an essential role in the health of millions of people in vario us communities across India (Pandey et al., 2013). Traditional herbal medicine serves as the basis for about 75–80% of the world's population, with a focus on basic health care in underdeveloped nations due to its cultural acceptance, compatibility with the body of an individual, and lack of adverse effects (M. H. Rahman et al., 2022). However, there has been a significant surge in the use of herbal therapy in affluent nations in recent years (Atanasov et al., 2021).

The climate, soil, height, and latitude of India vary greatly. Nature has provided a highly rich botanical landscape, and many different species of trees and shrubs grow wild in various sections of the country (Goyal & Arora, 2009). India is a nation rich in indigenous herbal resources that grow on different terrains and under shifting agro-climatic conditions, allowing the growth of around 6,000 species that are utilised in traditional, folk, and herbal remedies. However, only 3000 plants are medicinally recognised for their worth, accounting for approximately 75% of the medicinal needs of third-world nations. Herbal medicines, according to the WHO, serve the health requirements of about 80% of the world's population, particularly millions of people living in large rural areas of poor nations (Karlberg, 2001).

Plants have served as the foundation of competent traditional medicine systems for thousands of years and continue to serve individuals with novel treatments (Haque et al., 2018). Notwithstanding the knowledge that the pharmaceutical industry has created a great variety of therapeutic agents, indigenous phytotherapy is still practised in many rural regions, with therapies passed down from subsequent generations to the present (Newman & Cragg, 2020). The World Health Organisation (WHO) has emphasised the significance of traditional indigenous medicines, as the vast majority of rural people in poor countries continue to use these medicines as their first line of defence in health care (Sofowora et al., 2013). Approximately 85% of the drugs used in fundamental medical treatment originate from herbs (Aina et al., 2020). More than 50,000 of the total 4, 20,000 flowering plants reported from throughout the world (Govaerts et al., 2021) are used for therapeutic purposes (Chen et al., 2016). More than 43% of the total blooming plants in India are thought to be medicinally important (Parveen et al., 2007). Plants have long been used for medical reasons in India, as evidenced by ancient texts. However, organised investigations in this manner began in 1956 (Kumar et al., 2021), and such studies are gaining attention and appeal as traditional knowledge fades and plant populations decline.

Human life and culture in Nagappattinam district have been directly or indirectly related to and impacted by the surrounding environment. People survive partially on the leaves, tubers, and fruits of terrestrial forest plants and employ plant pharmaceuticals as medicines, providing ample opportunity for ethnobotanical research. As a result, identifying the indigenous names and usage of plants offers huge potential societal advantages

(Jarapala et al., 2021). The purpose of this study is to look at the medicinal efficacy and ways of plant utilisation in and around Sirkali taluk, Nagapattinam District, Tamil Nadu.

Materials and Methods

Study area

In Sirkali taluk, Nagapattinam District, Tamil Nadu, an ethno medicinal plant study was conducted (Figure 1). Sirkali is located on the eastern edge of the Kumbakonam - Shiyali ridge, which extends along the Kollidam River (City Corporate cum Business Plan for Sirkali Municipality, 2009) [13], at 11°14′N 79°44′E / 11.23°N 79.73°E / 11.23; 79.73. Sirkali lies 13 kilometres (8.1 miles) west of the Bay of Bengal and has an elevation of 5.18 metres (17.0 feet). It lies 95 kilometres (59 miles) north of Thanjavur, 24 kilometres (15 miles) north of Mayiladuthurai, and 20 kilometres (12 miles) south of Chidambaram. The town has long summers and short winters, with an average annual rainfall of 1,250 mm (49 in), primarily from the north-east monsoon between October and December (Francis, 2002). Sirkali is part of the Cauvery delta region and features irrigation canals known as the Kollidam canals that convey water from rivers and deposit fertile silt before it reaches the sea.

Collection of Medicinal plants

The ethnomedical plant survey was conducted among the local community, who were questioned in their homes. Field trips were made multiple times. Information gathered on ethnomedicinal plants has been acquired using the methods proposed by (Hook, 1872-1897). Knowledge about ethnomedical plants was gathered through questionnaires, interviews, and talks with locals. 150 people were questioned, both men and women, who rely on plants for medicine, either for self-medication or for treating others. The majority of the information was acquired from older people who have a long history of using herbs. The plant materials were identified using conventional flora. There were also photographs and slides taken. The accurate binomial names for the species obtained have been referred to in the flora of Tamil Nadu (Nair & Henry, 1983). Fresh plants obtained from the locals were examined for preliminary identification. The equivalent raw materials were collected, and the morphological characteristics of the fresh plants and their vernacular names were compared. Fewer responses were more informed and cooperative; they demonstrated new plants in the area, which will aid in final identification. The botanical names of medicinal plants are listed first, followed by the family, vernacular name, component employed, and healing practises.

Enumeration

The medicinal plant species were alphabetically organised. The enumeration of medicinal plants includes the scientific name, common name, family name, vernacular name (local name), and information such as the part(s) used alone. The people were mostly eager to share their knowledge of herbal medicine. The following 72 medicinal plants were discovered in the Sirkali taluk region.

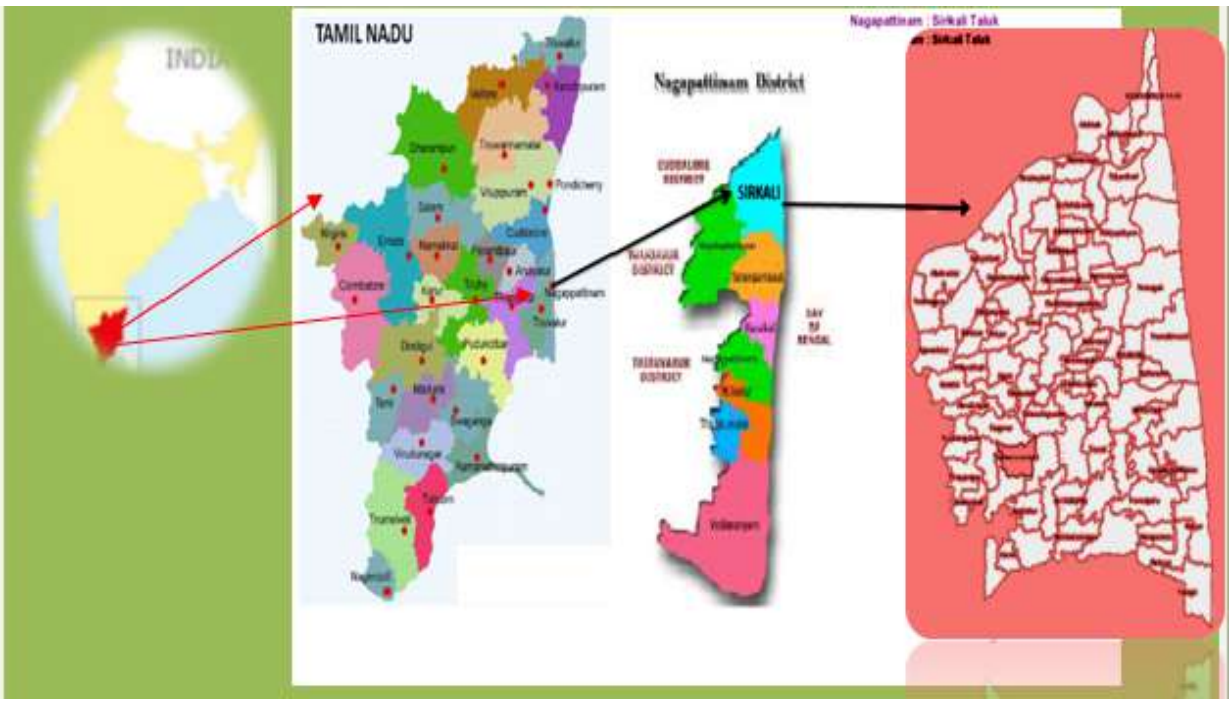

Fig 1. Map showing the Sirkali taluk from agapattinam District, Tamilnadu

Results and Discussion

For thousands of years, most herbs have been utilised as traditional medicines. The research findings are based on an assessment of traditional medicinal plant knowledge conducted in Sirkali taluk, Nagapattinam district, Tamil Nadu. Traditional knowledge on the medical benefits of medicinal plants has been gathered and represented. During the survey, 72 medicinal plant species from 47 families were discovered and recorded (Table 1 and Figure 2). The 72 medicinal plant species are used as herbal remedies to cure a variety of ailments. The plants are utilised either alone or in combination with other plants or plant components. All 72 medicinal plant species have substantial therapeutic properties.

Among the 47 families, most of the species were belonging to Solanaceae and Moraceae were abundantly represented (6 Sp each) and it's followed by Mimoceae, Cucurbitaceae, Poaceae, Acanthaceae, Malvaceae and Rubiaceae (3 Sp each). The remaining families only documented one or two species. Responses were gathered from herbalists, village inhabitants, herbal medicinal practitioners, elders, and other traditional healers throughout this study. Various plant components were employed in the manufacture of herbal medicines employed in the remediation of a variety of ailments in the current investigation. The leaves, fruits, seeds, bark, and roots of a great number of the species were used to make medicine. Similar findings have been made in other villages in wooded regions, where the flora is usually green and the leaves are plentiful (Sofowora et al., 2013; Tariq et al., 2018).

The therapeutic use of plant leaves, flowers, fruits, and roots in illness management and treatment has been used for centuries (Ahmed et al., 2021; Prasathkumar et al., 2021). Plant-derived medications are commonly utilised because they

are safer than synthetic counterparts, are more readily available, and are less expensive (Rahman et al., 2022; Vaou et al., 2021). Plant treatments were typically made as infusions or decoctions. The infusion was made using several components of the plants, such as leaves, flowers, and stem buds (Motti & de Falco, 2021). The benefit of this approach is that many active principles are extracted with little to no change in their chemical structure, keeping practically all of their qualities (Panda et al., 2022). Table 1 and Figure 2 show some herbs that are beneficial in treating ulcers, menstruation problems, cough, jaundice, eye illness, fever, dysentery, skin disorders, antibacterial activity, renal failure, neurological problems, bone fractures, food poisoning, sunstroke, and other conditions. Diabetes was cured by medicinal plant species such as *Aloe vera, Cassia auriculata, Coccina indica, and Syzygium cumini. Species such as Ficus benghalensis, Cocos nucifera,* and *Abarus precatorius* have tooth-healing qualities. Plants with medicinal characteristics, such as Acalypha indica and Ixora coccinia, are used to treat liver disorders. The majority of plants utilised by the residents of Sirkali taluk are not preserved and are overexploited. It is vital to discover strategies to encourage local people to practise ethnomedicine, which is defined as the study of recording indigenous peoples' heritage of plant usage and further examining our relationships with the environment as a whole.

Conclusion

As a result, the current survey assisted in understanding the traditional medicinal plant knowledge of the Sirkali taluk people. For health care, these peoples continue to rely on indigenous knowledge, which is influenced by culture and socioeconomic circumstances. Nowadays, the preservation of traditional knowledge is jeopardised by a number of factors relating to the region's modernization and traditional healers' lack of interest in passing on traditional health knowledge and technology to the next generation. Furthermore, it may improve the actual application of medicinal plants, and the emphasis must be on their pharmacological relevance.

Table 1. Medicinal plant used for various diseases by the peoples of Sirkali taluk, Nagapattinam District, Tamilnadu.

S. No.	Botanical name	Common name	Family	Vernacular name	Plant parts used	Curative practices
1	*Abutilon indicum*	Country Mallow	Malvaceae	Thuthi	Leaf	Ulcers, toothache, piles, laxative , sedative
2	*Acalypha indica*	Indian acalyph	Euphorbiaceae	Kuppameni	Whole plants	Liver, tonic, snake bits, black dye
3	*Achyranthes aspera*	Prickly chaff flower	Amaranthaceae	Naiyuruvie	Whole plants	Stomach ache, piles, menstrual,

						dysentery
4	*Adhatoda vasica*	Malabar nut	Acanthaceae	Adhatoda	Leaf	Cough, anti inflammatory, piles
5	*Aegle marmelos*	Bengal quince	Rutaceae	Vilvam	Leaves, seeds, fruits	Jaundice, eye-disease fever, asthma, abdominal dysentery
6	*Aloe vera*	Chinese Aloe, Indian Aloe	Liliaceae	Kumari	whole plant	Wounds, diabetics, anti bacterial, cooling purposes
7	*Aristolochia bracteolate*	Dutchmaris pipe fly	Aristolohiaceae	Aduthina palai	Leaf	Fever, worm, wounds
8	*Andrographis paniculata*	Maha-tita	Acanthaceae	Siriyanangai	Leaves	Fever and piles
9	*Abarus precatorius*	Jequirity, Crab's eye, Indian licorice	Fabaceae	Kundumani	Leaves	Dentifrice, Strengthening The Gum and Teeth
10	Acacia Arabica willd	Gum arabic tree, Egyptian thorn	Mimosaceae	Karuvelam	gum, bark, fruit, young stem	Gargle for toothache, gum disorders, toothbrush.
11	*Alternanthera sessilis*	Sessile joyweed, Dwarf copperleaf	Amaranthaceae	Ponaganikerai	Leaves	Headache, hepatitis and asthma
12	*Barleria cristata*	Philippine violet, Bluebell barleria	Acanthaceae	December poo	Young Plant	Cough and fever
13	*Basella alba*	Climbing spinach, Indian spinach	Chenopodiacea e	Pasali keerai	Leaves	Skin diseases and wounds
14	*Borassus flabellifer*	Palmyra palm	Palmaceae	Panai	Leaf, flowers, fruits	Heal wounds, skin diseases, sugar antidote for poisoning
15	*Calotropis gigantean*	Crown flower	Asclepiadaceae	Erukku	Root bark, Flowers	Paralysis, swelling and intermittent fevers, stomachache
16	*Carcia papaya*	Papaya	Caricaceae	Papali	Fruits	Stings, burns, antibacterial, kidney failure
17	*Cardiospermu Halicacabum*	Ballonvine	Sapindaceae	Mudakattan	Leaf	Rheumatism, nervous, snake bite

18	*Ceiba pentandra*	Kapok	Bombacaceae	Ilavam	Bark, Seeds	Abortifacient, brain tonic, stimulant, digestive and laxative.
19	*Cassia auriculata*	Ranawara or Avaram	Caesalpiniaceae	Avarai	Roots, leaves and flowers	Diabetes and urinary troubles
20	*Centella asiatica*	Indian pennywort	Umbellifera	Vallarai	Whole plant	Extraction Anti-inflamatory, Hypertension
21	*Citrus aurantifolia*	Key lime	Rutaceae	Elumitchai	Leaves	Headache, cold and fever
22	*Citrus medica*	Persian apple	Rutaceae	Naraththankayi	Leaves	Fever and Dyspepsia.
23	*Clitoria ternate*	Butterfly pea	Fabaceae	Sangu Pushpam	Leaf	Skin, eruption, ulcer, nervous problems
24	*Cocos nucifera*	coconut palm	Arecaceae	Thennai	branch of spadix	Foetid breath, tooth brush
25	*Coccinia indica*	Coccinia	Cucurbitaceae	Kovai	Leaf, fruits	Ulcers, diabetes, cure fever, anti inflammatory
26	*Couroupita Guianensis*	Cannon balltree	Lecythidaceae	Nagalingom	Flowers	Cure cold, stomach ache
27	*Cynodon dactylon*	Durva grass, Dhoob, Bermuda grass, Bermudagrass, Devil's grass, Couch grass	Poaceae	Arugampul	Leaf	Mastitis gastric troubles, internal injury, sprains, bone fracture, food poisonings, sunstroke, broken horn, clotting of blood.
28	*Datura meta*	Thorn apple	Solanaceae	Umaththai	Leaf	Anti spasmodic, cough, asthma, gastric ulcer
29	*Eclipta alba*	Bringaraja	Asteraceae	Karisilanganni	Leaves	Skin ulcers, cure wounds, eye drops
30	*Emblica officinalis*	Indian gooseberry	Euphorbiaceae	Nelli	Leaf, bark, flowers, fruits, nuts	Tuberculosis, asthma, cancer, jaundice, liver tonic
31	*Ficus benghalensis*	Indian Banyan	Moraceae	Alamaram	Bark, leaf, flower, latex, adventiti	Dental and gum disorders,Tooth brush

					ous root	
32	*Ficus racemosa*	Cluster Fig Tree, Indian Fig Tree or Goolar	Moraceae	Atti	latex, bark	gargle for sore throat
33	*Ficus religiosa*	Pee pal	Moraceae	Arasu	Whole plant	constipation, digestion, asthma, toothache, rheumatic pain
34	*Hibisicus rosasinensis*	Shoe flower	Malvaceae	Sembaruthi	Flower	Inflammations, god, leaves for hairs, menstrual, problems headache
35	*Hygrophila auriculata*	Marsh barbel or Gokulakanta	Acanthaceae	Neer mulli	Seeds and Roots	Primogenital system troubles.
36	*Ixora coccinea*	Jungle geranium, Flame of the woods, and Jungle flame	Rubiaceae	Idlipoo	Leaves, flower	Liver toxicity
37	*Jasminum auriculatum*	Jasmine	Oleaceae	Mullai	Flowers	Urinary disorders hair-oil, menstruation
38	*Jatropha curcas*	Puriging nut	Euphorbiaceae	Katta amankku	Bark and latex	Stomach related problems during pregnancy
39	*Lawsonia inermis*	Henna	Lythraceace	Maruthani	Leaves Seeds	Cure wounds, skin ulcers eye drop
40	*Leucas aspera*	Thumbai	Lamiaceae	Thumbai	Leafs	dysentery, headache, fever
41	*Limonia acidissima*	Wood apple	Rutaceae	Vila	Bark, leaves, fruits seeds	skin eruptions dysentery liver and spleen disorders
42	*Madhuca indica*	Indian butter Tree	Sapotaceae	Illupai	Leaves, flowers, seeds	Anti-bacterial, cough, ulcers, itching
43	*Magnifera indica*	Mango	Anarcardiaceae	Ma	Leaves, fruits	Sugar, menstrual disorder
44	*Mirabilis jalapa*	Four o'clock flower or Marvel of Peru	Nyctaginaceae	Andhimalli	Leaf	Jaundice, Dysentery, Diarrhoea and Dyspepsia.
45	*Momordica charantia*	Bitter melon, Bitter gourd	Cucurbitaceae	Pavakkay	Root, Leaves	astringent and ophthalmic,

		or Bitter squash				emetic, anthelmetic and purgative; Fruits: stimulant and purgative.
46	*Moringa oleifera*	Moringa, Drumstick tree,	Moringaceae	Murungai	Leaves	Fertility and stomach pain
47	*Morinda citrifolia*	Great morinda,Indian mulberry, Noni,beach mulberry	Rubiaceae	Nuna	Leaves, Fruits	Spongy gum, throat complaints
48	*Mimosa pudica*	Sensitive plant, Sleepy plant and The touch-me-not	Mimosaceae	Thottasurungi	Leaves	Wounds
49	*Murraya koenigii*	Curry tree	Rutaceae	Karuveppilai	Fruits, leaves & seed	Vomiting, liver problem
50	*Musa paradisiacal*	Plantain	Musaceae	Vaalai	Whole plant	Dysentery, stomach ache, bleeding piles, ulcers, kidney, stones, snake poisons
51	*Nerium indicum*	Rose laural	Apocynaceae	Arali	Leaves, seeds	Cardiac tonic, leprosy, skin disease, snake bits
52	*Opuntia dillenii*	Erect Prickly Pear and Nopal Estricto	Cactaceae	Sappathikali	Fruits	Gonorrhoea, snake bite and dog bite.
53	*Ocimum sanctum*	Sacred basil	Lamiaceae	Tulasi	Whole plant	Fever, dysentery, skin infections, snake poisoning
54	*Pithecolobium dulce*	Madras thorn	Mimosaceae	Kodukkapuli	Root bark	Dysentery
55	*Psidium guajava*	Common guava	Myrtaceae	Koyya	Fruit, Leaf, Bark	Bleeding gum, mouth wash
56	*Pongamia pinnata*	Indian beech	Papilionaceae	Pongam	Leaves, bark, flower, seed	Skin, bleeding, piles, ulcers, anti-septic, anti parasitic
57	*Phyllanthus amarus*	Stonebreaker or Seed-under-leaf	Euphorbiaceae	Keezhanelli	whole plant	Jaundice, skin Disease
58	*Ricinus*	Castor oil	Euphorbiaceae	Aamanakku	Seed	Ulcer, eye

	communis	plant				Irritation
59	*Saccharum officinarum*	Sugar cane	Poaceae	Karumbu	Stem	Arthritis, bedsores, cough, diarrhea, fever, inflammation, skin, sores, sore throat, spleen, tumors, and wounds
60	*Solanum surattense*	Kantakari	Solanaceae	Kandankathiri	Seed	Gum disorders, tooth pain, Dentifrice
61	*Solanum trilobatum*	Purple fruited pea egg plant	Solanaceae	Thuthuvalai	Leaf	Cough, skin Disease
62	*Solanum torvum*	Night shade plant	Solanaceae	Sundakkai	Fruits	Asthma, tuberculosis, digestion
63	*Solanum nigrum*	Black night Shade	Solanaceae	Manathakkali	Leaf	Mouth ulcers
64	*Syzygium cumini*	Indian black Plum	Myrtaceae	Naval palam	Seed	Diabetes
65	*Tamarindus indica*	Tamarind	Ceasalpiniaceae	Puli	Leaf, bark, fruits, seeds	Jaundice, inflammatory, muscular and joint pain, bilious vomiting
66	*Tabernamonta nadivaricata*	Cape jasmine	Apocyanaceae	Nandhyavattai	Flowers	Skin diseases, toothache, intestinal worms
67	*Tribulus terrestris*	Cat's head, Devil's thorn, Devil's weed, Puncturevine	Zygophyllaceae	Nerunchi	Whole plant	Fever, headache, heel cracks.
68	*Vitis quadrangularis*	Wall Cissus	Vitaceae	Pirandai	Whole plant	Stomachache, cancer, asthma, cough
69	*Vigna mungo*	Black gram, Black lentil	Fabaceae	Ulunthu	Seed	Breast cancer
70	*Wedelia chinensis*	Chinese Wedelia	Asteraceae	Manjal karesalankanni.	Leaves	Jaundice.
71	*Ziziphus jujube*	Jujube	Rhamnaceae	Illanthai	Leaves, fruit, root	Anticancer, loss of appetite, diarrhoea, anaemia, wounds and ulcers, growth hairs, nervous diseases
72	*Zizyphus*	Indian plum	Rhamnaceae	Illandai	Fruits	Ulcers, cuts,

	mauritiana					liver trouble, asthma and fever

Abutilon indicum

Acalypha indica

Achyranthes aspera

Adhatoda vasica

Aegle marmelos

Aloe vera

Aristolochia bracteolate

Andrographis paniculata

Abarus precatorius

Acacia Arabica

Alternanthera sessilis

Barleria cristata

Basella alba

Borassus flabellifer

Calotropis gigantean

Carcia papaya

Cardiospermum halicacabum

Ceiba pentandra

Cassia auriculata

Centella asiatica


Citrus aurantifolia


Citrus medica


Clitoria ternate


Cocos nucifera


Eclipta alba


Emblica officinalis


Ficus benghalensis


Ficus racemosa


Ficus religiosa


Hibisicus rosasinensis


Hygrophila auriculata


Ixora coccinea


Limonia acidissima


Madhuca indica


Magnifera indica


Mirabilis jalapa


Jasminum auriculatum


Jatropha curcas


Lawsonia inermis


Leucas aspera


Momordica charantia


Moringa oleifera


Morinda citrifolia


Mimosa pudica


urraya koenigii


Musa paradisiacal


Nerium indicum


Opuntia dillenii


Ocimum sanctum


Pithecolobium dulce


Psidium guajava


Pongamia pinnata


Phyllanthus amarus


Ricinus communis


Saccharum officinarum


Solanum surattense


Solanum trilobatum


Solanum torvum


Solanum nigrum


Syzygium cumini

Fig 2. Photograph shows the availability of medicinal plants during ethno pharmacological survey in Sirkali taluk, Tamilnadu.

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References

Ahmed, S. R., Rabbee, M. F., Roy, A., Chowdhury, R., Banik, A., Kubra, K., Hassan Chowdhury, M. M., & Baek, K.-H. (2021). Therapeutic Promises of Medicinal Plants in Bangladesh and Their Bioactive Compounds against Ulcers and Inflammatory Diseases. *Plants*, *10*(7). https://doi.org/10.3390/plants10071348

Aina, O., Gautam, L., Simkhada, P., & Hall, S. (2020). Prevalence, determinants and knowledge about herbal medicine and non-hospital utilisation in southwest Nigeria: A cross-sectional study. *BMJ Open*, *10*(9). https://doi.org/10.1136/bmjopen-2020-040769

Atanasov, A. G., Zotchev, S. B., Dirsch, V. M., Orhan, I. E., Banach, M., Rollinger, J. M., Barreca, D., Weckwerth, W., Bauer, R., Bayer, E. A., Majeed, M., Bishayee, A., Bochkov, V., Bonn, G. K., Braidy, N., Bucar, F., Cifuentes, A., D'Onofrio,

G., Bodkin, M., Supuran, C. T. (2021). Natural products in drug discovery: advances and opportunities. *Nature Reviews Drug Discovery*, *20*(3), 200–216. https://doi.org/10.1038/s41573-020-00114-z

Chen, S. L., Yu, H., Luo, H. M., Wu, Q., Li, C. F., & Steinmetz, A. (2016). Conservation and sustainable use of medicinal plants: Problems, progress, and prospects. *Chinese Medicine (United Kingdom)*, *11*(1), 1–10. https://doi.org/10.1186/s13020-016-0108-7

Francis, W. (2002). *Gazetteer of South India* (Volume 2). Mittal Publications.

Govaerts, R., Nic Lughadha, E., Black, N., Turner, R., & Paton, A. (2021). The World Checklist of Vascular Plants, a continuously updated resource for exploring global plant diversity. *Scientific Data*, *8*(1), 1–10. https://doi.org/10.1038/s41597-021-00997-6

Goyal, A. k, & Arora, S. (2009). *India's fourth national report to the CBD*. 86.

Haque, M. I., Chowdhury, A. B. M. A., Shahjahan, M., & Harun, M. G. D. (2018). Traditional healing practices in rural Bangladesh: A qualitative investigation. *BMC Complementary and Alternative Medicine*, *18*(1), 1–15. https://doi.org/10.1186/s12906-018-2129-5

Jarapala, S. R., Shivudu, G., Mangathya, K., Rathod, A., Panda, H., & Reddy, P. K. (2021). A New Approach for Identifying Potentially Effective Indigenous Plants Consumed by Chenchu Tribes and Their Nutritional Composition-India. *American Journal of Plant Sciences*, *12*(08), 1180–1196. https://doi.org/10.4236/ajps.2021.128082

Karlberg, J. P. E. (2001). *General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine*. https://api.semanticscholar.org/CorpusID:14236154

Kumar, A., Kumar, S., Komal, Ramchiary, N., & Singh, P. (2021). Role of Traditional Ethnobotanical Knowledge and Indigenous Communities in Achieving Sustainable Development Goals. *Sustainability*, *13*(6). https://doi.org/10.3390/su13063062

Motti, R., & de Falco, B. (2021). Traditional Herbal Remedies Used for Managing Anxiety and Insomnia in Italy: An Ethnopharmacological Overview. *Horticulturae*, *7*(12). https://doi.org/10.3390/horticulturae7120523

Nair, N. ., & Henry, A. (1983). *Flora of Tamil Nadu, India. Ser. 1: Analysis.* Vol. 1. Botanical Survey of India, Coimbatore.

Najmi, A., Javed, S. A., Al Bratty, M., & Alhazmi, H. A. (2022). Modern Approaches in the Discovery and Development of Plant-Based Natural Products and Their Analogues as Potential Therapeutic Agents. *Molecules*, *27*(2). https://doi.org/10.3390/molecules27020349

Newman, D. J., & Cragg, G. M. (2020). Natural Products as Sources of New Drugs over the Nearly Four Decades from 01/1981 to 09/2019. *Journal of Natural Products*, *83*(3), 770–803. https://doi.org/10.1021/acs.jnatprod.9b01285

Panda, S. K., Gazim, Z. C., Swain, S. S., Bento, M. C. V. de A., Sena, J. da S., Mukazayire, M. J., Van Puyvelde, L., & Luyten, W. (2022). Ethnomedicinal, Phytochemical and Pharmacological Investigations of Tetradenia riparia (Hochst.) Codd (Lamiaceae). *Frontiers in Pharmacology*, *13*, 896078. https://doi.org/10.3389/fphar.2022.896078

Pandey, M. M., Rastogi, S., & Rawat, A. K. S. (2013). Indian Traditional Ayurvedic System of Medicine and Nutritional Supplementation. *Evidence-Based Complementary and Alternative Medicine*, *2013*, 376327. https://doi.org/10.1155/2013/376327

Parveen, Upadhyay, B., Roy, S., & Kumar, A. (2007). Traditional uses of medicinal plants among the rural communities of Churu district in the Thar Desert, India. *Journal of Ethnopharmacology*, *113*(3), 387–399. https://doi.org/https://doi.org/10.1016/j.jep.2007.06.010

Prasathkumar, M., Anisha, S., Dhrisya, C., Becky, R., & Sadhasivam, S. (2021). Therapeutic and pharmacological efficacy of selective Indian

medicinal plants – A review. *Phytomedicine Plus*, *1*(2), 100029. https://doi.org/https://doi.org/10.1016/j.phyplu.2021.100029

Rahman, M. H., Roy, B., Chowdhury, G. M., Hasan, A., & Saimun, M. S. R. (2022). Medicinal plant sources and traditional healthcare practices of forest-dependent communities in and around Chunati Wildlife Sanctuary in southeastern Bangladesh. In *Environmental Sustainability* (Vol. 5, Issue 2). Springer Nature Singapore. https://doi.org/10.1007/s42398-022-00230-z

Rahman, M. M., Dhar, P. S., Sumaia, Anika, F., Ahmed, L., Islam, M. R., Sultana, N. A., Cavalu, S., Pop, O., & Rauf, A. (2022). Exploring the plant-derived bioactive substances as antidiabetic agent: An extensive review. *Biomedicine & Pharmacotherapy*, *152*, 113217. https://doi.org/https://doi.org/10.1016/j.biopha.2022.113217

Sofowora, A., Ogunbodede, E., & Onayade, A. (2013). The role and place of medicinal plants in the strategies for disease prevention. *African Journal of Traditional, Complementary, and Alternative Medicines : AJTCAM*, *10*(5), 210–229. https://doi.org/10.4314/ajtcam.v10i5.2

Tariq, N. P. M. M., Balamurugan, V., Sabaridasan, A., & Saravanan, S. (2018). *Ethnobotanical Survey of Herbal Plants at Kalvarayan hills of Tamil Nadu, India*. *7*(2), 25–29. www.stmjournals.com

Teixeira, J. V. D. S., Dos Santos, J. S., Guanaes, D. H. A., da Rocha, W. D., & Schiavetti, A. (2020). Uses of wild vertebrates in traditional medicine by farmers in the region surrounding the serra do conduru state park (Bahia, Brazil). *Biota Neotropica*, *20*(1), 1–15. https://doi.org/10.1590/1676-0611-bn-2019-0793

Vaou, N., Stavropoulou, E., Voidarou, C., Tsigalou, C., & Bezirtzoglou, E. (2021). Towards Advances in Medicinal Plant Antimicrobial Activity: A Review Study on Challenges and Future Perspectives. *Microorganisms*, *9*(10). https://doi.org/10.3390/microorganisms9102041