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Research Article

INDIGENOUS KNOWLEDGE OF MEDICINAL PLANTS USED FOR THE TREATMENT OF SKIN DISEASES BY THE KAANI TRIBE OF KANYAKUMARI DISTRICT

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ABSTRACT

The indigenous knowledge on medicinal plants is gaining recognition worldwide because of its support in discovery of new medicines and its importance for proper conservation of biodiversity. This paper documents the traditional knowledge of medicinal plants used for the treatment of skin diseases by the tribe, namely Kaani, of Kanyakumari District, Tamil Nadu, India. The present study was done through structured questionnaires in consultation with the tribal ethno-medical practitioners and has resulted in the documentation of 55 medicinal plant species belonging to 38 families. For curing the skin disease, the use of aboveground plant parts was higher (83.33%) than the underground plant parts (16.67%). Of the aboveground plant parts, leaves were used in the majority of cases (19 species), followed by whole plants (11 species). Different underground plant forms such as roots and rhizomes were also used by the tribe as medicine. The study thus underlines the potentials of the ethno-botanical research and the need for the documentation of traditional ecological knowledge pertaining to the medicinal plant utilization for the greater benefit of humankind.

Keywords: Kanyakumari, Questionnaires, Tribe, Skin diseases, Ethno-botany

INTRODUCTION

Skin is the largest organ of the body. It serves many important functions, including protection, percutaneous absorption, temperature regulation, fluid maintenance, sensory and disease control[1]. Skin complaints affect all ages from the neonate to the elderly and cause harm in many ways. It has been estimated that skin diseases amount to as high as 34% of all occupational diseases[2]. Natural beauty is a blessing and a sign of healthy life. Plants help in preserving and enhancing the beauty and personality of human beings.

Traditional medicinal resources, especially plants, have been found to play an important role in the management of dermatological conditions[3]. It is estimated that at least 265,000 species of seed plants[4] exist on earth. Only less than a half percent of these have been studied exhaustively for their chemical composition and medicinal value[5]. Many ethno-pharmacological studies on plants used in human communities have been limited to specific geographical or administrative regions[6,7,8]. Relatively few of these studies focused on communities with strong traditional cultures[9,10,11].

The human practice of plant traditional medicines is based on a knowledge that has been passed orally from generation to generation and only a very few written documents are available. Documentation of the indigenous knowledge through ethno-botanical studies is important for the conservation and utilization of biological resources[12]. Therefore, establishment of the local names and indigenous uses of plants has significant potential societal benefits[13].

Chinese, Indian, Arabian and other traditional systems of medicines make extensive use of about 5,000 plants. India is proud to be rich in biological diversity and insert tenth among the plant rich countries of Asia, sixth as far as centers of diversity especially agro-diversity is concerned. Nearly three fourth of the drugs and perfumery products used in the world are available in natural state in the country. India possesses almost 8% of the estimated biodiversity of the world with around 126,000 species. It is one of the 12 mega biodiversity centers with two hot spots of biodiversity in Western Ghats and North-Eastern region[14].

The hill tribal and rural communities of Kanyakumari district are heavily dependent on wild plants for their primary health care and treatment of diseases. They collect the medicinal plants from various habitats as forests, grasslands, cultivated fields and use these plant materials are raw drugs. These communities have acquired good knowledge on the useful and harmful properties of the plant resources in course of their constant association with forest and agro-ecosystems. Most of the information on medicinal uses of plant preparations given here has been found to be new when compared with earlier published works[15].

The present study investigates the medicinal efficacies and methods of plant utilization in the hills and forest areas of Kanyakumari District. The results add new data to the ethno-pharmacological literature and provide information that could be essential for the development of food medicine and new drugs. Finally, this study should stimulate interest in ethno-pharmacological studies about this area.

MATERIALS AND METHODS

The ethno-medicinal uses of plants were collected by field survey, based on the interviews from the tribal communities. An intensive survey of the selected area was undertaken during 2008-09 with the help of pre-structured questionnaires. Field interviews were conducted with tribal people, traditional healers and their clan leaders. Persons of different age groups ranging from 52 to 74 and both sexes were contacted for collection of data.

Plant specimens were collected, pressed, dried and identified with the help of literature. The indigenous knowledge about the use of medicinal plants was arranged in alphabetical order of botanical names, family, local name (Tamil), parts used and the medicinal uses of plants were recorded in tabular form for future use.

Interview with traditional healers

Adopting the methods of Jain[16], ethno-medicinal data were collected through general conversation with the informants. The questionnaires were used to obtain information on medicinal plants with their local names, parts used, mode of preparation and administration. A total of 24 informants, comprising 13 males and 11 females were identified between the ages of 52 and 74. They were selected based on their knowledge of medicinal plants either for self-medication or for treating others. Informants were asked to come to the habitat areas and identify the plants with local names; the species mentioned by the informants were taxonomically identified.

Preservation of plant specimens

Standard method was followed with regard to collection of plant materials, drying, mounting, preparation and preservation of plant specimens[17]. Voucher specimens of medicinal plants in triplicates were collected, prepared and identified. Plants with their correct

nomenclature were arranged alphabetically by family name, vernacular name and ethno-medicinal uses. The identification and nomenclature of the listed plants were based on the systematic enumeration and made with the available monographs, relevant literatures and taxonomic revisions[18, 19, 20, 21].

RESULT AND DISCUSSION

The paper presents a brief account of the uses of various ethno-medicinal plant parts against the skin diseases by the tribal people of Kanyakumari District, Tamil Nadu, India. The study provides information on 55 plant species belonging to 38 families (Table 1). Fabaceae contributed maximum of five species. The plant parts used for the medicinal preparations were bark (7), roots (8), rhizome (3), leaves (19), seeds (7), flowers (4), latex (2), fruit (1), pods (1), wood (2) and whole plants (11) (Table 2). Sometimes they combined gum with bark paste are used for the treatment of skin diseases. This result is in agreement with studies of Leffers[22]. Teklehaymanot[23] reported that the roots used in the preparations in both single and multiple treatment with 58% and 48% respectively. On the other hand; the results of this study are not in agreement with some other studies which had addressed that leaves was the most common used parts for the treatments[24, 25].The common dosage forms include paste, decoction and juice.

Table 1: List of medicinal plants and their uses

S. no.	Botanical name	Family	Local name	Parts used	Medicinal Uses
1	Abrus precatorius, L.	Fabaceae	Kunnimuthu	Seeds	Seeds are used for skin diseases
2	Acacia sinuata, (Lour.) Merr.	Mimosaceae	Ciyakkai	Pods	The powdered pods (ciyakkai powder) are the best alternatives to soaps in all cases of skin diseases
3	Acalypha indica, L.	Euphorbiaceae	Kuppaimeni	Whole plant	Decoction of whole plant is used to treat skin diseases
4	Achyranthes aspera, L.	Amaranthaceae	Naiyuruvi	Leaves	Leaves crushed and applied for skin diseases particularly for fungal infections
5	Aloe Vera, (Linn.) Burm. f.	Liliaceae	Sottukattalai	Leaves	The leaf juice is used in skin diseases
6	Alternanthera sesilis, (L.) R. Br. Ex. DC	Amaranthaceae	Ponnankanni keerai	Whole plant	Decoction of whole plant is used for skin diseases
7	Andrographis paniculata, (Burm.f) Wallich. Ex. Nees.	Acanthaceae	Nilavembu	Whole plant	Decoction of the whole plant is given for skin diseases
8	Argemone Mexicana, Linn	Papaveraceae	Ponnumathai	Root	Decoction of roots are given for skin diseases
9	Aristolochia indica, Linn	Aristolochiaceae	Garuda kodi	Leaves	Leaves are made in to paste and then boiled with coconut oil and it can be applied externally to cure skin diseases
10	Artocarpus heterophyllus, Lam.	Moraceae	Plamaram	Leaves	Leaves are used to cure skin diseases
11	Azadirachta indica, Adr. Juss.	Meliaceae	Veppu	Leaves, seeds	Leaves and bark, ground and made into paste and applied externally to cure skin diseasesOil from seed is used in the treatment of skin diseases
12	Bambusa arundinacea, (Rets.) Willd.	Bambusaceae	Mulmunkil	Root, leaves	Decoction of roots is useful for skin diseases Infusion of leaves is useful in skin diseases
13	Biophytum sensitvum, (L.) DC	Oxalidaceae	Kadanthaikanni pacchilai	Whole plant	Whole plant is ground with water and made into paste, and applied over the affected skin
14	Calophyllum inophyllum, Linn.	Clusiaceae	Punnagam	Bark, seed	Infusion of the bark is useful in skin diseasesThe oil from seeds is useful in skin diseases
15	Carica papaya, Linn	Caricaceae	Pappali	Latex	Latex is useful in skin diseases
16	Cassia fistula, L	Caesalpiniaceae	Kattu konnai	Root, flower, leaves	Roots ground with water made into paste and applied to cure skin diseasesFlowers are useful in skin diseasesLeaf juice is used for skin diseases
17	Catheranthus roseus, G. Dun.	Apocyanaceae	Nithya kalyani, peenarichedi	Leaves	Leaves are ground, made into paste and applied externally as a cure to pimples
18	Centella asiatica, (L.) Urb.	Apiaceae	Vallarai	Leaves	Crushed leaves applied orally for skin diseases
19	Cissus quadrangularis, Linn.	Vitaceae	Pirantai	Shoot	Juice of shoots are useful in skin diseases
20	Clerodendum viscosum, Vent. Jard.	Verbenaceae	Perukilai	Leaves	Decoction of the leaves are useful in skin diseases
21	Clitoria ternatea, Linn	Fabaceae	Shankupushpam, kakkanam kolli	Leaves	Fresh leaves pounded and made into paste and applied to cure skin diseases
22	Coccinia grandis, (L.) J. Voig.	Cucurbitaceae	Kovai	Fruit	Fruits are useful in skin diseases
23	Costus speciosus, (J. Koenig.) Smith	Zingiberaceae	Kostam	Rhizome	Rhizome is made into paste, applied externally as a cure for skin diseases
24	Curcuma aromatica, Salish	Zingiberaceae	Kasthuri manjal	Rhizome	Rhizome of the plant is made into paste, applied for skin to cure pimples and itchings
25	Cymbopogon citrates, Stapf	Poaceae	Chukka nari pullu, vasana pullu	Whole plant	Decoction of the plant is useful in skin diseases
26	Cyperus rotundus, L.	Cyperaceae	Korai kilangu, muttan kai kilangu	Rhizome	Rhizome made into paste with water and applied externally for skin eruptions.
27	Dalbergia sissoo, Roxb.	Fabaceae	Etti	Bark, heart wood	Decoction of bark and heartwood are useful in skin diseases
28	Elephantopus scaber, Linn.	Asteraceae	Anachuvadi	Leaves	Leaf paste is very specific for skin diseases

29	Erythrina variegate, Linn.	Fabaceae	Mullumurukku	Bark	Decoction of bark is used for skin diseases
30	Ficus benghalensis, Linn.	Moraceae	Alamaram	Bark, latex	Bark and latex is useful in skin diseases
31	Ficus religiosa, L.	Moraceae	Arasu	Bark	Paste of powdered bark is good for skin diseases
32	Hedyotis corymbosa, (L.) Lam	Rubiaceae	Parpatagam	Whole plant	Whole plant is pounded and is useful in skin diseases
33	Hedyotis nitida, W. & A	Rubiaceae	Eruli	Whole plant	Whole plant ground made into paste, boiled with coconut oil and applied over skin to cure pimples
34	Heliotropium indicum, Linn	Boraginaceae	Telkodukkai	Leaves	The paste of leaves is useful for local application for skin diseases
35	Hemidesmus indicus, (L) R.Br	Asclepiadaceae	Nannari	Root	Decoction of root is useful for skin diseases
36	Hydnocarpus laurifolia, (Dennst.) Sleumer	Flacourtiaceae	Neerotti, nivetti	Seed	Oil from seed is a valuable medicine for skin diseases
37	Ixora coccinea, L.	Rubiaceae	Thetti	Leaves, flowers	Flowers ground, made into paste and used for skin diseasesWater boiled with the leaves is an effective wash to skin diseases, itch and painful boils.
38	*Jasminum grandiflorum, L.*	Oleaceae	Picchi	Root, leaves	Decoction of roots are useful in skin diseasesLeaves are ground with venthayam and applied on the skin to cure pimple
39	Marsilea quadrifolia, Linn	Marsileaceae	Nirarai	Whole plant	Decoction of whole plant is useful in skin diseases
40	Michelia champaca, Linn	Magnoliaceae	Sempakam	Flower and fruits	Pounded flowers, flower buds and fruits are useful in skin diseases
41	Nelumbo nucifera, Gaertn.	Nymphaeaceae	Thamarai	Seeds	The seeds are used for the treatment of diarrhea
42	Pandanus fascicularis, Lam. F.	Pandanaceae	Talai	Flowers	Decoction of flowers are useful in skin eruptions
43	Phyllanthus maderaspatersis, L.	Euphorbiaceae	Kattukilanelli	Whole plant	Whole plant is pounded and the paste is used for skin eruptions
44	Polyathia longifolia, (Sonn.) Thw	Annonaceae	Asogu, nettilingam	Bark	Decoction of the bark is useful in skin diseases
45	Polygala avvensis, Willd.	Polygalaceae	Siriyarnangai	Leaves	Leaves ground and extract is used for skin diseases
46	Polygala javana, L.	Polygalaceae	Periyarnangai	Leaves	An infusion of the leaves is used for skin diseases
47	Ricinus communis, L.	Euphorbiaceae	Amanakku, chittamanakku	Root	Infusion of roots is useful in skin diseasesOil extracted from the seeds is used in children for skin diseases
48	Santalum album, L.	Santalaceae	Chanthanam	Wood	Oil which obtained by the seeds in useful in skin diseases
49	Solanum nigrum, L.	Solanaceae	Manatthakkali	Leaves	Leaves are used as poultice for skin diseases
50	Solanum suratense, Burm, f.	Solanaceae	Kandankathiri	Whole plant	Whole plant is used for skin diseases
51	Solanum torvum, L.	Solanaceae	Chuntai	Root	Infusion of root is useful for skin diseases
52	Tactona grandis, L.	Verbenaceae	Thekku	Tender leaves, bark	Decoction of bark is used for skin diseasesTender leaves are crushed and the extract is mixed with powder of Curcuma aromatic as a remedy for skin diseases
53	Tephrosia purpurea, (L) Pers.	Fabaceae	Kozhinchi	Root, seed	Decoction of roots and seeds are used for skin diseases
54	Terminalia bellirica, Roxb	Combretaceae	Thani	Seed	Oil from the seeds is applied for the skin diseases
55	Tricodesma indicum, (L) R.Br.	Boraginaceae	Kalludaithumbai	Whole plant	Decoction of whole plant is useful for skin diseases

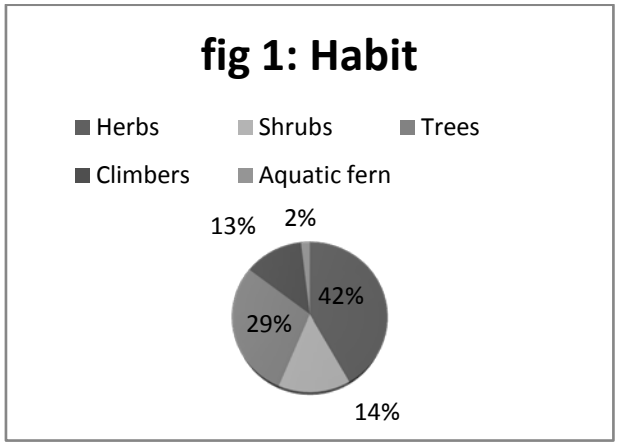
Table 2: Used parts and number of species

S.no	Plant parts	Number of species
1	Leaves	19
2	Whole plant	11
3	Root	8
4	Bark	7
5	Seeds	7
6	Flowers	4
7	Rhizome	3
8	Latex	2
9	Woods	2
10	Pods	1
11	Shoots	1
12	Fruits	1

The forests of Kanyakumari District are rich in medicinal plants, many are still not known to us. Present investigation indicates that Kanyakumari District is blessed with magnificent diversity of ethno-medicinal plants used to cure many diseases. The present study gives new incentive to the traditional system of health care. Further, this approach for the treatment of skin diseases is a practical, cost effective and biologically safe method. The use of plant resources as remedies is probably as ancient as man himself. The aforesaid uses are practiced daily by the tribal people living in hills, deep forests and jungles. The use of the traditional medicine is widespread in this region with higher percentage of the population relying on it[26].

According to the key informants we interviewed during our study, many medicinal plants have been disappearing from the forests. Because of this they have to walk or trek long distances to collect medicinal plants that had earlier been easily available in close proximity to their settlements. According to them, rapid deforestation, expansion of agricultural lands and destructive harvesting for commercial purposes are the main reasons for the dwindling and disappearance of medicinal plants.

The information presented in this research was collected from the senior members of the community who are still practicing the traditional healing methods. This study showed that the elderly persons and traditional healers have greater knowledge on the utilization of medicinal plants in comparison to the younger generation. During our study period, we found that the nearby villagers are seeking help from the traditional healers when their illness was not cured by modern medicines. Poor socio-economic status of the people has also compelled them to rely on traditional medicinal practices. When we interacted with the younger generation of the Kaani tribal community, they showed least interest in traditional practices mostly because of poor recognition of traditional healers and availability of modern health facilities.



But, it is their ardent wish that the ethno-botanical knowledge of their ancestors should be documented before they are lost or disappeared. The trend of disinterest of the young generation shows that the traditional knowledge on medicinal plants is deteriorating in the present study area. To preserve these valuable natural resources, the existing traditional knowledge needs systematic and scientific documentation. Therefore, hectic measures should be initiated to document the indigenous uses, traditional knowledge and practices in ethno-botany besides conservation of ethno-botanical biodiversity.

Medicines are prescribed in different forms as powder, paste, decoction (liquid obtained from boiling or the medicinal plants in the solvent), and infusion (plant powder or paste mixed with the solvent). In this study, powders and decoctions were found to be used more often in comparison to pastes and infusions. Medicines are prescribed in both ways, as a single drug and in mixed ingredient form. In mixtures, several valuable medicinal plants are mixed with other indigenous medicinal plants in standard amounts. The mixture is not changed depending on the person but the dose may be changed with age.

CONCLUSION

Traditional healthcare practice of indigenous people pertaining to human health is termed as ethno-medicine. Ethno-medicine is the mother of all other systems of medicines. The study revealed that whatever knowledge on plants exists with the people of the study area, is fast declining due to the lack of interest of local youth to acquire the traditional knowledge from the ancestors, who are indigenous physicians and traditional herbal healers. The highly interesting findings require further research, while the efficacy of the indigenous medical practices should be subjected to systematic pharmacological validation. Therefore, greater and constant efforts are required to document traditional knowledge of the Kaani tribal community to prepare a comprehensive account of it, which will throw open new vistas in plant research that can fulfill the purposes of biodiversity conservation and which are eco-friendly to the larger global community.

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