Research Paper

Medicinal Plant Diversity across the Vallavilai Coastal Villages of Kanyakumari District

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ABSTRACT

Present Study was conducted in the Vallavilai coastal Villages of Kanyakumari district, Tamil Nadu, India to document the Medicinal plant wealth. 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. 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 can be grouped into 12 major categories of symptomatically and organ-system related diseases/problems.

Key words: Ailments, coastal village, Medicinal plants, Vallavilai

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 (Khosoo 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. These coastal villages have a population of 1,48,539 fishermen, forming 19 percent of the total fisherman population (7,90,408) in Tamil Nadu.

Hence the present study was undertaken to document the ethnomedicinal wisdom of Vallavilai 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. Vallavilai is a coastal Village on the shore of the Arabian Sea in Kanyakumari district, Tamil Nadu, India. It was situated near the border of Tamil Nadu and Kerala. This village is the part of Kollemcode Panchayat.

**MATERIALS AND METHODS**

**Study Area**

The present study was conducted in the Vallavilai coastal village. This village comes under Kollemcode Panchayat of Vilavancode Taluk. This village has coastal Villages on the shore of the Arabian Sea in Kanyakumari district, Tamil Nadu, India. It was situated near the border with Tamil Nadu and Kerala on north-west to Kanyakumari and southwest to Trivandrum. These villages are located nearly 70 km from Kanyakumari and 30 km from Trivandrum. Kanyakumari district is situated in the Southernmost tip of Tamil Nadu, Southern Peninsular India (77° 15’- 77° 30’ E, 8° 30’-8° 15’ N), located in the part of Southern Western Ghats. It occupies an area of about 1684 sq.km, which is 1.29 percent of the total geographical area of the state. Kanyakumari coastal line has a length of about 71.5 km. The location of the study area had latitude 8.28 and longitude 77.11.

**Climate and Soil**

The climate of the district is warm and humid. The annual rainfall varies from 89-254 cm, and maximum and minimum temperatures were 24°C - 28°C in winter and 26°C - 32°C in summer respectively. Moisture content ranges from 65 to 75%. The soil of the district is broadly classified into two major groups namely, Red and Alluvial soil.

**Data Collection**

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 atleast 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). The boucher specimens were processed in the customary way and deposited in the herbarium of Botany, Nesamony Memorial Christian college, Marthandam.

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.
The arrangement of families of angiosperms is based on APG IV system of classification with necessary alterations. All the species are arranged alphabetically under each family. Geographical maps are provided for the location of the Vallavilai Village, Kanyakumari district, Tamil Nadu, 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.

Diversity of Ethnomedicinal Plants
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, Sapotaceae, Talinaceae, Verbenaceae, Oleaceae, Pandanaceae, Passifloraceae, Xanthorrhoeaceae) were monospecific Phytophthora, Plumbaginaceae, Rubiaceae, Rutaceae, Sapindaceae, Sapotaceae, Talinaceae, Verbenaceae, Xanthorrhoeaceae) were monospecific.

Table 1: List of Ethnomedicinal Plants Recorded From the Study Area

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Species</th>
<th>Family</th>
<th>Local Name</th>
<th>Useful Part</th>
<th>Therapeutic uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Abutilon indicum (L.) Sweet</td>
<td>Malvaceae</td>
<td>Cheepu kai</td>
<td>Whole plant</td>
<td>Fever</td>
</tr>
<tr>
<td>2.</td>
<td>Acahrypha indica L.</td>
<td>Euphorbiaceae</td>
<td>Kupaimaeni</td>
<td>Leaves</td>
<td>Headache and skin diseases</td>
</tr>
<tr>
<td>3.</td>
<td>Acanthospermum hispidum DC.</td>
<td>Compositae</td>
<td>Katu nerunchi</td>
<td>Whole plant</td>
<td>Fever and leprosy</td>
</tr>
<tr>
<td>4.</td>
<td>Aloe vera (L.) Burm.f.</td>
<td>Xanthorrhoeaceae</td>
<td>Kathalai</td>
<td>Leaves</td>
<td>Stomachache</td>
</tr>
<tr>
<td>5.</td>
<td>Amaranthus blitum L.</td>
<td>Amaranthaceae</td>
<td>Keerai</td>
<td>Whole plant</td>
<td>Headaches</td>
</tr>
<tr>
<td>6.</td>
<td>Amaranthus cruentus L.</td>
<td>Amaranthaceae</td>
<td>Keerai</td>
<td>Whole plant</td>
<td>Laxative and pains in the limbs</td>
</tr>
<tr>
<td>7.</td>
<td>Amaranthus viridis L.</td>
<td>Amaranthaceae</td>
<td>Kuppaikkirai</td>
<td>Leaves</td>
<td>Fever and eye infections</td>
</tr>
<tr>
<td>8.</td>
<td>Andrographis paniculata (Burm.f.) Nees</td>
<td>Acanthaceae</td>
<td>Nilavembu</td>
<td>Whole plant</td>
<td>Diarrhea, constipation, and stomach pain</td>
</tr>
<tr>
<td>9.</td>
<td>Annona squamosa L.</td>
<td>Annonaceae</td>
<td>Munthiri maram</td>
<td>Leaves</td>
<td>Dysentery and urinary tract infection</td>
</tr>
<tr>
<td>10.</td>
<td>Asystasia gangetica (L.) T.Anderson</td>
<td>Acanthaceae</td>
<td>Miti-kirai</td>
<td>Whole plant</td>
<td>Wounds, piles, stomach-ache, snakebites</td>
</tr>
<tr>
<td>11.</td>
<td>Azadirachta indica A.Juss.</td>
<td>Meliaceae</td>
<td>Vepa maram</td>
<td>Leaves</td>
<td>Skin diseases like eczema and psoriasis</td>
</tr>
<tr>
<td>12.</td>
<td>Barleria cuspidata F.Heyne ex Nees</td>
<td>Acanthaceae</td>
<td>Manchatcemulli</td>
<td>Leaves</td>
<td>Maceration and cracking</td>
</tr>
<tr>
<td>13.</td>
<td>Boerhavia diffusa L.</td>
<td>Nyctaginaceae</td>
<td>Sarandai</td>
<td>Root</td>
<td>Heart diseases, skin disorders</td>
</tr>
<tr>
<td>14.</td>
<td>Calotropis gigantea (L.) Dryand.</td>
<td>Apocynaceae</td>
<td>Eruku</td>
<td>Root and leaves</td>
<td>Rheumatism</td>
</tr>
<tr>
<td>15.</td>
<td>Cardiospermum halicacabum L.</td>
<td>Sapindaceae</td>
<td>Ulinjai</td>
<td>Root and leaves</td>
<td>Rheumatism and amenorrhea</td>
</tr>
<tr>
<td>16.</td>
<td>Carica papaya L.</td>
<td>Caricaceae</td>
<td>Papali maram</td>
<td>Leaf and fruit</td>
<td>Skin diseases, blood pressure and dyspepsia</td>
</tr>
<tr>
<td>17.</td>
<td>Catharanthus roseus (L.) G.Don</td>
<td>Apocynaceae</td>
<td>Nithia kalyani</td>
<td>Whole plant</td>
<td>Diabetes, malaria and cancer</td>
</tr>
<tr>
<td>18.</td>
<td>Centrosema pubescens Benth.</td>
<td>Leguminosae</td>
<td>Kattupayar</td>
<td>Leaf and seed</td>
<td>Skin diseases, scorpion and snake bites</td>
</tr>
<tr>
<td>19.</td>
<td>Chromolaena odorata (L.) R.M.King &amp; H.Rob.</td>
<td>Compositae</td>
<td>Kamnjumst alai</td>
<td>Stem and leaves</td>
<td>Eye pains, antibiotic, anti-malarial</td>
</tr>
<tr>
<td>20.</td>
<td>Cleome gynandra L.</td>
<td>Cleomaceae</td>
<td>Vellai chedi</td>
<td>Leaves</td>
<td>Cough, headache and rheumatism</td>
</tr>
<tr>
<td>21.</td>
<td>Cleome rutidosperma DC.</td>
<td>Cleomaceae</td>
<td>Neelavela</td>
<td>Whole plant</td>
<td>Malaria, inflammation and deafness</td>
</tr>
<tr>
<td>22.</td>
<td>Cleome viscosa L.</td>
<td>Cleomaceae</td>
<td>Naikkatuku</td>
<td>Leaves and seed</td>
<td>Wounds and ulcers</td>
</tr>
<tr>
<td>23.</td>
<td>Clerodendrum infortunatum L.</td>
<td>Lamiaceae</td>
<td>Karukanni</td>
<td>Root and leaves</td>
<td>Diarrhea, malaria, skin diseases,</td>
</tr>
<tr>
<td>24.</td>
<td>Coccinia grandis (L.) Voigt</td>
<td>Cucurbitaceae</td>
<td>Kovakai</td>
<td>Whole plant</td>
<td>Leprosy, bronchitis, joint pain</td>
</tr>
<tr>
<td>25.</td>
<td>Cocos nucifer a L.</td>
<td>Arecaceae</td>
<td>Thennai maram</td>
<td>Fruit</td>
<td>Pimples and black dots</td>
</tr>
<tr>
<td>26.</td>
<td>Combretum indicum (L.) DeFilipps</td>
<td>Combretaceae</td>
<td>Irgung mali</td>
<td>Whole plant</td>
<td>Diarrhea and fever</td>
</tr>
<tr>
<td>27.</td>
<td>Commelina benghalensis L.</td>
<td>Commelinaceae</td>
<td>Kanan valai</td>
<td>Whole plant</td>
<td>Diarrhea and eye complaints</td>
</tr>
<tr>
<td>28.</td>
<td>Crotonalaria pallida Aiton</td>
<td>Leguminosae</td>
<td>Kollukippai</td>
<td>Whole plant</td>
<td>Urinary problems, fever,</td>
</tr>
</tbody>
</table>

Table 1 to be continued...
32. Dioscorea alata L., Dioscoreaceae. Peruvallai Fruit Fever, gonorrhea, leprosy
33. Euphorbia heterophylla L., Euphorbiaceae. Paal perukki Whole plant Stomach-ache, intestinal worms
34. Euphorbia hirta L., Euphorbiaceae. Nilappala Whole plant Anticancer activity, skin diseases
35. Ficus religiosa L., Moraceae. Aras maram Whole plant Against bites of venomous animals
36. Gilias oppositifolia (L.) Aug. DC., Molluginaceae. Thura poondu Whole plant Promote digestion
37. Grinticida sepium (Jacq.) Walp., Leguminosae. Seemai agathi Whole plant Cough, fever, fractures, rheumatism
38. Gongylotrema cepaeoides Mart., Amaranthaceae. Neervadamalli Whole plant Skin diseases, worm infections
39. Hibiscus rosa-sinensis L., Malvaceae. Chambaruthi Leaves Dandruff
40. Hibiscus surattensis L., Malvaceae. Kashikirai Leaf and stem Urthritis
41. Hypis suaveolens (L.) Potr., Lamiales. Pachilai Leaves Fungal infection and diarrhea
42. Ipomoea pes-caprae (L.) R. Br., Convolvulaceae. Adapukodi Whole plant Rheumatism, colic, piles
43. Ipomoea triloba L., Convolvulaceae. Kakattan Whole plant Stomach ache
44. Jasminum sambuc L., Sol., Oleaceae. Mullai Leaf and flower Intestinal worms, jaundice, cancer
45. Lantana camara L., Verbenaceae. Unnu chedi Leaves Rheumatism
46. Laxosia merrisi L., Lythraceae. Mialanchi Leaves Skin diseases
47. Leonas aspera (Wild.) Link, Lamiales. Tumbai Whole plant Intestinal worm, scorpion bites and fevers
48. Mangifera indica L., Anacardiaceae. Manga maram Whole plant Ulcer
49. Manilkara zapota (L.), Sapotaceae. Sapota maram Whole plant Fever, ulcers and diarrhea
50. Mimosa pudica L., Leguminosae. Thotaal churunti Root Asthma, diarrhea, skin wounds
51. Moringa oleifera Lam., Moringaceae. Murungai maram Leaves and fruit Indigestion, hair falling and eye diseases
52. Musa x paradisiaca L., Musaceae. Vaazhai Fruit Stomach ache
53. Nerium oleander L., Apocynaceae. Arali Flower Heel cracks
54. Ocimum tenuiflorum L., Lamiales. Thulasi Leaves Cough and fever
55. Pandanus amaryllifolius Roxb., Pandanaceae. Ramba Leaves Fever, relieve indigestion and flatulence
56. Parthenium hysterophorus L., Compositae. Parthenium Whole plant Skin inflammation, rheumatic pain, diarrhea
57. Passiflora foetida L., Passifloraceae. Chokkan kai Leaves Sleeping problems, itching
58. Phyllanthus niruri L., Phyllanthaceae. Keezhanelli Whole plant Chronic fever and jaundice
59. Physalis angulata L., Solanaceae. Chodaku chedi Whole plant Rheumatic pain, muscular stiffness and fever
60. Plectranthus amboinicus (L.) florom. Lamiales. Pachilai Whole plant Dyspepsia and snakebites
61. Plumbago zeylanica L., Plumbaginaceae. Kodivaeli Whole plant Leprosy
62. Psidium guajava L., Myrtaceae. Peraikai maram Leaves and fruit Diarrhea and diabetes
63. Ricinus communis L., Euphorbiaceae. Aamanuku Root and leaves Inflammations, skin diseases and rheumatism
64. Senna occidentalis (L.) Link, Leguminosae. Payaverai Seed Rheumatism and diabetes
65. Sida cordifolia L., Malvaceae. Arivalmukkan Root and seed Inflammation, asthmatic bronchitis
66. Sida rubifolia L., Malvaceae. Karisalanganni Whole plant Swelling, headache and rheumatism
67. Solanum americanum Mill, Solanaceae. Manathakali Whole plant Liver disorders, fever and dysentery
68. Solanum lycopersicum L., Solanaceae. Thakali chedi Whole plant Burns, scalds, sunburn and toothache
69. Solanum melongena L., Solanaceae. Kathirikai Whole plant Blood cholesterol and regulate high blood pressure
70. Spermacoce ocyoides Burn.f., Rubiaceae. Nathaichuri Leaves Wounds, eczema, worms and rugworm
71. Talinum fruticosun (L.) Juss., Talinaceae. Pachai keerai Whole plant Measles and diabetes
72. Tamarindus indica L., Leguminosae. Puli maram Whole plant Swellings
73. Terminalia catappa L., Combretaceae. Vethavankai Whole plant Jaundice, indigestion and diarrheea
74. Thepesia populnea (L.) Sol., Ex Correa, Malvaceae. Cheelaanthi maram Leaves and flower Skin disease
75. Tridax procumbens (L.) L., Compositae, Odian pachlai Leaves Wounds, skin diseases and liver disorders
76. Triumfetta rhomboidea Jacq., Malvaceae. Otpaillu Whole plant Diarrhea, dysentery and gonorrhea
Table 2: Distribution of Families, Genera and Species under Dicots and Monocots

<table>
<thead>
<tr>
<th>Category</th>
<th>Dicots (n)</th>
<th>%</th>
<th>Monocots (n)</th>
<th>%</th>
<th>Total (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Families</td>
<td>31</td>
<td>19</td>
<td>7</td>
<td>34</td>
<td>38</td>
</tr>
<tr>
<td>Genera</td>
<td>58</td>
<td>37</td>
<td>7</td>
<td>33</td>
<td>65</td>
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<tr>
<td>Species</td>
<td>69</td>
<td>44</td>
<td>7</td>
<td>33</td>
<td>76</td>
</tr>
</tbody>
</table>

Plant Part Used for the Preparation of Medicine

In the present study the various plant parts used as medicines were whole plant (36), Leaves (16), Leaves and fruits (4), Root and leaves (4), Fruits (3), Roots (3), Leaves and flowers (2), Leaves and seed (2), Seed (2), Stem and leaves (2), Flower (1), Root and seed (1). Whole plants are largely used in the study area. Entire plants are extracted for medicinal purposes in case of herbs.

Table 3: Plant Parts Used for Medicinal Purposes

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Useful parts</th>
<th>No. of species</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Whole plant</td>
<td>36</td>
</tr>
<tr>
<td>2</td>
<td>Leaves</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>Leaves and fruit</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Root and leaves</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Fruit</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>Root</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>Leaves and flower</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Leaves and seed</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>Seed</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Stem and leaves</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>Flower</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Root and Seed</td>
<td>1</td>
</tr>
</tbody>
</table>

Route of Administration and Dosage

Most of the medicinal plants were collected from wild habitats. The medicinal plants are mostly used in the form of decoction. Most of the remedies were taken orally. They were also used in direct application of the paste for ailments like skin diseases, wounds, heel cracks, poison bites, rheumatism, body pain and headache. Some of the ailments were treated by internal consumption as well as topical application such as poison bite, rheumatism and body pain and also, some of the ailments such as cold, cough, headache and fever were involved.

Out of 76 plant species, particularly 13 species are used for fever, 9 species used for Cough, 9 species used for Rheumatism, 7 species used for stomach ache, 5 species used for jaundice, 4 species used for headache, 2 plants used for diarrhoea. Most of the collected medicinal plants have efficiency to fight against more than one disease. The most popular medicinal plants, in terms of the number of disease against which they are used, they are *Gliricidia sepium*, (8 diseases), *Clerodendrum infortunatum* (7), and *Asystasia gangetica* (6). 11 species (*Andrographis paniculata*, *Carica papaya*, *Coccinia grandis*, *Dioscorea alata*, *Ipomoea pes-caprae*, *Manilkara zapota*, *Parthenium hysterophorus*, *Physalis angulata*, *Ricinus communis*, *Senna occidentalis*, *Sida cordifolia*) are used in the treatment of 5 diseases.

Ethnomedicinal Importance of the Plant Species

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 been
recorded 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. (Table 4).

<table>
<thead>
<tr>
<th>Category</th>
<th>Diseases/conditions included</th>
<th>No. of plant species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin problems</td>
<td>Scabies, eczema, leucoderma, skin tumours, skin inflammation, skin wounds, scalds, burns, psoriasis, pimples, black dots, heel cracks, itching, boils.</td>
<td>20</td>
</tr>
<tr>
<td>Body pain/Swelling</td>
<td>Rheumatic pain, stomachache, swelling of joints, headache, joint pain, muscular stiffness and pain</td>
<td>14</td>
</tr>
<tr>
<td>Urino-genital problems</td>
<td>Hemorrhage, dysuria, urinary tract infection, urethral discharge, urethral stones, bladder stones, bladder inflammation</td>
<td>6</td>
</tr>
<tr>
<td>Gastro-intestinal problems</td>
<td>Constipation/ indigestion, dysentery, diarrhoea, intestinal gas, intestinal worms, intestinal colic, piles, dyspepsia, ulcers, liver disorders, nausea, vomiting</td>
<td>38</td>
</tr>
<tr>
<td>Respiratory problems</td>
<td>Cough, cold, asthma, bronchitis, sore throats, diphtheria, bowel complaints</td>
<td>13</td>
</tr>
<tr>
<td>Chronic infectious disease</td>
<td>Leprosy, anemia</td>
<td>5</td>
</tr>
<tr>
<td>Peripheral artery disease</td>
<td>Limb pain</td>
<td>2</td>
</tr>
<tr>
<td>Brain disorder</td>
<td>Epilepsy</td>
<td>1</td>
</tr>
<tr>
<td>Animal bites</td>
<td>Scorpion bites, snake bites</td>
<td>7</td>
</tr>
<tr>
<td>Venereal disease</td>
<td>Gonorrhea, syphilitic affections</td>
<td>6</td>
</tr>
<tr>
<td>Hair problems</td>
<td>Graying of the hair, hair falling, dandruff</td>
<td>3</td>
</tr>
<tr>
<td>Others</td>
<td>Fever, jaundice, diabetes, fractures, deafness, eye diseases, tooth problems, edema, cancer, malaria, fungal infection, sleeping problems, blood</td>
<td>29</td>
</tr>
</tbody>
</table>

Table 4: Diseases Treated in the Ethnomedicine of Study Area

Selected medicinal plants in the Study Area

- *Abutilon indicum*
- *Amaranthus blitum*
- *Cardiospermum halicacabum*
- *Centrosema pubescens*
- *Cleome gynandra*
- *Cleome rutidosperma*
- *Clitoria ternatea*
- *Crotonal verauccosa*
DISCUSSION

Medicinal plants have been used for millennia in virtually all cultures and serve both as a source of income and affordable healthcare. Worldwide, about 53,000 plant species are used for medicinal purposes (Hamilton 2004). 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. Heindrickson et al (2010) recorded 73 illnesses from the fishing communities of South Brazil. Muthukumar and Selvin Samuel (2010) reported 30 illness coastal areas of Tuticorin district. According to Bhandary and Chandrashekar (2014) recorded 42 ailments from the coastal Karnataka.

All the plants were able to cure different human ailments such as diabetes, cough, body ache, eye diseases, fever etc. Most of these plants are being used directly by the people or to prepare decoction or with slight preparation like applying the paste, boiling the useful parts of these plants, simply chewing leaves making extract of the plant and using it etc. The report is connected to the previous work (Rao et al., 2002; Bhattacharya 2002; Singh 2002; Gupta 2000; Khan 2004; Dhar et al 2003; Heindrickson et al 2010; Muthukumar and Selvin Samuel 2010; Qasim et al.,2014) etc. 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- A coastal village of Kanniyakumari district. But my study revealed that whole plants are dominantly used from the study area.

The plants such as Annona squamosa and Sida cordifolia were used to cure scorpion bite, stomach ache and fever. In the present study also same plants were used to cure particular diseases. They were reported by Viswanathan 2000; Rajendran et al., 2002; Sharma & Mujundar 2003. So the present study was consistent with the previous work.

Mangifera indica and Carica papaya were used to treat indigestion and stomach problems. It was reported by Kamble et al., 2008. 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.

The crude drug is obtained from medicinal plants. Due to the influence of modern medicine, the usage of traditional medicine becomes decreased day by day. When the people need to small part of the plant, but they pull out the whole plant. So the wealth of medicinal plants decreases, so we have to conserve the medicinal plants and utilize the crude drugs obtained from medicinal plants.

**CONCLUSION**

The coastal plant species of the coastal village of Vallavilai has extremely important, which play a vital role in the medicinal and social life of people. Findings of the present investigation revealed that, the coastal village of Vallavilai have a very rich diversity of medicinal plants. 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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