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ETHNOMEDICINAL STUDIES OF COASTAL MEDICINAL PLANTS IN AROUND MANDAPAM COASTAL REGIONS, GULF OF MANNAR, TAMIL NADU

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ABSTRACT

India has one of the richest plant medical cultures in the world. Millions of rural households use medicinal plants in a self-help mode. In the present study the survey is made on the ethno medicinal plants used by local inhabitants from Mandapam coastal regions **(9°16'58"N 79°9'35"E)** Tamilnadu. The study announced that most plant species are traditionally used by the nearby villagers of in Mandapam coastal regions for medicinal and daily purposes. In the study 57 species belonging to 34 families under 53 genera of ethno medicinally important plant species were noticed and their medicinal properties to cure more than 40 diseases like asthma, anemia, bronchitis, cough, cold, diabetes, diarrhea, skin diseases, respiratory problems etc., The medicinal important plants with their botanical names, vernacular names, family, habit and parts used and these plants are important from their medicinal values as reported by the inhabitant of these areas have been enumerated. The main objective of this article was to enlist the wealth of medicinal coastal plants.

Keywords: Survey, Medicinal Plants, Medicinal Uses, Mandapam Coastal Regions, Gulf of Mannar, Tamilnadu

INDRODUCTION

Throughout history, humans have derived many uses and benefits from the plants found in their own region. Initially, wild plants were collected from their natural habitat followed

by the cultivation of those that were used most commonly. In India, there are about 54 million indigenous people of different ethnic groups inhabiting various techniques. The value of medicinal plants to the mankind is very well proven. It is estimated that 70% to 80% of the people worldwide rely chiefly on traditional health care system and largely on herbal medicines. India harbours about 15% medicinal plants, 20,000 medicinal plants of the world. About 90% of these are found growing wild in different climatic regions of the country **[1].** Scientific investigations of medicinal plants have been initiated in many parts of our country because of their contributions to health care. The tribal and rural people of various parts of India are highly depending on medicinal plant therapy for meeting their health care needs. This is attracting the attention of several botanists and plant scientists who directing vigorous researches towards the discovery or rediscovery of several medicinal plants along with their medicinal remedies for various diseases. 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 Tamilnadu **[2-4]** These indigenous groups possess their own distinct culture, religious rites, food habit and a rich knowledge of traditional medicine **[5-6].**

Plant resources contain and provide materials for survival, that is, economic, medicinal, forage values, but also possess and preserve cultural heritages, biological information and indigenous knowledge on their utility. However, unwise use and over exploitation can slowly eliminate a plant species from the environment**.** As a plant species is lost from a locality, the information contained in it will also be slowly blurred and finally become lost forever. As pointed out that both saving plant species and documenting and preserving indigenous knowledge are fundamental urgent issues. Traditional systems of drugs have been the starting point for the discovery of many important modern drugs. This fact led to chemical and pharmacological screening programmes of plants not only in India bit all over the world. India has one of the richest plant medical cultures in the world. Millions of rural households use medicinal plants in self-helf mode. Even now a day most of the population of the country is still depend on the ethnomedicines as they live in far flung areas where the facilities of the medicinal treatment are scarcely available. In view of the wide spread usage of medicinal plants in Unani, Siddha, Ayurveda etc., It seems

worthwhile to carry out a study on the medicinal flora of Mandapam coastal regions.

MATERIALS AND METHODS

Description of Study Area

Among the Mandapam coastal regions, most of the people are relay mainly on the marine resources, palm products and bits of agriculture for their livelihood. The ground water scarcity is one among the predominant issue in the entire region. Even though, this area is blessed with Bay, Gulf and Coral islands which are ideal habitat for a variety of seaweeds, sea grass, corals, marine invertebrates and chordates and coastal medicinal plants **[7]**. The Mandapam coastal region is much closed with Gulf of Mannar, Palk bay and Rameshwaram islands. The present study carried out in entire Mandapam coastal area **(Figure 1)** were surveyed between 2010-2011 by carrying out ethno medicinal survey with adult and old people who live in the area under study and know the parts of uses of medicinal plants. More than 200 medicinal plants are found in around Mandapam coastal regions.

Rainfall

The study area is mainly in the dry and arid zone of the country, where mean annual rainfall is between 700-1,000 mm. The main rainy season is the north east monsoon from October to April which accounts for about 60-70% of the annual rainfall. Sometimes, minor rains are received from the south west monsoon during May to September. Long periods of drought exceeding 200 days per year are common in the area.

Climate

The mean annual temperature is more than 28°C. Generally, the hottest month in this region is May and the temperature ranges from 25-29°C with higher temperatures normally recorded between May and August.

Interviews to the Practitioners

The field of survey was conducted in around mandapam coastal regions for 12 months from June 2010 to June 2011. In the interview survey with herbalist healers and households of Ethno medicinal information's were collected and the ethno medicinal data included with Botanical name, Local name, Family, Habit and parts used and Medicinal uses have been enumerated. The identity of collected flora was confirmed with the help of various flora such as the Flora of the Tami Nadu carnatic Illustration by **[8]**, Flora of Presidency of Madras by **[9]** and **[10].**

The medicinal properties of collected flora were confirmed by referring "Indian Medicinal Plants" edited by **[11]**. All the herbarium specimens are kept at the Department of Environmental sciences, Madurai Kamaraj University, Madurai, and

Tamilnadu. The aim of the present work is to explore the ethno medicinal studies have been reported in several parts of India to explore the traditional knowledge.

RESULTS AND DISCUSSION

The surveyed ethno medicinal plants are enumerated alphabetically with their botanical name, family name, vernacular name, habit and their ethno medicinal values from 57 members belonging to 53 genera and 34 families **(Table 1)**.

Most of the traditional medicines were prepared by the healers from fresh materials collected from the wild. However, in some cases, sun dried stored plant materials, which were collected during their availability, were used. Dried plant materials were mostly powdered and used in preparation of the medicine. The study announced that most plant species are traditionally used by the nearby villagers of in Mandapam coastal regions for medicinal and daily purposes. In the study 57 species belonging to 34 families of ethno medicinally important plant species were noticed and their uses are focused. The medicinal properties of identified plants are used to cure various diseases like asthma, anemia, bronchitis, cough, cold, diabetes, diarrhea, skin diseases etc, *Euphorbiaceae* is represented by the highest number of species (5 species) followed by *Apocyanaceae, Caesalpiniaceae, Asteraceae* and *Convolvulaceae* are 3 species. 11 Families were represented by 2 species and 18 families by 1 species. The herbal preparations made from the traditional medicinal plants were mostly used for the treatment of diarrhea, fever and skin diseases (8 species), diabetes and rheumatism (7 species), jaundice (6 species), intestinal worm, swelling, ulcer, vomit and wound (5 species). The study showed that a good number of the collected plants were used for the treatment of multiple diseases. *Mongifera indica and Moringa olifera* is for the eleven diseases like respiratory problems, cough, bronchitis, tuberculosis, anemia, indigestion, menses pain, asthma, scurvy, wounds swellings etc., Evolvulus alsinoides is used for the treatment of ten diseases like Vomit, diarrhea, indigestion, bronchitis, jaundice, inflammations, asthma, paralysis, fever and scabies. *Euphorbia hirta, Ocimum sanctum and Prosopis julifera* is used for the seven diseases like colds, dysentery, earache, jaundice, intestinal disorders etc, 5 plants is used for six diseases, 4 plants is used for five diseases, 9 plants is used for four diseases, 10 plants is used for three diseases, 6 plants is used for 2 diseases and the rest of the plants are used to treat only one disease **(Table 2)**. The results of this study will now provide

information on medicinal plants for possible on form conservation. Since most of them are trees they grow longtime period and therefore can provide a conditinious supply of the medicinal products for long time. Some of these species are halophytes like *Avicennia alba, Elytrigia atherica, Lactuca auriculata, Rhizophora apiculata, Salicornia brachiata and Suaeda monoica*. These species can be grown on sea shore; these plants can become an additional source of income for the fisher people, if they are made aware of the medicinal importance of these plants.

CONCLUSION

Ethno botany is perhaps most important method to study natural resources and their management by indigenous people. It enables us to work with local people to explore knowledge based on experiences of ages. This villager has good knowledge about the uses of many plants. Over exploitation of plant species in the name of medicine may lead some species ultimately to the disappearance in future. Therefore, attention should be made on proper exploitation and utilization of these plants. The findings of this study may become basic leads for chemical, pharmacological, clinical and biochemical investigations, which ultimately may birth to drug discovery. Therefore, phytochemical and pharmacological values of these medicinally important plants should also be tested.

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Figure 1: Study Area- Around Mandapam Coastal Regions

Table 1: List of Coastal Medicinal Plants with Ethno Medicinal Uses

S. No	Botanical Name	Local Name	Family	Habit	Parts Used	Medicinal Uses
1.	*Abutilon indicum* (L.)	Thuthi	*Malvaceae*	Small shrub	Root, bark, flowers, leaves and seeds	To treat leprosy, ulcers, headaches, gonorrhea and bladder infection
2.	*Acacia nilotica* (L.)	Karuvelai	*Mimosaceae*	Tree	Bark, gum, tender leaves, seeds and root	diarrhea,, anemia, eczema, cough, diabetes
3.	*Acalypha indica* L.	Kuppaimeni	*Euphorbiaceae*	Annual herb	Leaves	Scabies, skin diseases, vomiting, earaches
4.	*Achyranthes aspera* L.	Katalati Nayuruvi	*Amaranthaceae*	Perennial herb	Flowering spikes	Poisonous insect bites
5.	*Aerva lanata* (L.)	Sirru -pulay – vayr	*Amaranthaceae*	Perennial herb	Leaves, roots, stem	Urinary infections, strength to pregnant woman
6.	*Aloe vera* Linn	Sotru katralai	*Liliaceae*	Perennial herb	Leaf extract	Sore
7.	*Anisomeles malabarica*	Peyimiratti	*Lamiaceae*	Perennial herb	Leaves	Vomit, diarrhea, indigestion
8.	*Asparagus capitatus* Baker	Thannir vittan	*Liliaceae*	Shrub	Leaves	Chronic gout
9.	*Avicennia alba* Bl.	Kandal	*Avicenniaceae*	Tree	Resinous substances	Used for birth control purposes
10.	*Azadirachta indica*	Vembu	*Meliaceae*	Tree	leaves, seeds, stem, bark	skin diseases, rheumatism, malarial fever, pyorrhea
11.	*Borassus flabellifer*	Panai	*Arecaceae*	Tree	Roots, leaves, flowering stalk	skin diseases, chronic inflammation diabetes, respiratory ailments
12.	*Calotropis gigantea*	Erukku	*Apocyanaceae*	Shrup	Leaves	rheumatism, filariasis, wounds, glandular swellings
13.	*Carica papaya*	Pappali	*Passifloraceae*	Tree	Leaves, seeds, fruits	Bleeding of kidneys, throat infections, ulcers,

14.	***Cassia auriculata L***	**Avarai**	***Caesalpiniaceae***	**Shrup**	**Leaves, roots, dried flowers, flower buds**	**Diabetes, improve the complexion in women, eye diseases, conjunctivitis, rheumatism, gonorrhea, gout**
15.	***Cassia fistula***	**Sarak-kondrai**	***Caesalpiniaceae***	**Small tree**	**Root**	**The root is considered a very strong purgative and self-medication**
16.	***Casuarina equisetifolia***	**Chavukku**	***Casuarinaceae***	**Tree**	**Bark**	**used as tonic and in the treatment of stomach complaints**
17.	***Catharanthus roseus*** **(L.) G.Don**	**Nityhakalyani**	***Apocynaceae***	**sub-shrub**	**Leaves, Flowers, Roots**	**lymphoma, leukemia, breast and lung cancer, diabetes, rheumatism,**
18.	***Cissus quadrangularis*** **L.**	**Pirandai**	***Vitaceae***	**Perennial**	**Stem, leaf**	**Ear drop, bone fracture**
19.	***Citrullus colocynthis***	**Kumatti**	***Cucurbitaceae***	**Climber**	**Fruits, Roots**	**jaundice, alleviates pain**
20.	***Cleome viscose***	**Naikkaduku**	***Cleomaceae***	**Herb**	**Leaves**	**Headache, cold, fever**
21.	***Cynodon dactylon*** **(L.)**	**Arugam pul**	***Poaceae***	**Herb**	**Leaves**	**Diuretic, menses problem**
22.	***Datura metel*** **L.**	**Oomathai**	***Solanaceae***	**Herb**	**Leaves**	**Orthratis**
23.	***Eclipta alba***	**Karisalankani**	***Asteraceae***	**Herb**	**Leaves**	**Jaundice**
24.	***Elytrigia atherica***	**Dog grass**	***Poaceae***	**Salt marsh Perennial her**	**Root, Rhizome**	**inflamed bladders, painful urination and water retention**
25.	***Euphorbia hirta*** **L.**	**Amman paccharisi**	***Euphorbiaceae***	**Annual herb**	**Leaves**	**Gastrointestinal disorders (diarrhea, dysentery, intestinal parasitosis, etc.), bronchial and respiratory diseases.**
26.	***Evolvulus alsinoides*** **L.**	**Visnukranthi**	***Convolvulaceae***	**Perennial herb**	**Leaves, flowers**	**Vomit, Diarrhea, indigestion, bronchitis, jaundice, inflammations, asthma, paralysis, fever, scabies**

27.	***Ficus bengalensis* L.**	**Alamaram**	***Moraceae***	**Tree**	**Slender twigs, leaves, Milky latex, stem bark, prop roots**	**Painful joints, bleeding piles, diabetes, eczema, pyorrhea,, leucorrhea, rheumatism**
28.	***Ficus religiosa* L.**	**Kanavam/ Arasamaram**	***Moraceae***	**Tree**	**Bark, Leaves, Tender Shoots, Latex, Seeds, Fruits**	**Astringent, inflammations and glandular swellings of neck. Stomatitis, clean ulcers and it is astringent in leucorrhoea and promotes granulations.**
29.	***Hemidesmus indicus* (L.)**	**Nannari**	***Asclepiadaceae***	**Climber**	**Roots**	**Blood purifier, chronic rheumatism, urinary and skin diseases**
30.	***Ipomoea aquatic***	**Sarkaraivalli**	***Convolvulaceae***	**Semi-aquatic Climer/ Creeper**	**Buds, leaves**	**Treatment to Ring worm, head reeling, gonorrhea.**
31.	***Ipomoea - pes caprae* (L,)**	**Adapu kodi**	***Convolvulaceae***	**Climber**	**Seeds**	**Fatigue**
32.	***Jatropha gossypifolia* L.**	**Siria Amanakku**	***Euphorbiaceae***	**Perennia l herb**	**Roots, leaves**	**eczema, vomiting, fever, tongue disease**
33.	***Lactuca auriculata* wall. Ex DC.**	**Sallathu keerai**	***Asteraceae***	**Herb**	**Leaves**	**Increase lactation**
34.	***Mangifera indica* L.**	**Mamaram**	***Anacadiaceae***	**Tree**	**Leaves, shoots, seeds, bark, gum, fruit**	**Respiratory problems, cough, bronchitis, tuberculosis, anemia, indigestion, asthma, bronchitis, scurvy, itches and skin diseases**
35.	***Moringa oleifera***	**Murungai**	***Moringaceae***	**Tree**	**Flower, Stick, Leaves, Bark, Root, Tender pods**	**Kidney stone, sore, menses pain, promotes the flow of urine, earaches, asthma, cough, respiratory disorders, scurvy, wounds and swellings, eye diseases**

36.	***Ocimum sanctum* L.**	**Tulsi**	***Lamiaceae***	**sacred herb**	**Leaf**	**cough, cold, fever, earsche, jaundice, diarrhea, indigestion**
37.	***Oldenlandia corymbosa* L.**	**kattucayaver, Pappan puntu**	***Rubiaceae***	**annual herb**	**Leaves**	**Febrifuge, Diaphoretic, Stomachic, Laxative fever, jaundice etc.**
38.	***Opuntia engelmannii***	**Chapati kalli**	***Cactaceae***	**Shrub**	**Fruits**	**Open wounds and swellings. dyspepsia, mumps, swelling**
39.	***Phoenix sylvestris* Roxb.**	**Eacha maram**	***Arecaceae***	**Tree**	**Tender leaves**	**gonorrhea**
40.	***Phyllanthus niruri***	**Keela Nelli**	***Euphorbiaceae***	**Annual herb**	**Leaves, seeds**	**Jaundice, diabetes, fevers**
41.	***Phyllanthus emblica* L.**	**Nellikkaai or Nellikaayi**	***Euphorbiaceae***	**Small tree**	**Fruits**	**Scurvy**
42.	***Plumeria alba***	**Sampangi**	***Apocyanaceae***	**small tree**	**Latex**	**Itches, swellings, and fevers.**
43.	***Pongamia pinnata* (L.)**	**Pungai**	***Fabaceae***	**Tree**	**Leaves**	**Cutaneous diseases, insecticidal and anti-bacterial properties**
44.	***Prosopis julifera***	**Vaelikaruvai**	***Mimosaceae***	**Tree**	**Leaves, pods**	**colds, diarrhea, dysentery, excrescences, eyes, stomachache and wounds**
45.	***Rhizophora apiculata* Bl.**	**Surapunnai**	***Rhizophoraceae***	**Tree**	**Bark**	**Diarrhea, nausea, vomiting and to stop bleeding**
46.	***Salicornia brachiata* Roxb.**	**Kattumari**	***Chenopodiaceae***	**Herb**	**All parts**	**To treat itches**
47.	***Suaeda monoica***	**Karuvumari**	***Chenopodiaceae***	**Shrub**	**Leaves**	**Ointment for wounds**
48.	***Syzygium cuminii* (L.)**	**Naval**	***Myrtaceae***	**Tree**	**Bark, seeds,**	**diarrhea, dysentery, diabetes**
49.	***Tamarindus indica* L.**	**Pulia maram**	***Caesalpinaceae***	**Tree**	**Fruits, leaves**	**Ulcer**
50.	***Tectona grandis***	**Teak**	***Verbinaceae***	**Tree**	**Seeds, root, flowers, bark,**	**Eczema, ringworm, hair growth, bronchitis, scabies, promote the flow of urine**
51.	***Tephrosia purpurea***	**Kolingi**	***Fabaceae***	**Herb**	**Root**	**Dyspepsia, diarrhea, rheumatism, asthma.**

52.	***Terminalia catappa***	**Nattu vadumai**	***Combretaceae***	**Tree**	**Latex**	**Astringent , diuretic**
53.	***Thespesia populnea* (L.)**	**Poovarasu**	***Malvaceae***	**Tree**	**Leaves, flowers**	**Depurative, Anthelmintic, Astringent. Skin diseases like pruritis and scabies.**
54.	***Tribulus terrestris* L.**	**Palleru mullu**	***Zycophyllaceae***	**Herb**	**Leaves**	**Mouth sore**
55.	***Tridax procumbens***	**Vettukaaya poondu**	***Asteraceae***	**Perennia l herb,**	**Leaves**	**Leaf juice can be used to cure fresh wounds, to stop bleeding, as a hair tonic.**
56.	***Withania somnifera***	**Ashwagandha**	***Solanaceae***	**Shrub**	**Leaves**	**Ulcer and stomach**
57.	***Ziziphus zizyphus***	**Elantai**	***Rhamnaceae***	**Tree**	**Fruits**	**Used for antifungal, antibacterial, antiulcer, anti-inflammatory,**

Table 2: Name of Diseases, Number of Remedies and Botanical Name of the Plants Used by Villagers of Mandapam Coastal Regions

NAME OF THE DISEASES	No. OF REMEDIES	BOTANICAL OF THE PLANTS USED
Asthma	**4**	***Euphorbia hirta, Evolvulus alsinoides, Moringa oleifera, Mangifera indica, Tephrosia purpurea***
Anemia	**2**	***Acacia nilotica, Mangifera indica***
Bladder infections	**3**	***Abutilon indicum, Elytrigia atherica, Carica papaya***
Bone fracture	**2**	***Cissus quadrangularis, Ficus benghalensis***
Bronchitis	**3**	***Euphorbia hirta,***
Blood purifier	**1**	***Hemidesmus indicus***
Cough	**4**	***Acacia nilotica, Mangifera indica, Moringa oleifera, Ocimum sanctum,***
Cold	**3**	***Cleome viscose, Ocimum sanctum, Prosopis julifera***
Diabetes	**7**	***Acacia nilotica, Borassus flabellifer, Cassia auriculata, Catharanthus roseus, Ficus benghalensis, Phyllanthus niruri, Syzygium cumini***
Diarrhea	**8**	***Acacia nilotica, Euphorbia hirta, Evolvulus alsinoides, Ocimum sanctum, Prosopis julifera, Rhizophora apiculata, Syzygium cumini, Tephrosia purpurea***
Dysentery	**3**	***Euphorbia hirta, Prosopis julifera, Syzygium cumini,***
Dyspepsia	**2**	***Opuntia engelmannii, Tephrosia purpurea***
Ear-ache	**4**	***Cissus quadrancularis, Ocimum sanctum, Moringa oleifera, Acalypha indica***
Eczema	**4**	***Acacia nilotica, Ficus benghalensis, Tectona grandis, Jatropha gossypifolia***
Eye- troubles	**4**	***Cassia auriculata, Cissus quadrancularis, Moringa olifera, Prosopis julifera***

Fever	**8**	***Azadiracta indica, Euphorbia hirta, Evolvulus alsinoides, Jatropha gossypifolia, Ocimum sanctum, Oldenlandia corymbosa, Phyllanthus niruri, Plumeria alba***
Hair growth	**2**	***Tectona grandis, Tridax procumbens***
Head –ache	**2**	***Abutilon indicum, Cleome viscose***
Inflammations	**4**	***Borassus flabellifer, Evolvulus alsinoides, Ficus religiosa, Ziziphus zizyphus***
Intestinal worm	**5**	***Ipomea aquatic, Pongamia pinnata, Tectona grandis, Ziziphus zizyphus, Euphorbia hirta***
Indigestion	**3**	***Anisomeles malabarica, Evolvulus alsinoides, Mangifera indica, Ocimum sanctum***
Jaundice	**6**	***Citrullus colocynthus, Eclipta alba, Evolvulus alsinoides, Ocimum sanctum, Oldenlantia corymbosa, Phyllanthus nirurii***
Menses problem	**2**	***Cynodon dactylon, Moringa olifera***
Paralysis	**1**	***Evolvulus alsinoides***
Piles	**1**	***Ficus bengalensis***
Poisonous bites	**1**	***Achyranthus aspera***
Rheumatism	**7**	***Azadiracta indica, Calotropis gigantean, Cassia auriculata, Catharanthus roseus, Ficus benghalensis, Hemidesmus indicus, Tephrosia purpurea***
Respiratory problems	**4**	***Borassus flabellifer, Euphorbia hirta, Mangifera indica, Moringa oleifera***
Skin diseases (leprosy, scabies)	**8**	***Abutilon indicum, Acalypa indica, Azadiracta indica, Borassus flabellifer, Evolvulus alsinoides, Hemidesmus indicus, Moringa oleifera, Thespesia papulnea***
Sore	**3**	***Aloe vera, Tribules terrestris. Moringa oleifera***
Stomach pain	**3**	***Casuarina equistifolia, Prosopis julifera, Withania somnifera***
Scurvy	**3**	***Mangifera indica, Moringa oleifera, Phyllanthus emblica***
Swelling	**5**	***Calotropis gigantean, Ficus religiosa, Moringa oleifera, Opuntia angelmannii, Plumeria alba***
Throat infections	**1**	***Carica papaya***
Tongue disease	**1**	***Jatropha gossypifolia***
Tuberculosis	**1**	***Mangifera indica***
Urinary infections	**2**	***Aerva lanata, Hemidesmus indicus***
Ulcer	**5**	***Abutilon indicum, Carica papaya, Ficus religiosa, Tamarindus indicus, Withania somnifera***
Vomit	**5**	***Acalypha indica, Anisomelus malabarica, Evolvulus alsinoides, Jatropha gossypifolia, Rhizophora abiculata***
Wound	**5**	***Calotropis gigantean, Moringa oleifera, Prosopis julifera, Suaeda monica, Tridax procumbens***