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Ethnomedicinal Plants of the Tirunelveli District, Tamil Nadu, India

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ABSTRACT

This study was carried out in several geographically isolated pockets of the Tirunelveli district, Tamil Nadu, India, in a region inhabited by a tribal group called the Kanikkars. The authors found that a total of 80 plant species belonging to 72 genera and 46 families were used by the natives of the study area for the treatment of such ailments as diabetes, rheumatism, jaundice, fever, cold, cough and snake bite. The full results of this study are organized in table form and include the species botanical name, parts used, method of administration, dosage, and the local or vernacular names of the species.

Key Words: Ethnomedicine, India, Kanikkars, Tirunelveli.

INTRODUCTION

India has a century's old tradition of using medicinal plants and herbal medicines for the alleviation of various diseases and ailments, as well as for the promotion of health and happiness. People often look towards the traditional systems of medicine not only for the curative effects of plants, but also to hopefully provide them with elixirs of youth and good health. Ethnomedicine is one of the systems of medicine that is widely practiced among the tribal and aboriginal populations of our country for the treatment of ailments. Primitive societies have depended on herbal remedies for the treatment of diseases and disorders since time immemorial (Singh *et al.*, 2003).

The tribal tracts are the storehouses of information and knowledge on the multiple uses of plants. However, such traditional knowledge is rapidly disappearing. There is an urgent need to document this knowledge, as otherwise it will be lost forever. The knowledge of the use of natural plant products amongst our people is truly phenomenal.

It is a matter of great pride that among the 18 largest centers of floral diversity in the world, two are located in India. They are the Eastern Himalayas and Western Ghats (Khoshoo, 1996). The hill chain of Western Ghats is under the threat of rapid loss of genetic resources (Gadgil, 1996). A perusal of the available literature reveals that information on the comprehensive survey, documentation and enumeration of wild medicinal plants used by the Kanikkars tribe of the South-Eastern Slope of Western Ghats, Tirunelveli District, Tamil Nadu is meagre (Ignacimuthu et al., 1998; Ayyanar and Ignacimuthu, 2005a,b). Hence, in the present study, an attempt was made to survey, document and enumerate the wild medicinal species of this area. The Kanikkars are the dominant tribal group inhabiting this locality. The present study focuses on the dependence of the Kanikkars on herbal medicines. Our survey is the first to attempt an exhaustive analysis of the therapeutic values of such medicinal plants.

MEDICINAL PLANTS AND THE KANIKKARS

The Kanikkars are a hill tribe that are distributed along the slopes of the Western Ghats of the Trivandrum, Kanyakumari and Tirunelveli Districts. Because of time limitations (10 months were reserved for the completion of this study), our investigations focused only on the Kanikkars settled in the reserve forest area of the Western Ghats, Tirunelveli Districts, and Tamil Nadu. The area of investigation lies between $77^{\circ}10' - 77^{\circ}29'$ E longitude and $8^{\circ}30' - 8^{\circ}53'$ N, latitude. The ghats are characterized by numerous geological folds and extensions engulfing small narrow valleys and deep narrow valleys which are difficult to reach. The highest peak is Agasthiar peak with an altitude of 6125 feet. Along the vast area of the Southern slopes of the Western Ghats, Tirunelveli District, the Kanikkars live in four isolated pockets or in small hamlets. The areas of their inhabitations include Karayar, Adukkuparai, Chinnamayilar, Periyamayilar, Valuar and Inchikuzhi.

The Kanikkars are typical hill tribals. They range across the slopes of the Western

Ghats from the Districts of Travancore and Kanyakumari to the District of Tirunelveli. The kanikkars are also commonly known as the Kanis. The kanikkars of the Tirunelveli District are thought to be immigrants from the District of Travancore and are believed to have entered into the Tamil Nadu area through the Kattalamalai Pass (Rajasingh, 1971).

Kanikkars are short in stature and are usually dark skinned. The word kanikkars means "hereditary proprietors of the land." They were once lords of the forests and practiced migratory cultivation. Today, as a result of the passage of governmental forest regulations, the Kanikkars are largely sedentary farmers since the new rules prevent forests from being set on fire or trees being felled at the unrestricted pleasure of individuals.

MATERIALS AND METHODS

Frequent field trips were undertaken in order to survey the inhabitants of our study area (southeastern slopes of Western Ghats, Tirunelveli District, Tamil Nadu) and to make collections of native medicinal plants. Information regarding medicinal plants was obtained in meetings with Kanikkars who practiced indigenous medicine. In many cases, it was first necessary to gain a good rapport with these people in order to win over their confidence. Most of the information included in this study was gathered from elderly and experienced practitioners who are very knowledgeable about medicinal plants. Our field notebook delineates all the usage procedures adopted by these tribals. The gathered data was cross-checked for reliability and accuracy by interacting with different groups of the Kanikkars from different habitats to confirm the use, mode of administration and dosage differences of the herbal materials, if any. After eliciting detailed information regarding the wild medicinal plants (Table 1), the collected materials were carefully brought to the laboratory for identification. Herbarium sheets for all the collected plant specimens were prepared (VOCB No. from 3620 to 3399) and deposited in the Botany Research Laboratory, V.O. Chidambaram College, Tuticorin, Tamil Nadu, India.

The medicinal plants were botanically identified using the "Flora of Presidency of Madras" (Gamble, 1935) and the "Flora of Tamil Nadu Carnatic" (Mathew, 1983).

Confirmation of the identifications was made through the comparison of our specimens with those housed in the Herbarium of the Botanical Survey of India (BSI), Southern Circle, Coimbatore, India.

Plants in Table 1 are arranged alphabetical in order of their botanical names, followed by the family and local (Kanikkar) name and a brief note on the plant parts used, modes of administration, dosages, etc.

Table 1. Ethnomedicinal Plants of the Tirunelveli District, Tamil Nadu, India.

S.No	Herbarium No.	Botanical Name	Family	Vernacular Name	Plant part/parts used
1	VOCB3620	<i>Abrus precatorius</i> L.	Fabaceae	Kunnimuthu	Leaf, Roots and Seeds
2	VOCB3621	<i>Acalypha indica</i> L.	Euphorbiaceae	Sirusinni	Leaf
3	VOCB3622	<i>Achyranthus aspera</i> L. var. <i>aspera</i>	Amaranthaceae	Nayurivi	Leaf
4	VOCB3623	<i>Aegle marmelos</i> (L.) Correa	Rutaceae	Vilvam	Leaf
5	VOCB3624	<i>Alangium salvifolium</i> Wagerin	Alangiaceae	Alinji	Fruit
6	VOCB3625	<i>Albizia amara</i> (Roxb.) Boivin.	Mimosaceae	Usilai	Stem bark
7	VOCB3626	<i>Allium cepa</i> L.	Liliaceae	Vengayam	Bulb
8	VOCB3627	<i>Aloe vera</i> (L.) Burm.f.	Liliaceae	Chothukathalai	Leaf
9	VOCB3632	<i>Alpinia calcarata</i> Roscoe.	Zingiberaceae	Chitrattai	Rhizome
10	VOCB3629	<i>Alstonia scholaris</i> (L.) R. Br.	Apocynaceae	Ezhilai palai	Leaf and Latex
11	VOCB3630	<i>Andrographis paniculata</i> (Burm.f.) Wall ex Nees	Acanthaceae	Siriyangai	Entire plant
12	VOCB3631	<i>Aristolochia indica</i> L.	Aristolochiaceae	Thalaisurulivaer	Root
13	VOCB3632	<i>Asparagus racemosus</i> Willd	Liliaceae	Neervalli	Tuber
14	VOCB3633	<i>Azadirachta indica</i> A. Juss	Meliaceae	Vembu	Stem bark
15	VOCB3634	<i>Bambusa arundinacea</i> Willd	Poaceae	Mungil	Leaf and Terminal bud
16	VOCB3635	<i>Begonia malabarica</i> Lam.	Begoniaceae	Narayanasanjivi	Leaf
17	VOCB3636	<i>Bryophyllum</i> sp.	Crassulaceae	Megasanjeevi	Leaf
18	VOCB3637	<i>Canarium strictum</i> Roxb.	Burseraceae	Kungilium	Resin
19	VOCB3638	<i>Canavalia gladiata</i> (Jacq.) DC.	Fabaceae	Thambattai	Leaf
20	VOCB3639	<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Mudakkathan	Leaf
21	VOCB3640	<i>Catharanthus roseus</i> G. Don	Apocyanaceae	Sudukadumallikai	Leaf
22	VOCB3641	<i>Cissampelos pareira</i> L.	Menispermaceae	Malaithangivaer	Leaf
23	VOCB3642	<i>Cissus quadrangularis</i> L.	Vitaceae	perandai	Leaf
24	VOCB3643	<i>Cleome viscosa</i> L.	Cleomaceae	Naakkadugu	Leaf

25	VOCB3644	<i>Clerodendrum inerme</i> (L.) Gaertn	Verbanaceae	Changukuppi	Leaf
26	VOCB3645	<i>Coccinia grandis</i> (L.) Voigt.	Cucurbitaceae	Kovai	Unripe fruits and Leaf
27	VOCB3646	<i>Curculigo orchioides</i> Gaertn.	Hypoxidaceae	Nilapanai	Tuber
28	VOCB3647	<i>Curcuma longa</i> L.	Zingiberaceae	Manjal/Turmeric	Rhizome
29	VOCB3648	<i>Datura metal</i> L.	Solanaceae	Karu-Umatthai	Petals
30	VOCB3649	<i>Dioscorea bulbifera</i> L.	Dioscoreaceae	Vethalaivalli	Tuber and Leaf
31	VOCB3350	<i>Dioscorea pentaphylla</i> L. var. <i>pentaphylla</i>	Dioscoreaceae	Mullvalli	Tubers
32	VOCB3651	<i>Dioscorea tomentosa</i> koen. ex Spreng	Dioscoreaceae	Noolvalli	Tuber
33	VOCB3652	<i>Dodoneae angustifolia</i> L.	Sapindaceae	Viraali	Leaf
34	VOCB3653	<i>Evolvulus alsinoides</i> (L.) L.	Convolvulaceae	Vishnukarandai	Leaf and roots
35	VOCB3654	<i>Ferula assafoetida</i> L.	Apiaceae	Perungayam/assafoetida	Resin
36	VOCB3655	<i>Gloriosa superba</i> L.	Liliaceae	Karthika kilangu	Tuber
37	VOCB3656	<i>Gmelina arborea</i> Roxb.	Verbenaceae	Kumilamaram	Leaf and fruit
38	VOCB3657	<i>Gnetum ula</i> Brongn	Gnetaceae	Anapendu	Stem
39	VOCB3658	<i>Gymnema sylvestre</i> R.Br.ex Schultes	Asclepiadaceae	Shirukuringan	Leaf
40	VOCB3659	<i>Helicteres isora</i> L.	Sterculiaceae	Valamburi	Fruits
41	VOCB3660	<i>Hemidesmus indicus</i> (L.) R.Br. var. <i>indicus</i>	Periplocaceae	Nannari	Root
42	VOCB3661	<i>Hemionitis arifolia</i> (Burm) T. Moone	Hemionitidaceae	Chakuliya	Leaf
43	VOCB3662	<i>Ixora coccinea</i> L.	Rubiaceae	Idlipoo	Flower
44	VOCB3663	<i>Jatropha curcas</i> L.	Euphorbiaceae	Katuamanakku	Latex
45	VOCB3664	<i>Justicia adhatoda</i> L.	Acanthaceae	Adathodai	Leaf
46	VOCB3665	<i>Lantana camara</i> L.	Verbenaceae	Unnipoo	Leaf
47	VOCB3666	<i>Leucas aspera</i> (Willd) Link	Lamiaceae	Thumbai	Leaf
48	VOCB3667	<i>Mangifera indica</i> L.	Anacardiaceae	Maa	Endosperm
49	VOCB3668	<i>Mimosa pudica</i> L.	Mimosaceae	Thotalsinungi	Leaf
50	VOCB3669	<i>Mollugo cerviana</i> (L.) Ser.	Molluginaceae	Pappadai	Entire plant
51	VOCB3670	<i>Mukia maderaspatana</i> (L.) M. Roem)	Cucurbitaceae	Musumusukkai	Leaf
52	VOCB3671	<i>Naravelia zeylanica</i> DC.	Ranunculaceae	Kattukodi	Leaf
53	VOCB3672	<i>Ocimum tenuiflorum</i> L.	Lamiaceae	Tulsi	Leaf
54	VOCB3673	<i>Oldenlandia puberula</i> Arm.	Rubiaceae	Emburel	Leaf
55	VOCB3674	<i>Papaver somniferum</i> L.	Papaveraceae	Popy	Seed
56	VOCB3675	<i>Phyllanthus amarus</i> Schum & Thonn.	Euphorbiaceae	Kilaneli	Aerial part
57	VOCB3676	<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Nelli	Pericarp
58	VOCB3677	<i>Piper longum</i> L.	Piperaceae	Tippili	Root
59	VOCB3678	<i>Piper nigrum</i> L.	Piperaceae	Milagu	Leaf
60	VOCB3679	<i>Ricinus communis</i> L.	Euphorbiaceae	Amanakku	Seed
61	VOCB3680	<i>Rubia cordifolia</i> L.	Rubiaceae	Koduvili	Tender shoot and Root
62	VOCB3681	<i>Sansevieria zeylanica</i> Roxb.	Liliaceae	Marul	Leaf
63	VOCB3382	<i>Scoparia dulcis</i> L.	Scrophulariaaceae	Neernangai	Leaf
64	VOCB3683	<i>Senna auriculata</i> (L.) Roxb.	Caesalpiniaceae	Aavarai	Sepal and petal

65	VOCB3684	<i>Sida cordifolia</i> L.	Malvaceae	Nilatutti	Leaf
66	VOCB3685	<i>Sida rhombifolia</i> L.	Malvaceae	Karunthatti	Root
67	VOCB3686	<i>Solanum nigrum</i> L.	Solanaceae	Manathakkali	Leaf
68	VOCB3687	<i>Solanum torvum</i> Sw.	Solanaceae	Sundaikkai	Fruit
69	VOCB3688	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Naval	Seed
70	VOCB3689	<i>Tabernaemontana heyneana</i> Wall.	Apocynaceae	Nandhiavattai	Petal
71	VOCB3690	<i>Tephrosia purpurea</i> (L.) Pers.	Fabaceae	Kolingi	Root bark
72	VOCB3691	<i>Terminalia bellarica</i> (Gaertn.) Roxb.	Combretaceae	Tani	Pericarp
73	VOCB3692	<i>Terminalia chebula</i> Retz.	Combretaceae	Kadukai	Pericarp
74	VOCB3693	<i>Trichopus zeylanicus</i> Gaertn	Dioscoreaceae	Arogyapatchalai	Fruit
75	VOCB3694	<i>Tylophora indica</i> Merr.	Asclepiadaceae	Karungakodi	Leaf
76	VOCB3695	<i>Vernonia cinerea</i> Less	Asteraceae	Mukuttipundu	Root
77	VOCB3696	<i>Vitex negundo</i> L.	Verbanaceae	Vennochi	Leaf
78	VOCB3697	<i>Wedlandia tinctoria</i> DC.	Rubiaceae	Kattumanjanathi	Leaf
79	VOCB3698	<i>Zingiber officinale</i> Roscoe.	Zingiberaceae	Sukku	Rhizome
80	VOCB3699	<i>Ziziphus xylopyrus</i> (Retz.) Willd.	Rhamnaceae	Muttukottai	Stem

ENUMERATION

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***Abrus precatorius* L.**

Two or three grams of fresh leaves or roots of the above plant with seeds are made into paste and consumed along with cold water or cow's milk two times a day for five to seven days to cure any poisonous bite.

***Acalypha indica* L.**

Five grams fresh leaves are made into juice. A small amount of calcium hydroxide is mixed with the juice. This mixture is applied externally on the throat twice a day for five days to get relief from cough.

Achyranthus aspera* L. var. *aspera

A handful of fresh leaves are made into paste with a little water. This paste is mixed with a pinch of lime and is applied externally on the spot once a day for three days for treating dog-bite.

***Aegle marmelos* (L.) Correa**

Five to ten grams of leaves are made into paste with a few drops of water. This paste is applied externally on the affected skin twice a day for a period of two to three days to get

relief from itches.

***Alangium salvifolium* Wagerin**

Fruit juice is taken for eye diseases.

***Albizia amara* (Roxb.) Boivin.**

Ten grams of fresh stem bark is made into paste with common salt and is taken orally with water two times a day for a span of three days to get relief from stomachache.

***Aloe vera* (L.) Burm. f.**

One fresh leaf is taken per day for about ten days after removing the epidermal peel to cure kidney stones.

***Alstonia scholaris* (L.) R.Br.**

One teaspoon of the powder made from the shade dried leaves is orally administered in water or along with a few drops of the stem latex of the same plant, once in a day for a period of one month to get relief from asthma.

***Andrographis paniculat* (Burm.f.)Wall ex Nees**

One teaspoon of fresh plant juice or one to two grams of the shade dried plant powder is taken twice a day for seven days to treat snake-bite and scorpion-bite.

***Aristolochia indica* L.**

Five grams of fresh root is made into paste with a few drops of water and the paste is applied externally on the spot or two to three grams of shade dried root powder is taken orally with one hundred ml of cold water two times a day for five to seven days to treat snake-bite and scorpion-sting. The decoction of the leaf relieves stomach pain during menstruation.

***Asparagus racemosus* Willd**

Five to ten grams of the peeled, raw or boiled tuber is given to children on an empty stomach in the morning for about one week to stop bed-wetting. Tender twig paste mixed with coconut oil applied for cracks in the heels.

***Azadirachta indica* A. Juss**

A handful of fresh stem bark is continuously boiled in two hundred ml of water to get fifty ml decoction. This decoction is taken orally once a day for four days to control fever.

***Bambusa arundinacea* Willd**

Young leaves and terminal bud of bamboo along with turmeric and the leaves of *Aloe vera* are ground and the paste is applied to the fractured bones for two weeks to join the bones quickly.

***Begonia malabarica* Lam**

Fresh leaf juice with salt is used to treat giddiness.

***Bryophyllum* sp.**

Roasted leaves are applied to wounds, bruises, boils and bites of venomous insects.

***Canarium strictum* Roxb.**

Five grams of powdered stem resin is burnt and the smoke is inhaled (vapour bath) at the time of headache. This practice relieves cold when it is administered for two times a day for three to four days.

***Canavalia gladiata* (Jacq.) DC.**

Leaf paste is applied on the anus to relieve pain in external piles.

***Cardiospermum halicacabum* L.**

Two hundred and fifty grams of fresh leaves and five hundred grams rice are ground well. Required quantity of common salt is added to this paste and a food stuff called *dosai* made from this paste is eaten for two to three days to get relief from rheumatic pain.

***Catharanthus roseus* G. Don**

Infusion of leaves used in menorrhagia. Fresh leaf juice is applied externally twice a day to get relief from pain due to wasp strings. The extracts prepared from the whole plant inhibit the growth of certain human tumors.

***Cissampelos pareira* L.**

Leaf paste is applied over body. Then, a hot water bath is taken for three to four days to relieve body pain and body heat.

***Cissus quadrangularis* L.**

One teaspoon of juice prepared from four to five fresh leaves is given to children with a pinch of asafetida (*Ferula asafortida* L.) in a single dose at bed time for two days to relieve

tumour like swellings caused by wind exposure to the naval region.

***Cleome viscosa* L.**

Leaf paste is applied on the fore-head two times a day for relief from headache.

***Clerodendrum inerme* (L) Gaertn**

The leaf paste is externally applied once a day for a week to treat psoriasis, scabies and the ringworm infection. The leaf paste is also applied on the side of insect bite.

***Coccinia grandis* (L.)Voigt**

One hundred to two hundred grams of unripe fruits or fresh leaves or both are boiled in five liters of water. This bath water is used for relief from body pain. The same is applied as a pain reliever on swellings, twice a day for three days.

***Curculigo orchoides* Gaertn.**

One teaspoon of powder obtained from a shade dried root tuber is taken in an empty stomach with a hundred ml of cow's milk once a day in the morning for two to three months to increase sexual vigour in males.

Dioscorea pentaphylla* L. var. *pentaphylla

Fifty to one hundred grams of tubers are boiled in water. The boiled tubers are made into curry after removing the skin or roasted and taken two times a day for two weeks to treat piles.

***Dioscorea tomentosa* Koen. ex spreng**

Ten grams of the boiled and peeled tuber is given to children once a day for three days to relieve bowel complaints.

***Dioscorea bulbifera* L.**

Fifty grams of fresh or boiled tuber is taken orally two times a day for a period of two or three days to arrest dysentery.

Leaf paste is also applied on burns and boils.

***Dodonaea angustifolia* L.**

Fifty to one hundred grams of fresh leaves are boiled in one liter of water. This water is applied to the body once a day for one week to get relief from body pain.

***Datura metal* L.**

Shade dried petals are smoked for cough.

***Evolvulus alsinoides* (L.) L.**

Ten grams of fresh leaf is continuously boiled in two hundred and fifty ml of water along with an equal quantity of fresh leaves of Tulsi (*Ocimum tenuiflorum* L.) and fresh roots of Kurunthatti (*Sida rhombifolia* L.) in order to attain a fifty ml decoction. This decoction is taken orally twice a day for two to three days to treat or control fever.

***Gloriosa superba* L.**

The paste of the upper half of the plough like root tuber is applied on the stomach and the paste of the lower half is applied on the abdomen to relieve pain at the time of child birth.

***Gmelina arborea* Roxb.**

The paste of the leaf and fruit is applied for two times a day for four days to relieve knee pain.

***Gnetum ula* Brongn**

The decoction of the stem is given to children for jaundice.

***Gymnema sylvestre* R.Br.ex Schultes**

One tea spoon of the powder made from shade dried leaves is taken along with one hundred ml of water two or three times a day for a period of ten to twelve days to control diabetes.

***Helicteres isora* L.**

The ash of two to three ripe fruits is mixed with twenty to twenty five ml of coconut oil. Two to three drops of the filtered oil are applied to the ear twice a day for four to five days to treat a sore ear.

***Hemionitis arifolia* (Burm.) T. Moore**

The leaf paste is applied externally twice a day for three days to get relief from joint pain.

Hemidesmus indicus* (L.) R. Br. var. *indicus

The root paste when taken orally relieves menstrual disorder. The extract of the entire plant is given for fever. Good antidote for snake bite.

***Ixora coccinea* L.**

Fifty grams of the dried flowers are boiled in coconut oil and the oil extract is applied externally twice a day to treat eczema.

***Jatropha curcas* L.**

The milky juice is applied to cure wounds on the lips.

***Justicia adhatoda* L.**

A fresh leaf is covered with cloth and boiled. The boiled leaf is kept on the body to relieve body pain.

***Lantana camara* L.**

Three to four grams of fresh flowers, a small onion bulb (*Allium cepa* L.) and ten to twelve fresh leaves of Thottalsinungi (*Mimosa pudica* L.) are made into paste with a few drops of water. This paste is applied externally on the spot two times a day for one week to treat any unknown insect bite.

***Leucas aspera* (Willd) Link**

For relief from a migraine headache, about ten fresh leaves are crushed and two to three drops of the juice are suctioned through the left nostril if migraine is perceived on the right side of the forehead and through the right nostril if migraine is perceived on the left side

***Mangifera indica* L.**

Twenty to twenty five grams of dried endosperm and dried Turmeric (*Curcuma longa* L.) are powdered separately and mixed. One teaspoon of powder is taken orally along with water in an empty stomach for four to five days in a single dose to reduce stomachache.

***Mimosa pudica* L.**

The leaf paste is mixed with cow milk and taken orally once a day to reduce body heat or as a laxative for bowel clearance.

***Mollugo cerviana* (L) Ser.**

Two or three grams of the entire fresh plant is continuously boiled in one liter of water with equal quantities of the powders made from the shade dried pericarp of Nelli (*Phyllanthus emblica* L.), Tani (*Terminalia bellirica* (Gaertn) Roxb.), and Kadukai (*Terminalia chebula* Retz), Sukku (*Zingiber officinale* Roscoe), Chitrattai (*Alpinia calcarata* Roscae), Tippili (*Piper longum* L.) and the fresh leaves of Tulsi (*Ocimum tenuiflorum* L.), Musumusukkai

(*Mukia maderaspatana* (L) M.Roem), Vishnukarandi (*Evolvulus alsinoides* (L.) L.) and one hundred grams palm jaggery to attain a two hundred ml decoction. One teaspoon of this decoction (and no more) is given to children to get relief from cold and cough.

***Mukia maderaspatana* (L.) M.Roem)**

One teaspoon of juice prepared from fresh leaves is taken orally once a day for three days to get relief from cold and cough.

***Naravelia zeylanica* DC.**

A leaf paste is applied over the forehead twice a day in order to relieve headache.

***Ocimum tenuiflorum* L.**

Ten to twenty grams of fresh leaves are boiled along with two liters of water in a closed container. The lid of the container is removed slowly and the stem is inhaled (vapour bath) only once to get relief from headache.

***Oldenlandia puberula* Arn.**

Fresh leaf juice is applied in the eye twice a day for three days to get relief from eye pain and infection.

***Phyllanthus amarus* Schum & Thonn.**

A juice is prepared using ten grams of the fresh, clean aerial parts of the plant and twenty five ml of water. The filtered juice is taken orally as such or along with a hundred ml of cow's milk twice a day for about seven to ten days to treat jaundice.

***Piper nigrum* L.**

One to two grams of fresh leaves are consumed twice a day for a period of five to seven days to get relief from cold and cough.

***Ricinus communis* L.**

Oil extracted from the seed is used to relieve muscle and joint pain.

***Rubia cordifolia* L.**

Twenty grams of the fresh and clean root or twenty grams of fresh tender shoots are made into paste. This paste is applied externally onto weapon injuries twice a day for five to six days for healing the injury.

***Sansevieria zeylanica* Roxb.**

A leaf is first heated on the fire and then crushed to release the juice. This juice is poured in the ear twice a day to receive relief from ear pain.

***Scoparia dulcis* L.**

Two to three grams of fresh leaves are taken orally two times a day for five days to treat any poisonous bite. Use of oil and tamarind should be avoided while consuming the leaves.

***Senna auriculata* (L.) Roxb.**

A paste is prepared from five to ten grams of flowers (minus sepals and petals) by grinding with a small quantity of asafoetida (*Ferula assafetida* L.) and poppy seeds (*Papaver somniferum* L.) in hot water. This paste is given orally for two days in a single dose to relieve colic pain.

***Sida cordifolia* L.**

The leaves of this plant along with the leaves of *Lantana camara* L. are boiled and the vapour is inhaled twice a day to relieve fever.

***Solanum nigrum* L.**

Fresh leaves are cooked as curry and taken once a day for ten to fifteen days to relieve wheezing and mouth ulcer.

***Solanum torvum* Sw.**

Cooked fruits used as Vermifuge.

***Syzygium cumini* (L.) Skeels**

One teaspoon of shade dried seed powder is taken in an empty stomach along with one hundred ml of cold water daily for a month to control diabetes.

***Tabernaemontana heyneana* Wall.**

Two drops of pure filtered aqueous extract prepared from flower petals are applied to the eyes for a period of seven days to improve vision.

***Tephrosia purpurea* (L.) Pers.**

One teaspoon of juice prepared from the fresh root bark is mixed with a pinch of asafoetida (*Ferula assafoetida* L.) and given to children in a single dose to get relief from bowel disorders.

***Terminalia chebula* Retz.**

One gram of the fruit pericarp along with an equal quantity of Turmeric (*Curcuma longa* L.) are made into a paste and taken orally three times a day for a period of two to three days to arrest dysentery.

***Trichopus zeylanicus* Gaertn.**

The fruits are eaten to gain vitality and vigour. This plant is also termed the “greener of health” since the ingestion of the fruits are thought to yield very good health and vitality.

***Tylophora indica* Merr.**

The fresh leaf is eaten to relieve asthma.

***Vernonia cinerea* Less.**

A root decoction is orally administered once a day for two days to treat Diarrhoea and stomachache.

***Vitex negundo* L.**

Fifty grams of fresh leaves are roasted with an equal quantity of sand in a hot pan. This hot mixture is administered on the forehead for the relief of headache.

***Wedlandia tinctoria* DC.**

A paste made from the leaves of this species is used in the treatment of knee pain.

***Ziziphus xylopyrus* (Retz.) Wild.**

Fifty grams of the fresh stem bark of this species is soaked in two hundred ml of water for twelve hours and filtered. This filtrate is taken orally on an empty stomach for a period of three days in a single dose to relieve stomachache.

DISCUSSION

The Kanikkar's' knowledge of the indigenous uses of native medicinal plants before their complete assimilation into the urban areas to join the mainstreams of life needs to be studied and documented. In the present study, a total of 80 medicinal plants belonging to 72 genera and 46 families were collected and documented (see Table 1). Of these, one plant species belongs to the Pteridophytes and a second is a Gymnosperm. The remaining 78 species fall within 44 families of Angiosperms. The Euphorbiaceae and Liliaceae account for five

ethnomedicinal plants each; whereas the Dioscoreaceae, Rubiaceae and Verbenaceae are next in line with four plant species each. All told, there are 67 dicots and 11 monocots given in the list.

As far as plant parts are concerned, the Kanikkars use a wide variety of parts structures in ethnomedicine. The percentage of plant parts used are as follows: leaves 49%, fruits 11%, roots 10%, tuber and aerial parts 8%, stems and flowers 5% and bulbs 1%.

The most prevalent forms of administration of medicine are in the form of paste (26%). This is followed by the juice (16%), boiled parts (19%), powder (6%) and decoctions (3%). The enumerated 80 plants are used to cure as many as 41 different types of human maladies. Five plants are used to treat cold and cough; four are used for fever, stomachache, headache, wounds, bruises, boils and/or ear complaints; while three are used for rheumatic pain/joint pain, bowel complaints and snake bites, respectively.

From this account it is clear that the kanikkar tribe, as in the case of other ancient tribals (Raja Singh, 1971), possess the ability to discern the character of various plants and their beneficial properties. It is interesting to note that such a way of life, particularly with respect to health care practices, has hardly undergone any change even to the present day. Similar ethnobotanical studies have been reported in some other parts of India (Ketewa and Arora, 1997; Reddy *et al.*, 1997; Jain, 2004; Singh, 2004; Muthukumarasamy *et al.*, 2003a, b; 2004a, b), as well as in other parts of the world (Jovel *et al.*, 1996; Bonet *et al.*, 1999; Grierson and Afolayan, 1999; Guarrera, 1999; Shinwari and Khan, 2000).

Evident from this study is the fact that medicinal plants still play a vital role in the primary healthcare of indigenous people. The information we gathered from the tribals may be useful to other researchers in the fields of ethnobotany, taxonomy and pharmacology. Hopefully, this study offers a model for studying the relationship between plants and people within the contexts of a traditional medical system. The purpose of standardizing traditional

remedies is obviously to ensure therapeutical efficacy; whereas the value of ethnomedicinal information in modern pharmacology lies in the development of new drugs. Lastly, it may be of some significance that this study generated a broad spectrum of information concerning the use of medicinal plants by indigenous tribal groups.

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