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Existence and Survey of Medicinal Plants along The Neerody Coastal Line Of Kanniyakumari District

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Abstract- Present Study was conducted in the Neerody coastal Villages of Kanniyakumari district, Tamil Nadu, India to document the Medicinal plant wealth. Taxonomically, a total of 32 plant species belonging to 31 genera and 23 families were recorded. Of these 15 (50%) were herbs, 5 (16%) were shrubs, and 11 (34%) were trees. 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 46 various ailments against which ethnomedicinal treatments have been recorded in the study area can be grouped into 10 major categories of symptomatically and organ-system related diseases/problems.

Keywords: Medicinal plants, Neerody village

I INTRODUCTION

Ethnomedicinal survey is one of the reliable sources to natural and synthetic drug discovery. 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. These medicinal plants have a longstanding history in many indigenous communities and continue to provide useful tools for treating various diseases. Documenting the indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources.

According to the World Health Organization (WHO) about 65- 80% of the world's population in developing countries depends essentially on plants for their primary healthcare due to poverty and lack of access to modern medicine. About 80% of the total population of India is depending on traditional medicine to treat different types of human ailments. They use their perceptions and experiences to categorize plant species indigenously and local people over the past period take traditional medicine. In traditional medicine, plant is required as a major component to cure many diseases caused by bacteria, fungi and virus in human. Herbs are mainly used for disease prevention and treatment.

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. The coastal population of the country has their own herbal homework to treat various diseases. The use of herbal medicines by coastal communities is inclined by distinct socio-cultural practices, support of traditional ability and services of traditional medicine. These people have much associated with their ambient environment and ecology and mainly depend on it for primary health care system, because of they live in remote areas as compared to modern facilities.

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 territoriesThe coastal zone is an important biogeographically habitats of the Indian subcontinent (Rodgers and Panwar 1998).

Kanniyakumari 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.

Hence the present study was undertaken to document the ethnomedicinal wisdom of Neerody 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. Neerody is a coastal Village on the shore of the Arabian Sea in Kanniyakumari district, Tamil Nadu, India. It was situated near the border of Tamil Nadu and Kerala.

II MATERIALS AND METHODS

Study Area

The present study was conducted in the Neerody coastal village OF Kanniyakumari district. This village comes under Kollemcode Panchayat of Vilavancode Taluk. It was situated near the border with Tamil Nadu and Kerala on north-west to Kanniyakumari and southwest to Trivandrum. These villages are located nearly 70 km from Kanniyakumari and 30 km from Trivandrum. Kanniyakumari 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. Kanniyakumari coastal line has a length of about 71.5 km. The location of the study area had latitude 8.29 and longitude 77.10.

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 15 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.

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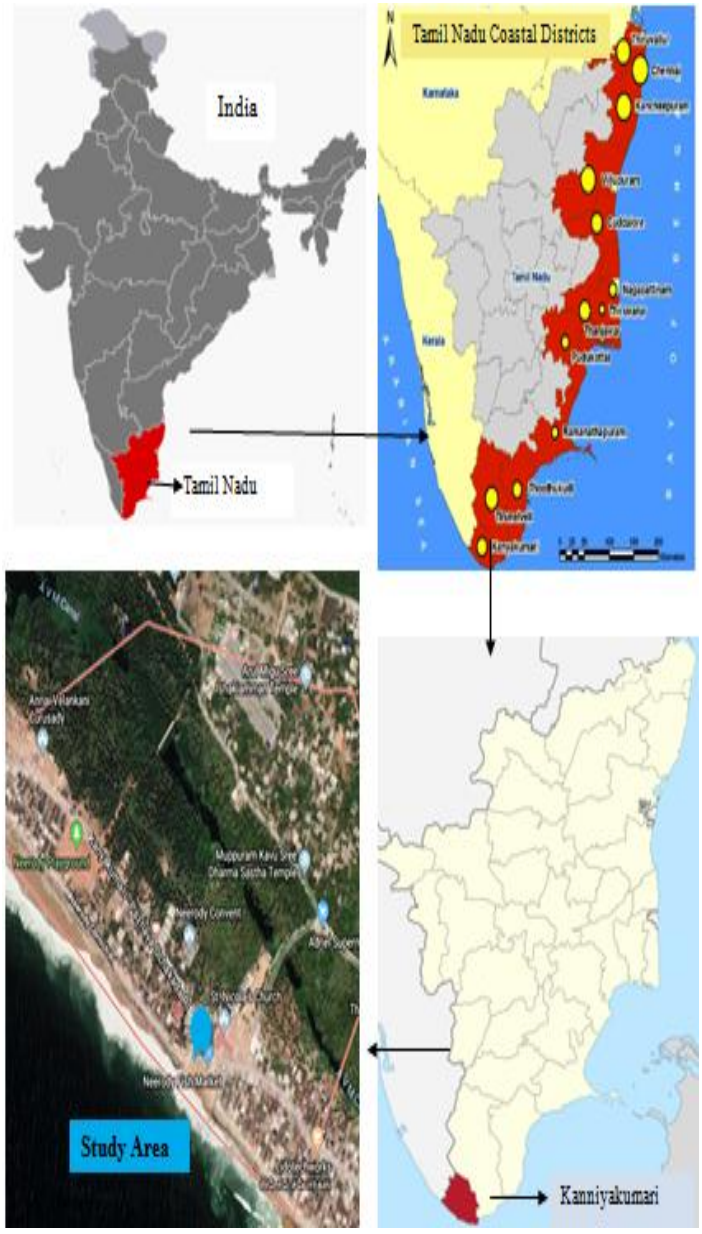

Plate 1: Map showing the Study Area

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 Neerody Village, Kanniyakumari district, Tamil Nadu, India.

III 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 Neerody Coastal village.

Diversity of Ethnomedicinal Plants

Taxonomically, a total of 32 plant species belonging to 31 genera and 23 families were recorded. Of these 15 (50%) were herbs, 5 (16%) were shrubs, and 11 (34%) were trees (Figure 1, Table 1). Plant species, which are used in traditional medicine, are enumerated alphabetically according to their binomial names, followed by family names (Table 2). Of the 32 taxa, dicots were represented by 27 species belonging to 18 families and monocots by 5 species belonging to 5 families (Table 3). Based on the growth forms, total of 8 annuals species (25%) and 24 perennials (75%) were recorded from the study area.

Family wise distribution shows that Amaranthaceae was the dominant family represented by 4 species under 3 genera, followed by Solanaceae, Apocynaceae, Lamiaceae, Malvaceae, Myrtaceae and Euphorbiaceae having 2 species each, whereas 16 families (Anacardiaceae, Annonaceae, Arecaceae, Caricaceae, Combretaceae, Compositae, Lythraceae, Meliaceae, Moraceae, Moringaceae, Musaceae, Nyctaginaceae, Oleaceae, Poaceae, Rutaceae, Xanthorrhoeaceae) were monospecific.

Table 1: Habit wise distribution of plant species in the study area

Category	Species (n)	%
Herbs	16	50
Trees	11	34
Shrubs	5	16

Table2: List of Ethnomedicinal Plants Recorded From the Study Area

Sl. No.	Name of the Species	Family	Local Name	Useful Part	Therapeutic uses
1.	*Abutilon indicum* (L.) Sweet	Malvaceae	Cheepu kai	Whole plant	Fever
2.	*Acalypha indica* L.	Euphorbiaceae	Kupaimaeni	Leaves	Headache and skin diseases
3.	*Achyranthes aspera* L.	Amaranthaceae	Nayuruvi	Whole plant	Toothache, wounds and snake bites
4.	*Aloe vera* (L.) Burm.f.	Xanthorrhoeaceae	Kathalai	Leaves	Stomachache
5.	*Amaranthus cruentus* L.	Amaranthaceae	Keerai	Whole plant	Laxative and pains in the limbs
6.	*Amaranthus viridis* L.	Amaranthaceae	Kuppaikkirai	Leaves	Fever and eye infections
7.	*Annona squamosa* L.	Annonaceae	Munthiri maram	Leaves	Dysentery and urinary tract infection
8.	*Azadirachta indica* A.Juss.	Meliaceae	Vepa maram	Leaves	Skin diseases like eczema and psoriasis
9.	*Boerhavia diffusa* L.	Nyctaginaceae	Sarandai	Root	Heart diseases, skin disorders
10.	*Capsicum annuum* L.	Solanaceae	Milagu	Fruit	Cold, cough, fever and dyspepsia
11.	*Carica papaya* L.	Caricaceae	Papali maram	Leaf and fruit	Skin diseases, blood pressure and dyspepsia
12.	*Catharanthus roseus* (L.) G.Don	Apocynaceae	Nithia kalyani	Whole plant	Diabetes, malaria and cancer
13.	*Chloris barbata* Sw.	Poaceae	Mayir-kontai pull	Leaves	Skin diseases, fever, diarrhea
14.	*Cocos nucifera* L.	Arecaceae	Thennai maram	Fruit	Pimples and black dots
15.	*Eclipta prostrata* (L.) L.	Compositae	Kaithoni	Whole plant	Liver complaints
16.	*Eucalyptus globulus* Labill.	Myrtaceae	Eucalyptus	Leaves and resin	Diarrhea and bladder inflammation
17.	*Euphorbia hirta* L.	Euphorbiaceae	Nilappala	Whole plant	Anticancer activity, skin diseases
18.	*Ficus religiosa* L.	Moraceae	Arasa maram	Whole plant	Against bites of venomous animals
19.	*Gomphrena globosa* L.	Amaranthaceae	Vaadamalli	Flower	Cough, diabetes, bronchial asthma
20.	*Hibiscus rosa-sinensis* L.	Malvaceae	Chembaruthi	Leaves	Dandruff
21.	*Jasminum sambac* (L.) Sol.	Oleaceae	Mullai	Leaf and flower	Intestinal worms, jaundice, cancer
22.	*Mangifera indica* L.	Anacardiaceae	Manga maram	Whole plant	Ulcer
23.	*Moringa oleifera* Lam.	Moringaceae	Murungai maram	Leaves and fruit	Indigestion, hair falling and eye diseases
24.	*Murraya koenigii* (L.) Spreng.	Rutaceae	Curry vepilai	Leaves	Vomiting
25.	*Musa x paradisiaca* L.	Musaceae	Vaazhai	Fruit	Stomach ache
26.	*Nerium oleander* L.	Apocynaceae	Arali	Flower	Heel cracks

Sl. No.	Name of the Species	Family	Local Name	Useful Part	Therapeutic uses
27.	*Ocimum tenuiflorum* L.	Lamiaceae	Thulasi	Leaves	Cough and fever
28.	*Plectranthus amboinicus* (Lour.) Spreng.	Lamiaceae	Pachilai	Whole plant	Dyspepsia and snakebites
29.	*Psidium guajava* L.	Myrtaceae	Peraikai maram	Leaves and fruit	Diarrhea and diabetes
30.	*Punica granatum* L.	Lythraceae	Madulai	Fruit	Diarrhea and stomachache
31.	*Solanum lycopersicum* L.	Solanaceae	Thakali chedi	Whole plant	Burns, scalds, sunburn and toothache
32.	*Terminalia catappa* L.	Combretaceae	Vethavankai	Whole plant	Jaundice, indigestion and diarrhea

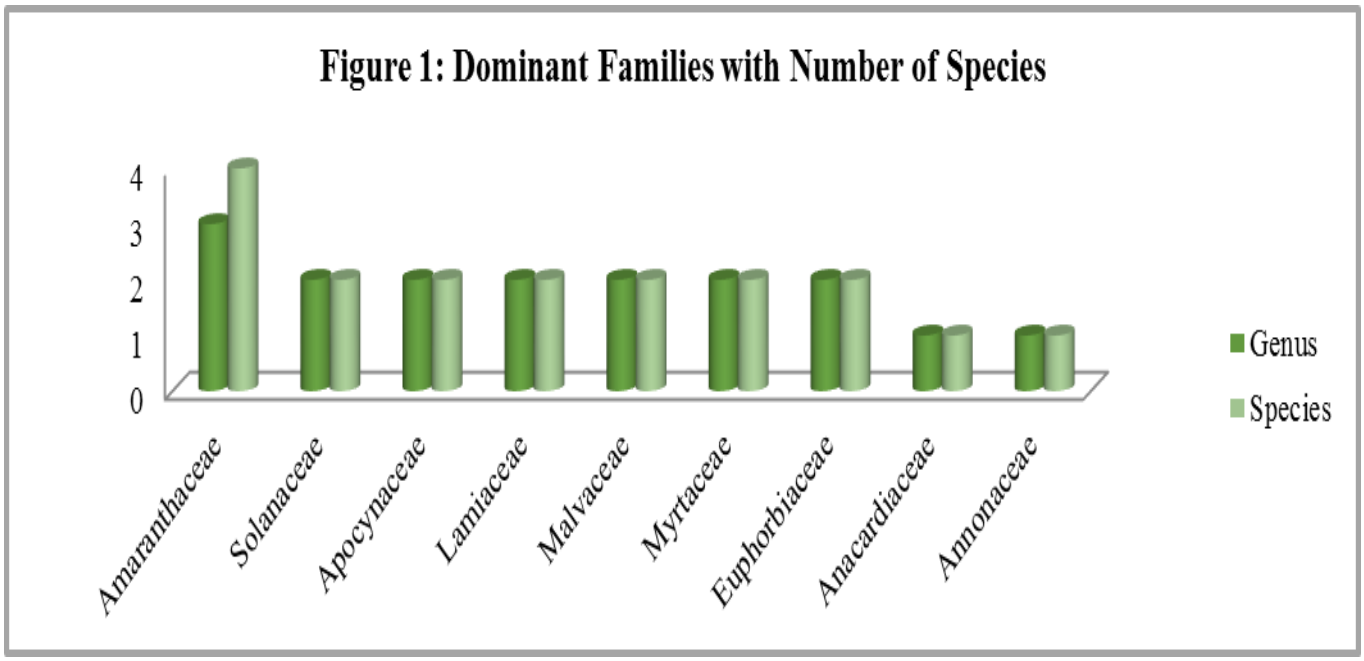

Table 3:Distribution of Families, Genera and Species under Dicots and Monocots

Category	Dicots (n)	%	Monocots (n)	%	Total (n)
Families	18	25	5	34	23
Genera	26	37	5	33	31
Species	27	38	5	33	32

Plant Part Used for the Preparation of Medicine

In the present study the various plant parts used as medicines were whole plant (11), Leaves (9), fruits (4), Leaves and fruits (3), Flower (2), Leaves and flowers (1), Leaves and resin (1), Roots (1) (Table 4). 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.

Table 4: Plant Parts Used for Medicinal Purposes

Sl. No.	Useful parts	No. of species
1.	Whole plant	11
2.	Leaves	9
3.	Fruit	4
4.	Leaves and fruit	3
5.	Flower	2
6.	Leaves and flower	1
7.	Leaves and resin	1
8.	Root	3

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 32 plant species, particularly 6 species are used for fever, 8 species used for Cough, 3 species used for Rheumatism, 7 species used for stomach ache, 3 species used for jaundice, 5 species used for headache, 2 plants used for diarrhoea. Most of the collected medicinal plants have efficiency to fight against more than one disease.

Ethnomedicinal Importance of the Plant Species

The medicinal plants of the study area have been used to treat 46 illnesses. The ailments such as scabies, skin inflammation, skin wounds, scalds, burns, psoriasis, pimples, black dots, heel cracks, rheumatic pain, stomach-ache, headache, urinary tract infection, bladder inflammation. constipation/indigestion, dysentery, diarrhoea, intestinal worms, dyspepsia, ulcers, liver disorders, vomiting, cough, cold, asthma, bronchitis, sore throats, diphtheria, scorpion bites, snake bites. fever, jaundice, diabetes, eye diseases, tooth problems, cancer, malaria, blood pressure, leprosy, anemia, limb pain, epilepsy, gonorrhoea, greying of the hair, hair falling, dandruff etc.

The 46 various ailments against which ethnomedicinal treatments have been recorded in the study area can be grouped into 10 major categories of symptomatically and organ-system related diseases/problems, such as 8 plants are used for Skin problems, 5 species are Urino-genital problems, 3 plants used for Gastro-intestinal problems, 1 species used for Respiratory problems. 2 species used for Chronic infectious diseases, 1 species used for Peripheral artery disease, 3 species used for Animal bites, 1 species used for Venereal disease, 3 plants used for Hair problems, 18 species used for Others diseases (Fever, jaundice, diabetes, eye diseases, tooth problems, edema, cancer, malaria, blood pressure, heart diseases) (Table 5).

Table 5: Diseases Treated in the Ethnomedicine of Study Area

Category	Diseases/conditions included	No. of plant species
Skin problems	Scabies, eczema, skin inflammation, skin wounds, scalds, burns, psoriasis, pimples, black dots, heel cracks, itching, boils, measles.	8
Urino-genital problems	Hemorrhage, urinary tract infection, bladder inflammation	5
Gastro-intestinal problems	Constipation/ indigestion, dysentery, diarrhoea, intestinal gas, intestinal worms, ulcers, liver disordersvomiting	3
Respiratory problems	Cough, cold, asthma, bronchitis, sore throats, diphtheria	1
Chronic infectious disease	Leprosy, anemia	2
Peripheral artery disease	Limb pain	1
Animal bites	Scorpion bites, snake bites	3
Venereal disease	Gonorrhea, syphilitic affections	1
Hair problems	Graying of the hair, hair falling, dandruff	3
Others	Fever, jaundice, diabetes, eye diseases, tooth problems, cancer, malaria, blood pressure, heart diseases	18

Selected medicinal plants in the Study Area

Abutilon indicum

Amaranthus viridis

Andrographis paniculata

Annona squamosa

Capsicum annuum

Catharanthus roseus

Eclipta prostrata

Mangifera indica




Moringa oleifera *Murraya koenigii* *Musa x paradisiaca* *Nerium oleander*




Ocimum tenuiflorum *Plectranthus amboinicus* *Psidium guajava* *Punica granatum*

IV 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 32 medicinal plants belonging to 31 genera from 23 families were collected and recorded. 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.

Family wise distribution shows that Amaranthaceae was the dominant family represented by 4 species under 3 genera, followed by Solanaceae, Apocynaceae, Lamiaceae, Malvaceae, Myrtaceae and Euphorbiaceae having 2 species each in the study area. The report is connected to the previous work (Arefin et al 2011; Sahu et al 2011; Noman et al 2013; Bhandary and Chandrashekar 2014; Qasim et al 2014; Jenisha and Jeeva 2014; Atikullah et al 2016) etc.

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.

The 46 various ailments against which ethnomedicinal treatments have been recorded in the study area can be grouped into 10 major categories of symptomatically and organ-system related diseases/problems, such as 8 plants are used for Skin problems, 5 species are Urino-genital problems, 3 plants used for Gastro-intestinal

problems, 1 species used for Respiratory problems. 2 species used for Chronic infectious diseases, 1 species used for Peripheral artery disease, 3 species used for Animal bites, 1 species used for Venereal disease, 3 plants used for Hair problems, 18 species used for Others diseases (Table 5). The report is connected to the previous work (Heindrickson et al 2010; Bhandary and Chandrashekar 2014; Qasim et al 2014) etc.

The plants such as *Annona squamosa* 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 *Boerhavia diffusa*, and *Achyranthes aspera* 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 *Moringa oleifera* were used to cure rheumatism, headache, scabies, itching of the skin and ulcer. They were reported various author such as Moorthy et al 2002; Rana et al 2002; Arya and Prakash 2000. Latif (2002) reported that the *Aloe vera* fresh leaves are cut longitudinally and applied on the forehead and fever. According to Kanjilal et al (2003) *Aloe vera* the pulp of the plant with salt and fermented sugarcane juice is used for pain and inflammations of the body. *Aloe vera* decoction is used to cure ulcer (Jeyaprakash et al 2011). According to Sahu et al (2011) *Aloe vera* leaves are used skin burnings. *Azardirachta indica was* used for the treatment of pox and skin diseases and Rana et al (2002). Tender leaves of *Azadirachta indica* was taken to relieve intestinal worms (Jeyaprakash et al 2011). According to Sahu et al (2011) *Azadirachta indica* leaves are used skin diseases. According to Kanjilal et al (2003) *Hibiscus rosa-sinensis* the stamen of the flower used in kidney troubles and *Murrya koenigii* leaves are very useful for digestive problems.

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 pullout 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.

V CONCLUSION

The coastal plant species of the coastal village of Neerody 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 Neerody 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 32 medicinal plants, used for treating 46 different human ailments were recorded in the study area. Of these 15 (50%) were herbs, 5 (16%) were shrubs, and 11 (34%) were trees belonging to 23 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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