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Medicinal Plant Diversity In The Coastal Village Of Mandaikadu Kanyakumari District, Tamilnadu, India.

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ABSTRACT

Present Study was conducted in the Mandaikadu coastal Villages of Kanyakumari district, Tamil Nadu, India to document the Medicinal plant wealth. Taxonomically, a total of 70 plant species belonging to 65 genera and 38 families were recorded. Of these 34 (45%) were herbs, 19 (25%) were shrubs, 13 (17%) were trees and 10 (13%) were climbers/creepers. The plant parts used for the preparation of medicine, whole plants were found to be most frequently used for the preparation of remedies. The mode of preparations is paste, juice, decoction and powder. The medicinal plants of the study area have been used to treat 53 illnesses. The 53 various ailments against which ethnomedicinal treatments have been recorded in the study area.

Key words*:* Ailments, coastal village, Medicinal plants, Mandaikadu.

INTRODUCTION

In traditional medicine, plants are required as a major component to cure many diseases caused by bacteria, fungi and virus in man. The World Health Organization (WHO) has estimated that 80% of the populations of developing countries still rely on traditional medicines, mostly plant drugs, for their primary health care needs. India has rich plant diversity and is one among the mega biodiversity countries of the world. Indians have been using medicinal plants since antiquity and the Ayurvedic methods date back to 5000 B.C. India is rich in its coastal population from the immemorial time with their traditional knowledge system which deals with the many significant aspects and the health problems of coastal communities. The coastal population has their own herbal homework to treat various diseases. India has a coastline of about 7516.6 km long with 2.02 million km exclusive economic zone and 0.13 million km continental shelf (Khoshoo 1996) and it covers nine states and two union territories. It has numerous lagoons, beaches, estuaries and mangrove swamps, which is rich in living and non-living resources. Tamil Nadu coastal line has a length of about 1076 km, it constitutes about 15% of the total coastal length of India. The coastal zone is an important biogeographically habitats of the Indian subcontinent (Rodgers and Panwar 1998.
Kanyakumari coastal line has a length of about 71.5 km. Coastal vegetation contains many species of specific flora and thus it is an ecological storehouse rich in biodiversity and also has high ecological values. The coastal plants are also used for construction materials, fuel wood and many other purposes. The characteristic feature of the coastal zone is the high population density dominated by fisherman and coir workers. Coastal sand dunes are the natural structures which protect the coastal environment by absorbing energy from wind, tide and wave action. The plants are playing a vital role in protecting the coast from erosion and flooding. Kanyakumari district, the southernmost tip of Indian Peninsula, is divided into four taluks namely: Agastheeswaram, Kalkulam, Vilavancode and Thovalai. The first three taluks are in the coastal belt with a length of 71.5 km (India's total coast line is 8118 km), having 47 coastal villages.Hence

the present study was undertaken to document the ethnomedicinal wisdom of Mandaikadu village, to assess the medicinal plant diversity of Coastal line and to enumerate information about morphologically useful parts of the medicinal plants to cure various ailments. Mandaikadu is a coastal Village on the shore of the Arabian Sea in Kanyakumari district, Tamil Nadu, India.

METERIALS METHODS

Regular field trips were made during the study period (November 2018 to March 2019). The information was collected from the coastal people. A total of 25 were interviewed and obtained information's, mainly concerning their knowledge on medicine from the plants and their parts, local names etc. The biological information of the studied plant material was recorded in the field note book. Informants were asked to guide as to the places where these plants grow or to bring the drug they use. The medicinal uses of plants were checked through the literature available. The medicinal property of each plant was accepted as valid if at least five separate informants had a similar opinion. The prepared herbarium and the specimens were carefully examined for the morphology differences the different genera and the taxonomic characters that distinguished each species of the same genus. To identify the species taxonomically, regional and local flora were referred (Gamble 1915-1936; Matthew 1999; Matthew 1982, 1983; Nair 2006). A systematic enumeration of medicinal plants has been arranged in alphabetical order. However botanical name, family, local name, common name where ever available, habit, growth form, useful parts followed by medicinal uses. All the species are arranged alphabetically under each family. Geographical maps are provided for the location of the, Kanyakumari district, Tamil Nadu, India.

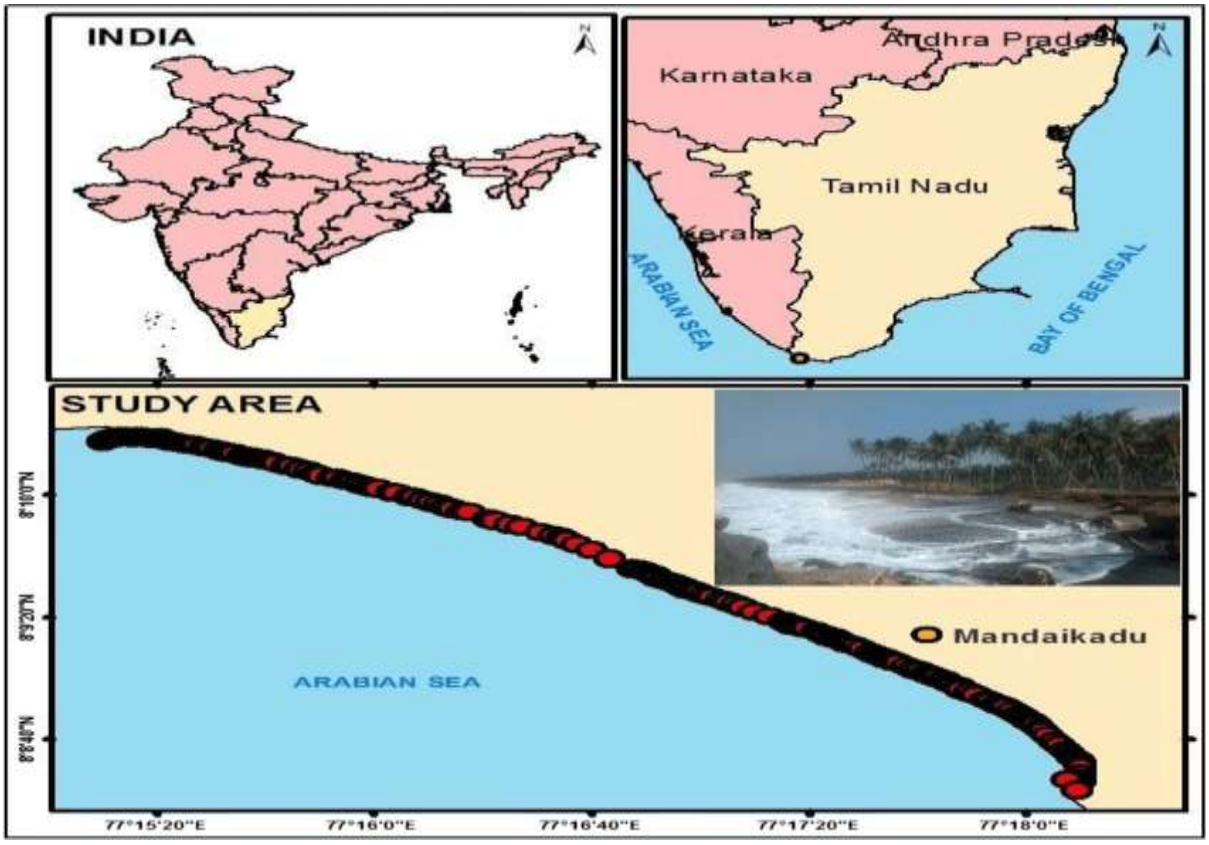

Fig.1.Map showing the study area Mondaikadu village,kanniyakumari, Tamilnadu, India.

RESULTS

The ecosystem of Coastal villages is rich in important medicinal plant species. These plants are not only valuable as herbal drugs but also significant as a source of food, fodder, spices etc. The ethnobotanical information gathered from the study area of Vallavilai Coastal village.Taxonomically, a total of 76 plant species belonging to 65 genera and 38 families were recorded. Of these 34 (45%) were herbs, 19 (25%)

were shrubs, 13 (17%) were trees and 10 (13%) were climbers/creepers. Plant species, which are used in traditional medicine, are enumerated alphabetically according to their binomial names, followed by family names (Table 1). Of the 76 taxa, dicots were represented by 69 species belonging to 31 families and monocots by 7 species belonging to 7 families (Table 2). Based on the growth forms, total of 27 annuals species (36%) and 49 perennials (64%) were recorded from the study area.Family wise distribution shows that Leguminosae and Malvaceae was the dominant families represented by Leguminosae have 7 species under 6 genera, Malvaceae have 7 species under 5 genera, followed by Lamiaceae have 5 species under 5 genera, Amaranthaceae, Compositae, Euphorbiaceae and Solanaceae having 4 species each, Acanthaceae, Apocynaceae, Cleomaceae and Cucurbitaceae having 3 species each, Combretaceae and Convolvulaceae having 2 species each, whereas 25 families (Anacardiaceae, Annonaceae, Arecaceae, Caricaceae, Commelinaceae, Dioscoreaceae, Lythraceae, Meliaceae, Molluginaceae, Moraceae, Moringaceae, Musaceae, Myrtaceae, Nyctaginaceae, Oleaceae, Pandanaceae, Passifloraceae, Phyllanthaceae, Plumbaginaceae, Rubiaceae, Rutaceae, Sapindaceae, Sapotaceae, Talinaceae, Verbenaceae, Xanthorrhoeaceae) were monospecific (Figure 1).

Table:1. The list of medicinal plants recorded in the study area.

S.NO	botanical name	family	local name	use full partsb	therapedic uses
1	*Abutilon indicum* (L.) Sweet	Malvaceae	Cheepu kai	Whole plant	Fever
2	*Acalypha indica L.*	Euphorbiaceae	Kupaimaeni	Leaves	Headache and skin diseases
3	*Acanthospermum hispidum* DC.	Compositae	Katu nerunchi	Whole plant	Fever and leprosy
4	*Aloe vera* (L.) Burm.f.	Xanthorrhoeacea e	Kathalai	Leaves	Stomachache
5	*Amaranthus blitum L.*	Amaranthaceae	Keerai	Whole plant	Headaches
6	*Andrographis paniculata* (Burm.f.) Nees	Acanthaceae	Nilavembu	Whole plant	Diarrhea, constipation, and stomach pain
7	*Annona squamosa L.*	Annonaceae	Munthiri maram	Leaves	Dysentery and urinary tract infection
8	*Asystasia gangetica* (L.) T.Anderson	Acanthaceae	Miti-kirai	Whole plant	Wounds, piles, stomach-ache, snakebites
9	*Azadirachta indica* A.Juss.	Meliaceae	Vepa maram	Leaves	Skin diseases like eczema and psoriasis
10	*Barleria cuspidata* F.Heyne ex Nees	Acanthaceae	Manchat-cemmulli	Leaves	Maceration and cracking
11	*Boerhavia diffusa L.*	Nyctaginaceae	Sarandai	Root	Heart diseases, skin disorders
12	*Calotropis gigantea* (L.) Dryand.	Apocynaceae	Eruku	Root and leaves	Rheumatism
13	*Cardiospermum halicacabum L.*	Sapindaceae	Ulinjai	Root and leaves	Rheumatism and amenorrhea
14	*Carica papaya L.*	Caricaceae	Papali maram	Leaf and fruit	Skin diseases, blood pressure and dyspepsia
15	*Catharanthus roseus* (L.) G.Don	Apocynaceae	Nithia kalyani	Whole plant	Diabetes, malaria and cancer
16	*Centrosema pubescens* Benth.	Leguminosae	Kattupayar	Leaf and seed	Skin diseases, scorpion and snake bites
17	*Chromolaena odorata* (L.) R.M.King & H.Rob.	Compositae	Kamyunist alai	Stem and leaves	Eye pains, antibiotic, anti-malarial
18	*Cleome gynandra L.*	Cleomaceae	Vellai chedi	Leaves	Cough, headache and rheumatism
19	*Cleome rutidosperma* DC.	Cleomaceae	Neelavela	Whole plant	Malaria, inflammation and deafness
20	*Cleome viscosa L.*	Cleomaceae	Naikkatuku	Leaves and seed	Wounds and ulcers
21	*Clerodendrum infortunatum L.*	Lamiaceae	Karukanni	Root and leaves	Diarrhea, malaria, skin diseases,
22	*Coccinia grandis* (L.) Voigt	Cucurbitaceae	Kovakai	Whole plant	Leprosy, bronchitis, joint pain
23	*Cocos nucifera L.*	Arecaceae	Thennai maram	Fruit	Pimples and black dots
24	*Combretum indicum* (L.) DeFilipps	Combretaceae	Irangun malli	Whole plant	Diarrhea and fever
25	*Commelina benghalensis L.*	Commelinaceae	Kanan valai	Whole plant	Diarrhea and eye complaints
26	*Crotalaria pallida* Aiton	Leguminosae	Kilukilipai	Whole plant	Urinary problems, fever,
27	*Crotalaria verrucosa L.*	Leguminosae	Gilugiluppai	Root	Fever, stomach pains and skin diseases
2	*Cucumis sativus L.*	Cucurbitaceae	Vellarikai	Leaf and fruit	Dyspepsia
29	*Cucurbita maxima* Duchesne	Cucurbitaceae	Poosanikai	Seed	Parasitic worms
30	*Dioscorea alata L.*	Dioscoreaceae	Peruvalli	Fruit	Fever, gonorrhea, leprosy
31	*Euphorbia heterophylla L.*	Euphorbiaceae	Paal perukki	Whole plant	Stomach-ache, intestinal worms
32	*Euphorbia hirta L.*	Euphorbiaceae	Nilappala	Whole plant	Anticancer activity, skin diseases
33	*Ficus religiosa L.*	Moraceae	Arasa maram	Whole plant	Against bites of venomous animals
34	*Glinus oppositifolius* (L.) Aug.DC.	Molluginaceae	Thura poondu	Whole plant	Promote digestion

35	*Gliricidia sepium* (Jacq.) Walp.	Leguminosae	Seemai agathi	Whole plant	Cough, fever, fractures, rheumatism
36	*Gomphrena celosioides* Mart.	Amaranthaceae	Neervadamalli	Whole plant	Skin diseases, worm infections
37	*Hibiscus rosa-sinensis* L.	Malvaceae	Chembaruthi	Leaves	Dandruff
38	*Hibiscus surattensis L.*	Malvaceae	Kashlikirai	Leaf and stem	Urethritis
39	*Hyptis suaveolens* (L.) Poit.	Lamiaceae	Pachilai	Leaves	Fungal infection and diarrhea
40	*Ipomoea pes-caprae* (L.) R. Br.	Convolvulaceae	Adapukodi	Whole plant	Rheumatism, colic, piles
41	*Ipomoea triloba L.*	Convolvulaceae	Kakattan	Whole plant	Stomach ache
42	*Jasminum sambac* (L.) Sol.	Oleaceae	Mullai	Leaf and flower	Intestinal worms, jaundice, cancer
43	*Lantana camara L.*	Verbenaceae	Unni chedi	Leaves	Rheumatism
	Lawsonia inermis L.	Lythraceae	Mailanchi	Leaves	Skin diseases
44	*Leucas aspera* (Willd.) Link	Lamiaceae	Tumbai	Whole plant	Intestinal worm, scorpion bites and fevers
45	*Mangifera indica L.*	Anacardiaceae	Manga maram	Whole plant	Ulcer
46	*Manilkara zapota* (L.)P.Royen	Sapotaceae	Sapota maram	Whole plant	Fever, ulcers and diarrhea
47	*Mimosa pudica L.*	Leguminosae	Thotaal churungi	Root	Asthma, diarrhea, skin wounds
48	*Moringa oleifera* Lam.	Moringaceae	Murungai maram	Leaves and fruit	Indigestion, hair falling and eye diseases
49	*Musa x paradisiaca L.*	Musaceae	Vaazhai	Fruit	Stomach ache
50	*Nerium oleander L.*	Apocynaceae	Arali	Flower	Heel cracks
51	*Ocimum tenuiflorum L.*	Lamiaceae	Thulasi	Leaves	Cough and fever
52	*Pandanus amaryllifolius* Roxb.	Pandanaceae	Ramba	Leaves	Fever, relieve indigestion and flatulence
53	*Parthinium hysterophorus L.*	Compositae	Parthenium	Whole plant	Skin inflammation, rheumatic pain, diarrhea
54	*Passiflora foetida L.*	Passifloraceae	Chokkan kai	Leaves	Sleeping problems, itching
55	*Phyllanthus niruri* L.	Phyllanthaceae	Keezhanelli	Whole plant	Chronic fever and jaundice
56	*Physalis angulata L.*	Solanaceae	Chodaku chedi	Whole plant	Rheumatic pain, muscular stiffness and pain
57	*Plectranthus amboinicus* (Lour.) Spreng.	Lamiaceae	Pachilai	Whole plant	Dyspepsia and snakebites
58	*Plumbago zeylanica L.*	Plumbaginaceae	Kodivaeli	Whole plant	Leprosy
59	*Psidium guajava L.*	Myrtaceae	Peraikai maram	Leaves and fruit	Diarrhea and diabetes
60	*Ricinus communis L.*	Euphorbiaceae	Aamanaku	Root and leaves	Inflammations, skin diseases and rheumatism
61	*Senna occidentalis* (L.) Link	Leguminosae	Payaverai	Seed	Rheumatism and diabetes
62	*Sida cordifolia L.*	Malvaceae	Arivalmukkan	Root and seed	Inflammation, asthmatic bronchitis
63	*Sida rhombifolia L.*	Malvaceae	Karisalanganni	Whole plant	Swelling, headache and rheumatism
64	*Solanum americanum* Mill	Solanaceae	Manathakali	Whole plant	Liver disorders, fever and dysentery
65	*Solanum lycopersicum L.*	Solanaceae	Thakali chedi	Whole plant	Burns, scalds, sunburn and toothache
66	*Solanum melongena L.*	Solanaceae	Katharikai	Whole plant	Blood cholesterol and regulate high blood pressure
67	*Spermacoce ocymoides* Burm.f.	Rubiaceae	Nathaichuri	Leaves	Wounds, eczema, worms and ringworm
68	*Talinum fruticosum* (L.) Juss.	Talinaceae	Pachai keerai	Whole plant	Measles and diabetes
69	*Tamarindus indica L.*	Leguminosae	Puli maram	Whole plant	Swellings
70	*Terminalia catappa L.*	Combretaceae	Vethavankai	Whole plant	Jaundice, indigestion and diarrhea

Vinca rosea

Abutilon indicum


T*ribulus terrestris* Ricinus communis


Ficus religiosa *Ipomoea pescaprae*


Euphorbia heterophlla *Cucurbita maxima*

Fig.2.Some medicinal plants collected from study area Mandaikadu ,kanyakumari tamilnadu,India.

The medicinal plants of the study area have been used to treat 53 illnesses. The ailments such as scabies, eczema, leucoderma, skin tumours, skin inflammation, skin wounds, scalds, burns, psoriasis, pimples, black dots, heel cracks, itching, boils, measles, rheumatic pain, stomach-ache, swelling of joints, headache, joint pain, muscular stiffness and pain, hemorrhage, dysuria, urinary tract infection, urethral discharge, urethral stones, bladder stones, bladder inflammation. constipation/ indigestion, dysentery, diarrhoea, intestinal gas, intestinal worms, intestinal colic, piles, dyspepsia, ulcers, liver disorders, nausea, vomiting, cough, cold, asthma, bronchitis, sore throats, diphtheria, bowel complaints, scorpion bites, snake bites. fever, jaundice, diabetes, fractures, deafness, eye diseases, tooth problems, edema, cancer, malaria, fungal infection, sleeping problems, blood cholesterol, blood pressure, heart diseases, leprosy, anemia, limb pain, epilepsy, gonorrhoea, syphilitic affections, greying of the hair, hair falling, dandruff etc. The 53 various ailments against which ethnomedicinal treatments have beenrecorded in the study area can be grouped into 12 major categories of symptomatically and organ-system related diseases/problems, such as 20 plants are used for Skin problems, 14 species are Body pain/Swelling, 6 species are Urino-genital problems, 38 plants used for Gastro-intestinal problems, 13 species used for Respiratory problems. 5 species used for Chronic infectious diseases, 2 species used for Peripheral artery disease, 1 species (*Asystasia gangetica*) used for Brain disorder (Epilepsy), 7 species used for Animal bites, 6 species used for Venereal disease, 3 plants used for Hair problems, 29 species used for Others diseases (Fever, jaundice, diabetes, fractures, deafness, eye

diseases, tooth problems, edema, cancer, malaria, fungal infection, sleeping problems, blood cholesterol, blood pressure, heart diseases.

DISCUSSION

According to an estimate of the World Health Organization (WHO), about 80% of the populations in the developing countries still rely on traditional medicine for their primary health care needs. India is rich in its ethnic diversity of which many aboriginal cultures have retained traditional knowledge concerning the medicinal utility of the native flora. In the present investigation, a total of 76 medicinal plants belonging to 65 genera from 38 families were collected and recorded (Table 1). Similarly, Raafat et al (2008) recorded 121 medicinal species belonging to 96 genera and 37 families. The report is connected to the previous work (Heindrickson et al 2010; Muthukumar and Selvin Samuel 2010; Sahu et al 2011; Bartwal et al 2011; Bhandary and Chandrashekar 2014; Qasim et al 2014; Jenisha and Jeeva 2014) etc. A total of 27 annuals species (36%) and 49 perennials (64%) were recorded from the study area. Raafat et al (2008) recorded medicinal plants of North Sinai consists of 39 annuals and 82 perennials. The medicinal plants of the study area have been used to treat 53 illnesses.The method of preparation of medicine and use is same or different from place to place. Majority of the work revealed that leaves were predominantly used than the other parts. Bourdy *et al* (2000) registered an overwhelming use of leaves in one Amazon community; Medeiros *et al* (2004) obtained the same results with a group of ranchers in the state of Rio de Janeiro; Pinto *et al* (2006) cited the predominant use of leaves in rural communities in the Atlantic Forest; Heindrickson *et al, (*2010) also registered the leaves are predominantly used in Fishing communities of Southern Brazil; Muthukumar and Selvin Samuel (2010) obtained the same results in Coastal area of Tuticorin district; Sahu et al (2011) cited the predominant use of leaves in Coastal district of Odisha; Jenisha and Jeeva (2014) registered an overwhelming use of leaves in Keezhakrishnanputhoor.The plants such as *Ricinus communis, Boerhavia diffusa, Tridax procumbens, Lawsonia inermis, Cocos nucifera* and *Tamarindus indica* were used to cure wound, jaundice, improves hair growth, urinary difficulty, dissolves bladder stones, eczema, heart diseases, snake bite and poisonous insect bite. In the present study also, same plants were used to cure particular diseases. They were reported by Ayanar *et al*., 2010 ; Hitesh and Patel, 2013; Datta *et al*., 2014. The plants such as *Lantana camara, Moringa oleifera, Mimosa pudica, Passiflora foetida* and *Thespesia populnea* were used to cure muscle pain, rheumatism, headache, scabies, leucoderma, itching of the skin, asthma, and ulcer. They were reported various author such as Moorthy *et al.,* 2002; Rana *et al.,* 2002; Arya and Prakash 2000.

CONCLUSION

Medicinal plants are still an important resource utilized for health maintenance of families of the fishing community of the study area. All together 76 medicinal plants, used for treating 53 different human ailments were recorded in the study area. Of these 34 (45%) were herbs, 19 (25%) were shrubs, 13 (17%) were trees and 10 (13%) were climbers/creepers belonging to 38 different families were recorded. Among the recorded species mostly whole plants are utilized as medicines. Other useful parts include Root, Stem, Leaves, Flower, Fruits and Seeds. The crude drug obtained from medicinal plants can be used in the treatment of various diseases.

The noteworthy findings stand out from this work, data suggests that people in the more isolated village know and consume more plants than people in the more accessible village. Conservation and judicious utilization of this coastal plant wealth is important because they have become threatened by over-exploitation. The findings of this study reveal that common plant species seen around us also play an important role in the treatment of various ailments. Due to the impact of urbanization, partial modernization and over exploitation of plant species for medicinal purposes there is chance for disappearance of some plant species in near future. Therefore, appropriate measures should be taken to conserve these plants for healthy and disease free life.

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