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Ethnomedicinal plants used by Kani tribals in Pechiparai forests of Southern western Ghats, Tamil Nadu, India

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An ethnobotanical survey was conducted to document the ethnomedicinal plants which are used by the Kani tribal people in Pechiparai forest range (southern Western Ghats) in Kanyakumari district of Tamil Nadu, India. The information on plants was collected by interviewing the local Kani traditional practitioners. The present study revealed that the plants which are used in traditional systems are mostly collected from the wild resources. There were 58 species of medicinal plants belonging to 27 families were documented in the present study and are mostly used to cure skin diseases, stomach problems, diabetes, urinary infections, fever, cough, cold, snakebites, earache, hair growth, headache, indigestion, itches, swellings, wounds and dental problems. The collection and documentation of their empirical knowledge and traditional techniques based on the traditional use of plants is no doubt a remarkable step keeping in view the fading ethnic traditions and culture. More attempts should be made to authenticate and evaluate the efficacy of these herbs and products used by the tribal communities.

Keywords: Kani tribals, medicinal plants, traditional medicine, western Ghats.

INTRODUCTION

Medicinal plants play a major role in meeting the medical and health needs of the people, especially in developing countries. In the developed countries, they are used as templates for manufacturing modern pharmaceutical drugs whereas, in developing countries they are an important resource for the treatment of various maladies and illnesses, and are a major component of treatment within the primary health care systems (Ngari et al., 2010). The World Health Organization (WHO) estimates that over 80 percent of people in developing countries depend upon traditional medicine for treatment of disease and other maladies in their primary health care. India is one of the leading countries in Asia in terms of the wealth of traditional knowledge systems related to the use of plant species and also known to harbour a rich diversity of higher plant species of which 7500 are known as medicinal plants (Kala, 2005). These tribal communities draw their sustenance largely from forests for food,

medicine and other requirements.

Ethnomedical practices are preferred largely because medicinal plants are less expensive, readily available and reliable, and they are considered to have fewer side effects than modern medicines. A few reports on ethnomedicinal uses of plants by the Kani tribals were available (Janaki Ammal and Prasad, 1984; Prasad et al., 1996; Ignacimuthu et al., 1998; Viswanathan et al., 2001; Ayyanar and Ignacimuthu, 2005) in the adjoining areas of Kanyakumari district. The objective of this study was to assess the diversity of ethnomedicinal plant species used by Kani/ Kanikaran tribals in Kanyakumari district of Tamil Nadu and to document the traditional medical practices in healing the aliments.

METHODOLOGY

The present study was conducted in Pechiparai forest areas of Kanyakumari district $(8^{0}03' - 8^{0}35' \text{ N and}77^{0}05' - 77^{0}36' \text{ E})$, which is located in the lap of Western Ghats (Figure 1). This district covers an area of about1684 sq km, surrounded by three Seas (Gulf of Mannar, Indian

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Figure 1. Location map of Pechiparai in Kanyakumari district of Tamil Nadu, India

Ocean and Arabian Sea), southern Western Ghats and plains of Kerala. The annual rainfall varies from 89 - 254cm, and maximum and minimum temperatures were 24° C - 28° C in winter and 26° C - 32° C in summer respectively.

This district produces paddy, tapioca and oilseeds such as groundnut and coconut besides commercial crops like cashew, rubber, fruits and spices. The Kanyakumari district can be divided into three distinct regions namely the uplands, the middle and the low lands (Kanyakumari district website). The uplands comprising of hills and hill bases suitable for growing crops like rubber (Hevea brasiliensis), cloves (Syzygium aromatica), nutmeg (*Myristica fragrans*), pepper (*Piper nigrum*) and pineapple (Ananas comosus), etc. The Middle region comprising of plains and valleys suitable for growing the crops like paddy (Oryza sativa), tapioca (Manihot esculenta), banana (Musa paradisiaca), coconut (Cocos nucifera), etc. The low lands comprise the coastal belts and it is ideal for growing coconut (Cocos nucifera), cashew (Anacardium occidentale), mango (Mangifera indica), tamarind (Tamarindus indica) etc.

In the present study, ethnobotanical study was conducted among the Kani tribal people in the villages of

Pechiparai forest range (Thatchamalai, Kalapparai, Thottamalai, Maaramalai, Mudavanpotthai and Andipotthai) in Kanvakumari district during June to December 2010. The information on plants was collected by interviewing local traditional practitioners. The ethnomedicinal plants were collected botanically identified using the Flora of Presidency of Madras (Gamble, 1935) and the Flora of Tamil Nadu Carnatic (Mathew, 1983). Plants were identified in the field by trekking different areas of the forests along with some of the members of the community who already practiced traditional medicine. Herbarium specimens were deposited at the herbarium of Department of Botany, Pachaiyappa's College, Chennai for further reference.

RESULTS AND DISCUSSION

Sixty three herbal remedies based on 58 medicinal plants belonging to 27 families were documented in the present study. The plants are arranged alphabetically by botanical name followed by synonym(s), local name, family and detailed ethnomedicinal uses (Table 1). Kani tribal practitioners are using these plants to cure skin Table 1: List of ethnomedicinal plants used by Kani traditional healers in Pechiparai forest, Kanyakumari district of Tamil Nadu, India

Botanical Name	Local Name	Family	Ethnomedicinal Uses
Abrus precatorius L.	Vellai kuntumani	Fabaceae	Root is ground with water and the juice is taken orally 3 times a day for 3 days to cure dry coup.
Acalyph indica L.	Kuppameni	Euphorbiaceae	Leaf is ground into juice and taken orally in empty stomach to cure asthma, child's dry cough.
Achyranthes bidentataBlume	Kadaladi	Amaranthaceae	Leaf is fired and the ash is mixed with water and small quantity of salt and the mixture is taken orally to cure cholera, testis pain and swellings.
Achyranthes aspera L.	Naayurivi	Amaranthaceae	Root is used as toothbrush to get relief from bleeding of blood from teeth.
Aegle marmelos (L.) Correa	Kuvaalam, Vilvam	Rutaceae	Fresh leaves are taken orally in an empty stomach for 41 days without eating non-vegetarian food items to treat diabetics.
Aloe vera L.	Chottukattalai	Aspholedaceae	The sap of leaf is mixed with Palmyra palm jaggery and taken orally to control over bleeding after delivery.
Andragraphis echiodes L.	Malaithangi	Acanthaceae	Leaf is ground into a paste and taken orally to get relief for chest pain.
<i>Andrographis paniculata</i> (Burm. f) Wall.	Siriyanangai	Acanthaceae	All parts of the plant is ground in to a paste and applied topically to treat snake bite.
Blepharis maderaspatensis (L.) Roth.	Murivu porunthi	Acanthaceae	Leaf is ground into a paste and applied or taken orally to treat bone fracture and deep cuts.
Canna indica L.	Kalvazhai	Cannaceae	Dried seeds are ground into powder and taken orally along with cow's milk to get relief from venereal diseases.
Capsicum frutescens L.	Kanthari Melagu	Solanaceae	Fruits are mixed with water and ground into paste and taken orally 3 times a day for 3 days to control blood pressure.
Caralluma atteuata	Perandai	Asclepiadaceae	Fresh leaves are taken orally at empty stomach to cure bone fracture.
Cassia occidentilis L.	Peitagarai	Fabaceae	Seeds are boiled with water and the decoction is taken orally for a week to treat heart diseases.
<i>Catharanthus pusillus</i> (Murray) G. Don.	Melagainankai	Apocynaceae	Whole plant parts are ground into a paste and taken orally in empty stomach 3 times a day for 3 days to treat ulcer and stomach pain.
Centella asiatica (L.) Urban	Vallarai	Mackinlayaceae	Leaf juice is taken orally to treat blood purification, blood clot and appendices.
Cleome viscosa L.	Peikaduku	Cleomaceae	Leaf paste is applied on fore head and a little portion on the right leg thump finger for men; and for women applied on the fore head and little portion on the left leg thump finger to treat head ache, toothache and swelling in teeth.
Clerodendrum phlomidis L.	Vathamudakki	Verbenaceae	Leaf paste is applied externally over the affected places to treat rheumatism.
Clitoria ternatea L.	Neela kakkanam	Fabaceae	Leaf is ground into juice applied over the part of thorn pricked in hand and leg.
<i>Costus pictus</i> D. Don	Mugakkanai charanai	Costaceae	Leaves are slightly heated and the juice obtained in poured into ear to get relief from earache.
Cymbopogon citratus (DC) Stapf.	Sukkunari	Poaceae	Whole plant parts are mixed with water and the juice is taken orally to get relief from headache, body pain and rheumatism.
Cynodon dactylon (L.) Pers.	Aruvampull	Poaceae	Whole plant parts are mixed with water banana fruit and the mixture is taken orally to get relief on body tiredness and blood pressure.

Table 1: continue

Cyperus rotundous L.	Korai	Cyperaceae	Tuber is ground in to a paste and applied on affected places to cure boils.
Datura innoxia L.	Oomatthai	Solanaceae	Root is ground with water and the obtained juice is taken orally 3 times a day for a week to cure rabies.
<i>Eupatorium odoratum</i> (L.) King & H.E Robins	Aana vannthan Pachilai	Asteraceae	Leaf juice is mixed with lime juice and made into paste and applied over affected places to heal wounds.
Evolvulus alsinoides L.	Kondaiketty (Vishnugranthi)	Convolvulaceae	Leaf, stem and flowers are ground into a paste and applied externally on head for eye cooling, hair growth and to prevent hair fall.
Glycyrrhiza glabra L.	Athimathuram	Fabaceae	Root is boiled with water and taken orally to treat cough and cold.
Gynandropsis pentaphylla (L.) DC.	Peruvelai	Cleomaceae	Leaf juice is applied on cuts to control blood bleeding.
<i>Hedyotis puberula</i> (G. Don)	Theevanki	Rubiaceae	Leaf is ground with tender coconut and coconut oil and taken orally as well as applied on the site of burns.
Ionidium suffruticosum DC.	Oorelai thamarai	Violaceae	Whole plant parts are ground and boiled with tendered coconut and made into paste. The paste is applied over the swellings to cure soon taken orally to treat venereal diseases.
Ixora coccinea L.	Kattu Thetti	Rubiaceae	Flower juice is boiled with coconut oil and applied topically on the itching places to cure soon.
Jasminum angustifolium (L.) Willd.	Kuduvaivalli	Oleaeceae	Whole plant parts are mixed with the root of <i>Hemidesmus indicus</i> and gingelly oil and applied on affected places to cure to cure knee pain and other nervous problems.
Jatropha curcas L.	Kaattu Amanukku	Euphorbiaceae	Watery latex is used as mouthwash to cure foul odour.
Lannea pinnatifida L.	Ezhutthani	Anacardiaceae	Leaf juice is taken orally 3 times a day to treat to childs's running nose.
Leucas aspera (Willd.) L ink.	Thumpai	Lamiaceae	Leaf juice is missed with common salt and taken orally to cure indigestion in children.
Mimosa pudica L.	Manivatti	Fabaceae	Leaf juice is mixed with castor oil and the decoction is taken orally to cure piles.
			. Whole plant parts are ground into paste and applied topically to treat insect bites.
<i>Murraya koenigii</i> (L.) Spreng.	Kariveppelai	Rutaceae	Leaves are ground with water and taken orally to expel worms from intestine.
			Leaves are ground with coconut oil and applied topically on head for hair growth.
Ocimum sanctum L.	Neela thulasi	Lamiaceae	Leaf juice is taken orally to treat cough, cold and stomach ache in children.
Ocimum americanum L.	Pachai Thulasi	Lamiaceae	Leaf juice is boiled with pepper and the decoction is taken orally to cure severe head ache and fever.
<i>Pergularia daemia</i> Forssk.	Veleparathi	Asclepiadaceae	Leaf juice is mixed with egg and taken orally to cure stomachache and ulcer.
Phyllanthus amarus L.	Keezhanelli	Euphorbiaceae	Whole plant parts are ground into a paste and taken orally 3 times a day for 3 days to treat jaundice
			The whole plant juice is taken orally 3 times a day for 2 days to cure venereal diseases.
Physalis minima L.	Potten pachilai	Solanaceae	Leaf juice is taken orally in an empty stomach to cure boils.

Table 1: continue 1

Piper nigrum L.	Kattu Nalla Melaku	Piperaceae	Stem is boiled with water and decoction obtained is taken orally to get relief from dry cough.
<i>Plectranthus amboinicus</i> (Lour.) Spreng	Navara pachilai	Lamiaceae	Leaf is boiling with coconut oil and applied on head to control running nose and cough.
Punica granatum L.	Mathulai	Punicaceae	Leaf, flower and fruits are ground with water and taken orally once a day for 3 days to get relief from stomach pain and dysentery.
<i>Rauvolfia serpentina</i> (L.) Benth. ex. Kurz.	Aval pori	Apocynaceae	Tuber is made into a paste and applied topically to cure all types of poison bites.
Scoparia dulcis L.	Sancheevi	Scrophulariaceae	Leaf, flower and fruits are ground into a paste and applied on the affected places to heal wounds and also to control bleeding of blood from cuts.
<i>Sida acuta</i> Burm.F.	Arivamunai Pondu	Malvaceae	Juice of bulb is taken orally to cure headache and to reduce body heat.
Sida rhombifolia L.	Kurunthotti	Malvaceae	Leaf and root are boiled with coconut oil and applied over head to get relief from one-side headache and to remove dandruff.
Solanum americanum L.	Manatthkkali	Solanaceae	Leaf is ground into juice and taken orally in empty stomach to cures ulcer, mouth wound and stomach pain.
Solanum nigrum L.	Kutty thakkali	Solanaceae	Leaf juice is taken orally to treat stomach problems.
Solanum surattense L.	Kandan kathirikai	Solanaceae	Shade dried leaves made into powder and boiled with castor oil. The mixture is taken orally and applied externally to treat all types of skin diseases.
Syzygium cumini (L.) Skeels	Naaval	Myrtaceae	Stem bark and seeds are mixed with water and filtered juice is taken orally to cure diabetes.
Thevetia neriifolia (Pers.) K. Sehun.	Manjal Arali	Apocynaceae	Root is ground with water and applied topically to cure boils.
Tridax procumbens L.	Murian pachilai	Asteraceae	Leaf juice is applied over affected places to cure cuts.
			Root and leaf are ground with cow's milk and taken orally to cure jaundice.
			Leaf juice is mixed with coconut oil and applied over head to remove dandruffs.
Tylophora indica L.f.	Nancharutthan	Apocynaceae	Tuber is ground with human saliva and applied over boils.
Vernonia cinerea (L.) Less.	Kucheri Kuuttam	Asteraceae	Leaf juice is applied over the affected places to cure all types of eye diseases.
Vitex negundo L.	Karu Nochi	Verbenaceae	Leaf is boiled with water and applied over affected places to cure cuts.
Wrighita tinctoria (Roxb.) R.Br.	Veppalai	Apocynaceae	Latex is applied topically to get relief from any thorn pricked in hand or leg.

diseases, stomach problems, diabetes, urinary infections, fever, cough, cold, snakebites, earache, killing of worms, hair growth, headache, indigestion, itches, swellings, wounds, dental problems etc.

The dominant families with more number of medicinal plants in the present study are Solanaceae with 6 species and it was followed by Fabaceae and Apocynaceae (5 species each), Lamiaceae (4 species), Verbenaceae, Asteraceae, Euphorbiaceae and Acanthaceae (3 species each). Seven families were represented with 2 species and 12 families were represented with only one species. Of the plant parts used for the preparation of medicine, leaves are frequently used and it was followed by fruit, root, rhizome, latex, whole plant, stem, flower, seed and tender shoot.

Most of people interviewed traditional healers were familiar with the species dealing with common ailments like cold, cough, fever, digestive problems, fever, headache, skin infection, and plant remedies were used on regular basis. Like other rural and tribal communities (Lev and Amar,

2004; 2000: Katewa et al., Ghorbani, 2005: Teklehavmanot et al., 2006; Pattanaik et al., 2008), common knowledge was learned from the elders and community members who share knowledge of mode of collection, preparation and administration of medicinal plants to cure diseases. Earlier studies on traditional medicinal plants reveals that the economically backward local people of Kani tribals in Tirunelveli hills prefer folk medicine due to low cost and sometimes it is a part of their social life and culture (Ignacimuthu et al., 1998; Viswanathan et al., 2001; Ayyanar and Ignacimuthu, 2005). The present study shows that the Pechiparai forest areas have great diversity of medicinal plants with rich ethnomedicinal uses, since this type of research must be promoted to understand the potential use of their plant resources, as well as a means to better promote basic healthcare.

CONCLUSION

Traditional knowledge of plants in many tribal communities is changing because of rapid socioeconomic and cultural changes. This is particularly true in Kani tribal communities in Kanyakumari district of Tamil Nadu. Documentation of this knowledge is valuable for the communities and their future generations and for scientific consideration of wider uses of traditional knowledge. The wealth of this tribal knowledge of medicinal plants points to a great potential for research and the discovery of new drugs to fight diseases, obtaining foods and other uses. So, further scientific assessment of these medicines for phytochemical, biological and clinical studies is however greatly needed.

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