

Ethnomedicinal plants used by Kanikkars of Agasthiarmalai Biosphere Reserve, Western Ghats

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Abstract

The study has been carried out in Agasthiarmalai Biosphere Reserve, Western Ghats, Tamil Nadu. *Kanikkars*, the predominant tribal community has their settlements in different areas in the Biosphere. A total of 174 medicinal plants belonging to 69 families are identified which have been employed by the tribal community for the treatment of various ailments.

Keywords: Ethnomedicine, *Kanikkar* tribes, Western Ghats

INTRODUCTION

Traditional medicine (TM) occupies an important place in the health care systems of developing countries. The World Health Organization (WHO) estimates that more than 80% of health care needs in these countries are met through traditional health care practices (Chendurpandy *et al.*, 2010). The people in developing countries depend on TM, because it is cheaper and more accessible than Orthodox Medicine (OM) (Sofowora, 1993; Luoga *et al.*, 2000; World Health Organization, 2002). Traditional medicine is also acceptable than OM because, it blends readily into the people's socio-cultural life (Tabuti *et al.*, 2003).

The various tribal sects of India are repositories of rich knowledge on various uses of plant genetic resources, which have hitherto remained unknown (Khoshoo, 1996). But of later, due to several developmental activities around tribal areas which are after all not related to their welfare, the tribal people are losing their traditional identity resulting in a good deal of loss of such treasures of plant genetic resources (Shankar, 1995). In view of the harmful developments, the UN declared the year 1993 as the "International Year of Indigenous people" based on the recommendation of the Rio de Janeiro Earth Summit. The studies on the relationship between the aboriginal or primitive people and their surroundings including a critical evaluation of some of the important plants used by the tribes have received considerable attention in recent years (Das *et al.*, 1989).

Many infectious diseases are known to be treated with herbal remedies throughout the history of mankind. Even today, plant materials continue to play a major role in primary health care as therapeutic remedies in many developing countries (Zakaria, 1991). Plants still continue to be almost the exclusive source of drugs for a majority of the world's population (Hamburger & Hostettman, 1991).

It is a matter of great pride that, among the 16 hot spots known for rich flora in the world, two are located in India (Mohan *et al.*, 2010). They are the Eastern Himalayas and the Western Ghats (Khoshoo, 1996). The hill chain of Western Ghats recognized as a region of high level of biodiversity is under the threat of rapid loss of genetic resources (Gadgil, 1996). The biodiverse nature of the Eastern Ghats is meagre. A perusal of the available literature reveals that, till date there is no comprehensive survey, documentation and enumeration of wild medicinal plants used by the tribe *Kanikkars* inhabiting the Agasthiarmalai Biosphere Reserve, Western Ghats, Tamil Nadu, India. Hence, in the present study, an attempt is made for the survey, documentation and enumeration of wild medicinal plants in the Agasthiarmalai Biosphere Reserve, Western Ghats, Tamil Nadu. The *Kanikkars* are the dominant tribal group inhabiting this locality. The present study focuses on the dependence of the *Kanikkars* on herbal medicines and attempts at an exhaustive analysis of the therapeutic values of such medicinal plants.

The *Kanikkars* have asserted this ethnic identity and practiced the traditional ethnomedicine is a standing example of the symbiotic relationship with man had enjoyed from time immemorial. If it is documented and intellectual rights are guaranteed to them, not only the *Kanikkars* but the whole nation would benefit.

The *Kanikkar* tribes

The *Kanikkars* belong to the southern tribal zone. They are distributed along the Southeastern slopes of altitude regions of Western Ghats in large numbers. *Kanikkars* means hereditary proprietor of land thus recognizing their ancient rights over the forests lands. The *Kanikkars* are generally very short in stature and meager in appearance. Some have markedly negroid features. They are traditionally a nomadic community. They speak in their own dialect, *Kanikkar Bhasha* or *Malampashi*, which is close to the Dravidian language *Malayalam*. *Kanikkars* once practiced migratory cultivation but have now to a large extent abandoned such cultivation. Most of the *Kanikkar* tribals have a general knowledge of medicinal plants that are used for first aid remedies, to treat cough, cold fever, headache, poisonous bites and some other simple ailments. *Kanis* still supplement their food by gathering roots and tubers from the nearby forest areas. They eat tubers like *Manihot esculenta* and *Dioscorea oppositifolia*, etc (Sutha *et al.*, 2010). They are also

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engaged in seasonal collection of honey, bee wax and some minor forest produce. They cultivate edible plants, like tapioca, banana, millets and cash crops such as pepper, areca nut and cashew nut.

METHODOLOGY

Frequent field surveys were carried out in Agasthiarmalai Biosphere Reserves Western Ghats during different seasons in 2008-2010. The Agasthiarmalai Biosphere Reserve lies between 8° 22' and 8° 53' North latitude and between 77° 10' and 77° 35' East longitudes in Tirunelveli and Kanyakumari district of Tamil Nadu in the Southern Western Ghats of India. The boundaries are Ambasamudram and Tenkasi taluks of Tirunelveli districts in the north, Ambasamudram and Nanguneri taluks of Tirunelveli districts in the east, Kanyakumari district in the south and Kerala State in the west.

Geographically, it is a part of South Western tip of the Western Ghats, a region that is known for its species richness, diversity and high degree of endemism. The Agasthiarmalai Biosphere Reserve area has been recognized as one of the 'hot-spots' for Biodiversity conservation by the IUCN (Ayyanar & Ignacimuthu, 2005). The altitude ranges from 100 to 1867m (MSL). It receives rainfall during the South West as well as North East monsoon.

In the study area, the *Kanikkars* live either in isolated pockets or small hamlets. Their habitations are known by the following names.

- (i) Ingikuzhi, (ii) Chinnamylar, (iii) Periyamylar, (iv) Agasthiarkanikudiyiruppu

- (v) Tharuvattampari Kani Kudiyiruppu (Servalar) (vi) Kouthalai and (vii) Valayar

The ethnobotanical data were collected through interviews and discussions among the herbal practitioners in and around the study area. Most of the information was gathered from the elderly people, who have a very long acquaintance with usage of plants. The information thus gathered was cross-checked adequately for reliability and accuracy by interacting with different groups of the *Kanikkars* from different habitats to confirm the use, mode of administration as well as dosage differences, if any. Data were also collected through questionnaires in their local language. In addition to the vernacular name and medicinal uses, detailed information about mode of preparation, form of usage was collected. The medicinal plants were identified, photographed and sample specimens were collected for the preparation of herbarium (Gamble, 1996; Mathew, 1983). The identified plant specimens were confirmed and deposited in the herbarium of Ethnopharmacology Unit, Research Department of Botany, V.O.Chidambaram College, Tuticorin, Tamil Nadu.

As many as 174 ethnomedicinal plants were identified as being used by the *Kanikkar* tribals of Agasthiarmalai Biosphere Reserves, Western Ghats, Tamil Nadu, India. They were tabulated (Table 1) alphabetically with botanical name, family name, vernacular name, plant parts used, mode of administration, dosage etc.

Table.1. List of ethnomedicinal plants collected and documented

Sl. No	Botanical name Family	Vernacular name	Mode of Administration
1	<i>Abrus precatorius</i> L. Fabaceae	Kundumani	Two to three grams of fresh leaves are chewed carefully without swallowing the saliva for a minute. Then the chewed leaves are spat out and the mouth is washed well with water. This procedure is repeated for two times a day for a period of three to four day to get relief from sensitiveness of teeth. About fifty grams of warm seed paste is applied over the affected joints twice a day until one experiences relief from stiffness of joints. A drop of pure filtered seed extract prepared with clean water is allowed to settle on the eyeballs twice a day for about three days to reduce irritation. Two to three grams of fresh leaves or roots of the plant with seeds are made into a paste and consumed along with cold water or cow's milk two times a day for five to seven days to cure any poisonous bites.
2	<i>Abutilon indicum</i> (L.) Sweet Malvaceae	Thuthi	The juice prepared from ten grams of crushed leaves is applied externally two times a day for a period of three days to get relief from earache.
3	<i>Acacia caesia</i> (L.) Willd (<i>Mimosa caesia</i> L.) Mimosaceae	Vellinjal	The dried bark is made into powder and is used like soap to treat scabies, rashes and ringworm infection.
4	<i>Acalypha racemosa</i> Heyne ex Baill Euphorbiaceae	Sirusinni	The juice prepared from ten to fifteen grams of fresh leaves with fifty ml of water is taken orally two times a day for two days to get relief from indigestion.
5	<i>Achyranthes aspera</i> L. Amaranthaceae	Nayurivi	The paste prepared from fifteen grams of fresh leaves with water is applied externally two times a day for a period of ten days to treat dog bites.
6	<i>Acorus calamus</i> L. Araceae	Vasambu	A thread is inserted through a hole made in the dried rhizome and is worn as a necklace to ward off giddiness.
7	<i>Aloe barbadensis</i> Mill. (<i>A. vera</i> (L) Burm.F) Liliaceae	Chothukathalai	A fresh leaf is taken orally as such after removing the epidermal peel, once in a day for a period of three to four days to reduce body heat. One fresh leaf is taken per day for about ten days after removing the epidermal peel to cure kidney stone.
8	<i>Alpinia calcarata</i> Roscoe Zingiberaceae	Sitharathai	The paste prepared from ten grams of the rhizome mixed with water is taken orally twice a day for two days to get relief from stomach disorders.
9	<i>Alistonia scholaris</i> (L.) R.BR. Apocynaceae	Mukkampalai	Ten grams of the fresh stem bark is made into a paste with a few drops of water. This paste is mixed with one hundred ml of cow's milk or rice fermented water and taken by nursing mothers twice a day for seven to ten days to improve lactation. One teaspoon of the powder made from 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.
10	<i>Amaranthus viridis</i> L. Amaranthaceae	Kuppaikerai	A handful of the whole plant paste is externally applied in the morning hours to treat scabies.

11	<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson var. <i>campanulatus</i> (Blume ex Dence) Sivadasan Araceae	Kattukarunai	One hundred grams of the tuber is boiled in water with an equal amount of fresh leaves of tamarind (<i>Tamarindus indica</i> L.). Then the peeled tuber is cooked in tamarind. The prepared curry is taken as medicine once a day for seven to ten days to get relief from bleeding piles.
12	<i>Ammannia baccifera</i> L. subsp. <i>aegyptiaca</i> (Willd) Koehne Lythraceae	Kallurvi	The paste prepared from ten grams of whole plant with water is mixed with lemon (<i>Citrus aurantifolia</i> (Christm) Swingle) juice and it is applied externally two times a day for a period of one week to treat eczema.
13	<i>Anaphyllum beddomei</i> Engler. Araceae	Keerikilangu	About ten grams of the cleaned fresh rhizome made into a paste is externally applied twice a day to treat eczema and scabies.
14	<i>Ancistrocladus heyneanus</i> wall.ex Graham Ancistrocladaceae	Malvadudamadaky	The paste prepared from twenty grams of leaves with water is applied externally two times a day for a period of one month to treat rheumatism.
15	<i>Andrographis paniculata</i> (Burm.f.) Wall.ex Nees Acanthaceae	Neelavembu	The paste prepared from ten grams of leaves along with ten grams of the root of adathoda (<i>Justicia adathoda</i> L.) is applied externally two times a day for a period of four days to treat poisonous insect bites.
16	<i>Anisomeles malabarica</i> (L.) R. Br.ex Sims Lamiaceae	Perunthumbai	Handful of leaves are boiled in two litres of water in a closed container. When the steam emanates the lid of the container is slowly removed and vapour bath is administered to get relief from rheumatic pain.
17	<i>Argemone mexicana</i> L. Papaveraceae	Kudiyoyetti	About ten grams of the leaf paste is externally applied once in a day to treat ringworm infection.
18	<i>Aristolochia bracteolata</i> Lam. Aristolochiaceae	Aaduthinnapai	Handful of the whole plant paste is externally applied twice a day to treat eczema, scabies and ringworm infection.
19	<i>Aristolochia krysagathra</i> Sivararajan &Pradeep Aristolochiaceae	Karudakodi	About fifty grams of root and an equal quantity of leaves are boiled in one litre of coconut oil (<i>Cocos nucifera</i> L.) for about fifteen to twenty minutes over a low flame. This oil is filtered after cooling and applied on the head once in a day for seven to ten days as the treatment for rheumatism. This therapy is used to reduce excessive body heat.
20	<i>Asystasia travancorica</i> Bedd. Acanthaceae	Aathuurinji	About ten grams of a paste made from the leaves and the flowers is mixed with honey and is taken orally, twice a day, for three weeks for the treatment of rheumatism. The use of tamarind, fish and egg is avoided.
21	<i>Azadirachta indica</i> A Juss Meliaceae	Vembu	The oil extracted from the seeds is massaged over the joints as an embrocation in rheumatism. Neem oil is used in many medicated preparations for the treatment of rheumatism. About twenty to fifty grams of stem bark is boiled in five hundred ml of water for twenty to thirty minutes. This decoction is taken orally for three weeks to treat rheumatic complaints.
22	<i>Bacopa monnieri</i> (L.) Pennell (<i>Moniera cuneifolia</i> Michaux) Scrophulariaceae	Nirbrahmi	Fifty to one hundred grams of whole plant is boiled in coconut oil (<i>Cocos nucifera</i> L.) and the oil is applied on the knees three times a day for three days to get relief from pain on the knees.
23	<i>Bauhinia racemosa</i> Lam. Caesalpiniaceae	Aathi	Two to three drops of pure filtered juice prepared from three to five fresh leaves with water is applied on the eyes twice a day to remove particles like dust.
24	<i>Begonia subpeltata</i> Wight Begoniaceae	Oruyelathamare	The paste prepared from twenty grams of leaves with water is taken orally three times a day to get relief from stomachache.
25	<i>Biophytum sensitivum</i> (L.) DC (<i>Oxalis sensitiva</i>) L. Oxalidaceae	Manivattipatchilai	Twenty grams of leaf is made into a paste with water and is applied externally once in a day to treat skin rashes and eczema.
26	<i>Blepharis maderaspatensis</i> (L) Heyne ex Roth Acanthaceae	Sadhaiotti	The paste prepared from fresh leaves with water is applied externally once in a day for a period of one week to heal the wounds.
27	<i>Boerhavia diffusa</i> L.(B. repens L.) Nyctaginaceae	Vethalamai	One hundred grams of leaves is boiled in half a litre of coconut oil (<i>Cocos nucifera</i> L.) and the oil extract is applied twice a day to treat scabies and ringworm infection.
28	<i>Bridelia scandens</i> (Roxb.)Willd Euphorbiaceae	Akakavale	The paste prepared from twenty five grams of the stem bark with water is taken orally in a single dose for a period of twenty days to treat jaundice.
29	<i>Bulbophyllum albidum</i> (Wight) Hook. f Orchidaceae	Kalmalpuravi	The juice prepared from twenty grams of fresh leaves and bulb along with water is taken orally two times a day for a period of one month for strengthening of a weak uterus for conception.
30	<i>Cadaba trifoliata</i> (Roxb.) Wight &Arn Capparaceae	Mayiladikurutha	The paste prepared from twenty grams of whole plant with a few drops of water is applied externally two times a day for a period of twenty days to treat rheumatism.
31	<i>Calanthe masuca</i> (D.Don)Lindl Orchidaceae	Kalai kombu	About ten grams of dried tuberous root is powdered and made into a paste with water. This paste is used to treat acne and sebaceous cysts.
32	<i>Calophyllum inophyllum</i> L. Clusiaceae	Punnai	Few drops of oil extracted from the seeds are applied externally twice a day to treat ringworm infection.
33	<i>Calotropis gigantea</i> (L.) R.Br Asclepiadaceae	Erukku	A poultice of roasted leaves is applied on the rheumatic joints for one week or more to soothe pain and to reduce swelling.
34	<i>Calycopteris floribunda</i> Lam. Combretaceae	Minnarkodi	Ten grams of the leaf paste is applied externally twice a day to treat scabies and skin inflammation.
35	<i>Canthium parviflorum</i> Lam. Rubiaceae	Kattikarai	The paste prepared from twenty grams of root mixed with coconut oil (<i>Cocos nucifera</i> L.) is applied externally three times a day for a period of four days to treat boils.
36	<i>Capparis sepiaria</i> L. Capparaceae	Muruvilikodi	Ten grams of the fresh bark of the stem is made into paste with lemon juice (<i>Citrus aurantifolia</i> (Christm) Swingle) and is applied externally once in a day for a period of one week to treat eczema and dandruff.
37	<i>Capsicum annuum</i> L. (<i>C. frutescens</i> Sensu Clarke) Solanaceae	Usimilagai	A thick paste made from twenty grams of fruits, along with ten grams of ginger (<i>Zingiber officinale</i> Roscoe) and ten grams of vellaipoondu (<i>Allium sativum</i> L.) is given orally to women after delivery. This is followed by the administration of fifty milliliters of gingelly oil (<i>Sesamum indicum</i> L.) or honey to prevent rheumatic complaints.

38	<i>Carissa carandas</i> L. Apocynaceae	Kalaaka	Fresh fruits are taken as a coolant twice a day for a period of three days to reduce body heat.
39	<i>Carica papaya</i> L. Caricaceae	Pappali	The juice prepared from twenty five grams of fruit with milk and sugar is taken orally for a period of one week, two times a day to cause abortion.
40	<i>Carmona retusa</i> (Vahl) Masamune (<i>Ehretiamicrophylla</i> Lam) Boraginaceae	Seethavettilai	The paste prepared from ten grams of fresh leaves and stem along with ten grams of the leaves of keerai (<i>Phyllanthus lawii</i> Graham ex Mull-Arg) and applied externally two times a day for a period of six days to get relief from swelling of legs.
41	<i>Cassia alata</i> L. Caesalpinaceae	Yanaithavarai	Twenty grams of fresh leaf paste is applied twice a day to treat ring worm infection.
42	<i>Cassia kleinii</i> Wight & Arn Caesalpinaceae	Mullillathottavadi	Handful of the whole plant is made into a paste and is applied externally twice a day to treat eczema.
43	<i>Chlorophytum laxum</i> R.Br Liliaceae	Pelamanak	The paste prepared from ten grams of fresh leaves is mixed with honey is administered two times a day for period of three days to treat indigestion.
44	<i>Cipadessa baccifera</i> (Roth) Miq Meliaceae	Pullipamcheddi	The paste prepared from twenty grams of fresh leaves with water is applied externally twice a day for a period of two days to get relief from wasp sting.
45	<i>Cissus quadrangularis</i> L. Vitaceae	Pirandai	About ten grams of a paste made from the tender shoots is consumed twice a day for three weeks for the treatment of rheumatism.
46	<i>Cissampelos pareira</i> L. Menispermaceae	Malaitthankivaer	The paste prepared from leaves with water is taken orally along with cow's milk two times a day for a period of two days to get relief from lumbago.
47	<i>Clerodendrum inerme</i> (L.) Gaertn (<i>Valkameria inerms</i> L.) Verbenaceae	Changukuppi	The leaf paste is externally applied once in a day for a week to treat psoriasis, scabies and ringworm infection. The leaf paste is also applied on the site of insect bite.
48	<i>Clerodendrum viscosum</i> Vent. Verbenaceae	Perungilai	The paste prepared from ten to fifteen grams of leaves is applied externally two times a day for a period of three days to prevent excessive bleeding due to injury.
49	<i>Clitoria ternatea</i> L. Fabaceae	Changupushpam	Twenty grams of leaf paste is externally applied twice a day to treat skin inflammation, scabies and ringworm infection.
50	<i>Coccinia grandis</i> (L.) Voig (<i>C. indica</i> Wight & Arn) Cucurbitaceae	Kovai	The paste prepared from ten grams of fruit with water is applied externally on the gums two times a day for a period of two days to get relief from toothache.
51	<i>Commelina benghalensis</i> L Commelinaceae	Valaipachai	The leaf paste is applied externally twice a day to treat scabies. The leaf paste is also applied once in a day on the wounds for healing and to remove the poisonous spines that had struck accidentally on the body parts.
52	<i>Corallocarpus epigaeus</i> (Rottl&willd.) Clarke Cucurbitaceae	Akashagaruden	The paste prepared from twenty grams of bulb with water is mixed with honey and is taken orally two times a day for a period of two day to treat cold and cough in children.
53	<i>Coscinium fenestratum</i> (Gaertn) Coleb Menispermaceae	Maramanjai	About fifty grams of the dried climbing stem are boiled in one hundred ml of coconut oil (<i>Cocos nucifera</i> L.). Few drops of this oil extract are applied on the burns twice a day for healing. The stem paste is used to treat acnes
54	<i>Costus speciosus</i> (Koen.)J.E.Smith Costaceae	Koshtam	The rhizome and leaf paste are externally applied once in a day to treat ringworm infection.
55	<i>Crataeva magna</i> (Lour.) DC Capparaceae	Maralingam	The juice prepared from five to ten grams of fresh stem bark with one hundred ml of water is taken orally in empty stomach once in a day for a period of one week during the early stages of pregnancy to cause abortion.
56	<i>Crinum defixum</i> Ker-Gawl Amaryllidaceae	Vishanarayani	About ten bulbs made into a paste with water are applied externally twice a day on the inflamed skin that is formed due to insect bites or allergy.
57	<i>Croton tiglium</i> L. Euphorbiaceae	Nervilankai	The seeds are purified by soaking them in lime water for two days. The oil expelled from the seeds is applied twice a day on the infected areas to treat eczema. The oil is also used to treat alopecia. The leaf paste is externally applied twice a day to treat scabies and ringworm infection.
58	<i>Cymbopogon citratus</i> (DC.) Stapf (<i>Andropogon citratus</i> DC) Poaceae	Chukkunaaripullu	A sufficient quantity of the whole plant is chopped and boiled in water for thirty minutes and the warm water is used during bath twice a day for twelve days as treatment for rheumatism. Handful of fresh leaves is crushed with water into juice. After filtration, half a cup of this juice is given orally twice or thrice a day for one week as an effective management of rheumatism.
59	<i>Datura metel</i> L. (<i>D. fastuosa</i> L.) Solanaceae	Oomathai	The leaves are soaked in boiling water and they are bandaged over the affected part to get relief from rheumatic pain. The boiled leaves are also used for fomentation on the rheumatic swelling for fifteen to twenty minutes.
60	<i>Dioscorea bulbifera</i> L. var. <i>vera</i> Prain & Burkill Dioscoreaceae	Vethalaivalli/ Karuvalli	Fifty grams of fresh or boiled tuber is taken orally two times a day for a period of two to three days to arrest dysentery.
61	<i>Dioscorea pentaphylla</i> L. var <i>pentaphylla</i> (<i>D. pentaphylla</i> L. var. <i>linnaei</i> Prain & Burkill) Dioscoreaceae	Mullvalli	Twenty grams of the tuber is fried in ghee and made into a paste. This paste is taken orally three times a day for a period of four days for general good health.
62	<i>Dioscorea tomentosa</i> Koen ex Spreng Dioscoreaceae	Noolvalli	Ten grams of boiled and peeled tuber is given to children once in a day for three days to relieve bowel complaints.
63	<i>Diospyros melanoxylon</i> Roxb. Ebenaceae	Vaathabeedi	Fifty grams of fresh leaves is made into a paste. This paste is warmed on low flame and applied over the knee twice a day for five to six days to get relief from joint pain. A hundred to two hundred grams of fresh leaves is boiled in water. A bath with this warm water treats the parts affected by rheumatism.
64	<i>Diploclisia glaucescens</i> (Blume) Diels (<i>Cocculus glaucescens</i> Blume.)	Erumaithirankodi	Ten grams of dried leaves are soaked in one hundred ml of coconut oil (<i>Cocos nucifera</i> L.) for few days. The oil infusion is externally applied thrice a day to treat leprosy and scabies.

65	Menispermaceae <i>Diplocyclos palmatus</i> (L.) Jeffrey (<i>Bryonopsis laciniosa</i> Sensu Naud.)	Malaiupusani	Twenty grams of dried tuber made into a paste with water is externally applied twice a day to treat inflammatory sebaceous cysts.
66	Cucurbitaceae <i>Dipteracanthus patulus</i> (Jacq.) Nees (<i>Ruellia patula</i> Jacq.)	Kanapoodu	The powder prepared from the shade dried whole plant is taken orally along with water three times a day for a period of two days to treat poisonous bites.
67	Acanthaceae <i>Dolichos trilobus</i> L. (<i>D. falcatus</i> auct non Klein ex Willd)	Pirappanelai	The powder prepared from the shade dried leaves is taken orally along with water two times a day for a period of one week to reduce body heat.
68	Fabaceae <i>Drymoglossum heterophyllum</i> (L.) Trimen	Sethavale	The paste prepared from twenty grams of fresh leaves is taken orally two times a day for a period of one month to reduce body heat, reduce excessive white discharge and helps in conceiving.
69	Polypodiaceae <i>Eclipta prostrata</i> (L.) L. (<i>E. alba</i> (L.) Hassk)	Karisalankanni	Twenty five to fifty grams of the stem and leaves is boiled in one litre of coconut oil (<i>Cocos nucifera</i> L.). This oil is filtered after cooling. This filtered oil is applied on the head for an hour before bath during the course of treatment. This therapy is used to reduce body heat.
70	Asteraceae <i>Entada pursaetha</i> DC (<i>E. scandens</i> auct. non Benth)	Parandaikodi	A thick paste made from six to ten seeds is applied over the affected and inflamed swellings to reduce pain. To strengthen the joints in infants, this paste is applied over the leg once in a day for ten days. Warm water bath is administered each time.
71	Mimosaceae <i>Erythralium scandens</i> Bl. Bijdr (<i>E. populifolium</i> (Arn.) Mast.)	Vaathavallikodi	The chopped tender shoots are boiled with water. When this infusion is comfortably hot bath is taken. This management is continued until there is relief from the rheumatic complaint. A paste made from ten grams of fresh leaves is mixed with one teaspoon of honey is given orally twice a day for seven days as treatment for rheumatism. Consumption of fish, egg, tamarind, liquor, salt and intercourse is prohibited during the course of the treatment.
72	Erythraliaceae <i>Erythrina variegata</i> L. (<i>E. indica</i> Lam.)	Mullumurungai	Two hundred grams of stem bark is boiled in one litre of neem oil (<i>Azadirachta indica</i> A. Juss) together with ten grams of poppy seeds (<i>Papaver somniferum</i> L.) and twenty five grams of vellaipoondu (<i>Allium sativum</i> L.) for fifteen to twenty minutes. This oil is massaged over the affected joints twice a day until one gets relief from rheumatic pain. Fifty to hundred grams of the leaves is boiled in an earthen pot. This preparation is used for fomenting the affected parts after massage.
73	Fabaceae <i>Eugenia singampattiana</i> Bedd.	Kaatukorandi	One teaspoon of the powder made from equal quantity of shade dried leaves, flowers and tender fruit is consumed with honey two times a day for twenty one days for the treatment of rheumatism. Consumption of fish, both, fresh and dry, and egg is avoided.
74	Myrtaceae <i>Ficus benghalensis</i> L. var <i>benghalensis</i>	Aal	The stem latex is applied on the cracked feet (fissures in foot) twice a day for a week for healing cracks in the feet.
75	Moraceae <i>Ficus microcarpa</i> L. F.	Punniyaviruru	Applying the stem latex twice a day for seven days is beneficial for the treatment of cracked feet.
76	Moraceae <i>Ficus racemosa</i> L.	Atthi	The stem latex is applied on the cracked feet twice a day for a week for healing of the affected part of the feet.
77	Moraceae <i>Ficus religiosa</i> L.	Arasu	Applying the stem latex twice a day for a week can heal the fissures in the foot.
78	Moraceae <i>Goniothalamus wightii</i> HK. f. Th.	Kattunaraipatchilai	Five grams of an equal quantity of leaves and tender fruits is made into a paste with a few drops of water. This paste is taken orally twice a day for five to ten days for relief from rheumatic pain.
79	Annonaceae <i>Hemionitis arifolia</i> (Burm) T. Moore	Nayecheveyan	The juice prepared from fifteen to twenty grams of fresh leaves in one hundred ml of water is taken orally two times a day for a period of ten days to treat dog bite. The leaves are applied as a pack on the wound till it is completely healed.
80	Hemionitidaceae <i>Hiptage benghalensis</i> (L.) Kurz	Mathavikodi	Twenty grams of leaves and flowers made into a paste with water is externally applied twice a day to treat ringworm infection.
81	Malpighiaceae <i>Hugonia mystax</i> L.	Motirakanni	One teaspoon of paste made from equal quantity of shade dried leaves and tender fruit is consumed with honey twice a day for twelve days for the treatment of rheumatism. Consumption of fish, both fresh and dry, and egg is avoided.
82	Linaceae <i>Indigofera longeracemosa</i> Boiv ex Bail	Poorisa vayittruvai	Handful of leaves is made into a paste along with ten grams of leaves of neelavembu (<i>Andrographis paniculata</i> (Burm.f) Wall ex Nees) and ten grams of rhizome of kaccholam (<i>Kaempferia galanga</i> L.) are boiled in coconut oil (<i>Cocos nucifera</i> L.). This oil extract is externally applied to treat leprosy, leucoderma and scabies. The leaf extract is boiled in coconut oil and the oil infusion is used to treat alopecia.
83	Fabaceae <i>Indigofera wightii</i> Graham ex Wight & Arn	Neelamari	Half a teaspoonful of shade dried root powder is taken with luke warm water at the time of stomachache.
84	Fabaceae <i>Isonandra lanceolata</i> Wight	Milagunari patchilai	A paste is prepared from two grams of fresh leaves and flowers with a few drops of water. This paste is consumed twice a day for ten to twelve days to get relief from rheumatic pain.
85	Sapotaceae <i>Ixora coccinea</i> L.	Idlipoo	Fifty grams of dried flowers are boiled in coconut oil (<i>Cocos nucifera</i> L.) and the oil extract is externally applied twice a day to treat eczema.
86	Rubiaceae <i>Jatropha gossypifolia</i> L.	Aathalai	About fifty grams of the crushed stem bark is boiled in one litre of neem oil (<i>Azadirachta indica</i> A. Juss) along with twenty five grams of chopped tuber of nilappanai (<i>Cucurbita orchoides</i> Gaertn) for half an hour on a low flame. This oil is massaged on the affected joints helps to relieve rheumatic pain.
87	Euphorbiaceae <i>Justicia adhatoda</i> L. (<i>Adhatoda</i> <i>vasica</i> Nees)	Adathoda	A handful of leaves is cooked and used for fomentation on the affected joint to alleviate rheumatic pain. The juice extracted by crushing fifty grams of fresh leaves together with twenty five grams of leaves of velliparuthi (<i>Pergularia daemia</i> (Forssk.) Chiov) is battered with egg white and taken orally for ten to twelve days to treat rheumatic complaint.

88	<i>Kingiodendron pinnatum</i> (Roxb.ex DC.) Harm. (<i>Hardwickia pinnata</i> Roxb.ex DC) Caesalpiaceae	Kulavu	The resin obtained by piercing the trunk is applied on the affected joints before going to bed along with a soft massaging in circular motion. In the morning lukewarm water is poured over the joints. It is also applied on the fissured foot for five to seven days to get relief.
89	<i>Lantana camara</i> L. var <i>aculeata</i> (L.) Mold Verbenaceae	Unnipoo	The powder prepared from the shade dried leaves is taken orally along with water two times a day for a period of one week to reduce body heat. A teaspoon of paste made from an equal quantity of leaves and flowers is mixed with honey and taken orally thrice a day for sixteen days as treatment for rheumatism.
90	<i>Lawsonia inermis</i> L.(L. <i>alba</i> Lam) Lythraceae	Maruthani	The leaves are soaked in coconut oil (<i>Cocos nucifera</i> L.) along with the flowers of asokam (<i>Saraca asoca</i> (Roxb.) Wilde) for a week and this oil infusion is used as a hair tonic to promote hair growth and to treat dandruff. This oil is also used to treat ringworm infection.
91	<i>Lepianthes umbellata</i> (L.) Rafin (<i>Hackeria subpellata</i> (Willd.) Kunth) Piperaceae	Thendemani	The paste prepared from twenty grams of fresh leaves with water is applied externally twice a day for a period of two days to prevent any swelling caused by wasp bites.
92	<i>Leucas aspera</i> (Willd) Link Lamiaceae	Tumbai	One teaspoonful of juice prepared from five to ten grams of leaves mixed with honey is taken orally three times a day for a period of two days to get relief from cough in children.
93	<i>Mallotus philippensis</i> (Lam.) Muell-Arg Euphorbiaceae	Kaatuthakadi	One teaspoon of paste is made from an equal quantity of leaves and tender fruit. This is mixed with honey and is taken orally twice a day for thirteen days to get relief from rheumatism. During this period the consumption of salt, spicy food and tamarind is avoided.
94	<i>Merremia tridentata</i> (L.) Hall. f subsp <i>hastata</i> (Desr.) Ooststr Convolvulaceae	Koonthalvalarathi	The entire plant is boiled in coconut oil (<i>Cocos nucifera</i> L.) and the extract is used to treat dandruff and to promote hair growth. Ten grams of the leaves made into a paste is applied once in a day to treat various skin infections.
95	<i>Mirabilis jalapa</i> L. Nyctaginaceae	Anthimantharai	Twenty grams of dried root tuber made into a paste with water is applied externally twice a day to treat sebaceous cysts.
96	<i>Momordica charantia</i> L. var. <i>charantia</i> Cucurbitaceae	Paakakai	As a vermifuge fifty to one hundred grams of unripe fruit is cooked as curry and taken two times a day for a period of three days.
97	<i>Morinda pubescens</i> J.E.Smith var <i>pubescens</i> Rubiaceae	Manjanatti	Ten grams of fresh leaves, two or three small vengayam (<i>Allium cepa</i> L.) and one teaspoon of manjal powder (<i>Cucurma longa</i> L.) are made into a paste. This paste is heated in five to ten ml of coconut oil (<i>Cocos nucifera</i> L.) and the hot paste is applied on the injury caused by weapons once in a day for period of four to five days to heal the wounds.
98	<i>Moringa concanensis</i> Nimmo ex Gibs Moringaceae	Kattumoringai	Fifteen to twenty grams of fresh leaves are made into a paste along with two to three grams of black pepper (<i>Piper nigrum</i> L.) and five grams of vellaipoondu (<i>Allium sativum</i> L.). This paste is taken in the early morning hours in empty stomach once in a day for a period of three to four days to treat jaundice. During this treatment one bucketful of cold water is poured on the head of the patients. One teaspoonful of fresh leaf juice is given to children in a single dose to treat bowel disorder.
99	<i>Moringa pterygosperma</i> Gaertn (<i>M. oleifera</i> acut.non Lam) Moringaceae	Moringai	About two hundred grams of stem bark from a ten year old tree is boiled in neem oil (<i>Azadirachta indica</i> A.Juss) along with fifty grams of crushed vellaipoondu (<i>Allium sativum</i> L.) and fifty grams of coarsely powdered fenugreek (<i>Trigonella foenum-graecum</i> L.) on a moderate flame for about twenty minutes. This oil is applied on the affected part as an embrocation for rheumatic swelling. Hot water bath is administered after few hours.
100	<i>Mucuna pruriens</i> (L.) DC var <i>pruriens</i> Fabaceae	Poonaykali	Powdered hairs on pods are administered with honey for expelling intestinal worms.
101	<i>Mukia maderaspatana</i> (L.)M.Roem Cucurbitaceae	Musumusukkai	One teaspoon of juice prepared from the fresh leaves is taken orally once in a day for a period of three days to get relief from cold and cough. The juice prepared from ten grams of fresh leaves with two hundred ml of rice fermented water is taken orally two times a day for a period of one week to reduce bile problem.
102	<i>Murraya koenigii</i> (L.) Spreng Rutaceae	Kariveppilai	Twenty to twenty five grams of fresh leaves are made into a paste along with equal quantity of fresh endosperm of thennai (<i>Cocos nucifera</i> L.) The paste is mixed with a little water and applied on the head an hour before taking bath. This procedure is practiced once a week regularly to induce hair growth, to delay the development of grey hair and to arrest falling of hair.
103	<i>Murraya paniculata</i> (L.) Jack (<i>M. exotica</i> L.) Rutaceae	Malaivembu	About fifty grams of fresh leaves is made into a paste with a little water. This paste is warmed for few minutes and bandaged on the affected part in the morning and the patient is advised hot water bath in the evening. This helps to relieve rheumatic pain.
104	<i>Mussaenda glabrata</i> (Hook.f) Hutchinson ex Gamble Rubiaceae	Vellimadanthai	The leaf paste is applied externally once in a day to treat skin allergy and inflammation. Fifty grams of the fresh leaves are boiled in two hundred ml of coconut oil (<i>Cocos nucifera</i> L.) and the extract is applied on the scalp to promote hair growth.
105	<i>Myxopyrum serratum</i> A.W. Hill Oleaceae	Saduramullai	Five grams of the leaf paste is applied externally twice a day to treat skin rashes, scabies and ringworm infection.
106	<i>Ocimum gratissimum</i> L. Lamiaceae	Perumtulasi	The paste prepared from one hundred grams of fresh leaves is applied externally three times a day for a period of one week to get relief from muscle pain.
107	<i>Paspalum scrobiculatum</i> L.(<i>P.commersonii</i> Lam) Poaceae	Varegu	The paste prepared from equal quantity of leaves and root with water is applied externally to get relief from pain during delivery.
108	<i>Pavonia odorata</i> Willd Malvaceae	Thuthi	The juice prepared from twenty grams of the whole plant with one hundred ml of water is mixed with five grams of pepper powder (<i>Piper nigrum</i> L.) and is taken orally two times a day for a period of five days to treat fever and cough.

109	<i>Pergularia daemia</i> (Forssk.) Chiov (<i>P. extensa</i> (Jacq.) N.E.Br) Asclepiadaceae	Veliparuthi	Fifty grams of fresh roots and an equal quantity of fresh leaves is crushed together with twenty five grams of stem bark of mullumurungai (<i>Erythrina variegata</i> L.) and ten grams of poppy seeds (<i>Papaver somniferum</i> L.). This is boiled for twenty five to thirty minutes on a low flame in an earthen pot or brass vessel. The filtered oil is massaged on the joints and the affected parts two times a day for ten to fifteen days. A hot water bath is administered during the course of the treatment. The use of chicken, pork, fish and having sex is to be avoided.
110	<i>Phyllanthus amarus</i> Schum & Thonn Euphorbiaceae	Kilanelli	The juice prepared from ten grams of the fresh clean aerial parts of the plant in twenty five ml of water. The filtered juice is taken orally as such or along with hundred ml of cow's milk twice a day for about seven to ten days to treat jaundice.
111	<i>Phyllanthus gardnerianus</i> (Wight)Baill Euphorbiaceae	Oopanechay	The paste prepared from ten to fifteen grams of leaves and fruits in water are taken orally in a single dose for a period of two weeks to treat jaundice.
112	<i>Phyllanthus singampattiana</i> (Sebastine & Henry) Kumari & Chandrabose comb.nov Euphorbiaceae	Kattugoiya	One teaspoonful of juice prepared from the fresh leaves is taken twice a day for a period of four to five days to relieve cold and cough.
113	<i>Piper nigrum</i> L. Piperaceae	Milagu	One hundred to two hundred grams of leaves with shoot is boiled in water together with tender shoot of bamboo (<i>Bambusa arundinacea</i> (Retz.) Roxb) and neem leaves (<i>Azadirachta indica</i> A.Juss). Hot water bath is taken twice a day with this water while it is comfortably hot for twelve days or more to get relief from rheumatic pain.
114	<i>Pleiospermium alatum</i> (Wall.ex Wt. & Arn)Swingle (<i>Limonia alata</i> wall.ex Wt & Arn) Rutaceae	Malainaarathai	The juice extracted from one hundred grams of fresh leaves and hundred grams of fresh leaves of lemon grass (<i>Cymbopogon citratus</i> (DC) Stapf) is boiled in one litre of neem oil (<i>Azadirachta indica</i> A.Jess) in a low flame for twenty minutes. This oil is applied on the joints, shoulders and the other affected parts. Hot water is sprinkled to get relief from rheumatic complaints.
115	<i>Plumbago zeylanica</i> L. Plumbaginaceae	Vellaikkoduvili	The paste prepared from ten to fifteen grams of root with water is applied externally in a single dose for a period of three days to get relief from poisonous insect bites.
116	<i>Polygala chinensis</i> L. Polygalaceae	Siriyangai	The paste prepared from ten grams of the root is applied externally twice a day for a period of three days to treat any poisonous bites.
117	<i>Polygala javana</i> DC. Polygalaceae	Palpiranthai	Five to ten grams of fresh leaves are made into a paste and applied on the breast twice a day for a period of two to three days to get from pain after breast feeding is stopped.
118	<i>Pongamia pinnata</i> (L.) Pierre (<i>P. glabra</i> Vent) Fabaceae	Pongan	One hundred grams of dried bark powder is boiled in half a litre of coconut oil (<i>Cocos nucifera</i> L.) and the oil extract is applied externally once in a day to treat eczema, rashes and ringworm infection.
119	<i>Psychotria nilgiriensis</i> Deb & Gang Rubiaceae	Odaikaapatchilai	A ten gram paste made from the tender fruits is consumed along with honey once in a day for twelve days or more for the treatment of rheumatism.
120	<i>Psychotria nudiflora</i> Wt & Arn Rubiaceae	Kalpo	A ten gram paste is made from an equal quantity of leaves and flowers which is consumed along with honey once in a day for twelve days for the treatment of rheumatism.
121	<i>Pterocarpus marsupium</i> Roxb. Fabaceae	Vengai	Fifty grams of the stem resin is soaked in one hundred ml of water for about twelve hours. It is applied externally on the knee twice a day for a period of five to six days to get relief from joint pain.
122	<i>Rauwolfia densiflora</i> (Wall.) Benth.ex Hk.f (<i>Tabernaemontana densiflora</i> Wall) Apocynaceae	Paarisirunila patchilai	The paste prepared from ten grams of leaves and flowers is consumed orally two times a day for five days to treat rheumatic complaints.
123	<i>Rivina humilis</i> L. Phytolaccaceae	Molagsar	The paste prepared from ten to fifteen grams of fresh leaves with water is applied externally two times a day for a period of one day to treat insect bites.
124	<i>Sansevieria roxburghiana</i> Schultes &Schultes (<i>S. zeylanica</i> Roxb) Agavaceae	Marul	A hundred grams of chopped leaves, twenty grams of vellaipoondu (<i>Allium sativum</i> L.) and twenty grams of vengayam (<i>Allium cepa</i> L.), fifty grams of stem bark of moringai (<i>Moringa pterygosperma</i> Gaertn.) and ten grams of mustard seeds (<i>Brassica juncea</i> (L.) Czern) is boiled in one litre of neem oil (<i>Azadirachta indica</i> A.Juss) on a low flame. This lukewarm oil is massaged by applying medium pressure on hands and legs for fifteen days or until one gets relief from rheumatic pain.
125	<i>Santalum album</i> L. Santalaceae	Santhanam	The wood paste is applied externally on the skin to treat prickly heat, skin rashes and allergy.
126	<i>Sarcostemma acidum</i> (Roxb) Voigt Asclepiadaceae	Kodiekalli	One teaspoonful of latex from the plant is applied externally three times a day for two days to treat heat boils in children.
127	<i>Saraca asoca</i> (Roxb.) Wilde Caesalpinaceae	Asokam	Fifty grams of the dried flowers along with the leaves of maruthani (<i>Lawsonia inermis</i> L.) are boiled in coconut oil (<i>Cocos nucifera</i> L.) and the extract is applied externally twice a day to treat eczema and scabies.

128	<i>Scleria lithosperma</i> (L.) Sw (<i>Scirpus lithosperma</i>) Cyperaceae	Kathipul	Twenty grams of dried rhizome made into a paste with water is applied externally twice a day to treat eczema, leucoderma and scabies.
129	<i>Senna auriculata</i> (L.) Roxb. (<i>Cassia auriculata</i> L.) Caesalpinaceae	Aavarai	The paste prepared from five to ten grams of sepals and petals from the flowers with a small quantity of asafoetida (<i>Ferula assafoetida</i> L.) and poppy seeds (<i>Papaver somniferum</i> L.) using hot water. This paste is given orally for two days in single dose to relieve colic pain.
130	<i>Solanum surattense</i> Burm.F Solanaceae	Kandargattiri	The decoction prepared from fresh leaves of kandargattiri (<i>Solanum surattense</i> Burm. F.) thoothuvalai (<i>Solanum trilobatum</i> L.) dried ginger (<i>Zingiber officinale</i> Roscoe) coriander seeds. (<i>Coriandrum sativum</i> L.) and pepper (<i>Piper nigrum</i> L.) is taken orally two times a day for two days to arrest cold, cough and fever.
131	<i>Solanum torvum</i> Sw Solanaceae	Sundaikai	As vermifuge fifty to one hundred grams of unripe fruits is cooked as curry and taken two times a day for a period of three days.
132	<i>Sonerila tinneveliense</i> Fischer Melastomataceae	Kalpuli	A handful of leaves are boiled with one litre of water that is, further, reduced to a hundred ml and consumed on an empty stomach once in a day for twelve to fifteen days to get relief from rheumatic complaints.
133	<i>Sphaeranthus indicus</i> L. Asteraceae	Oothuchedi	At the time of giddiness three or four fresh leaves are squeezed using both the palms and then smelled to get relief.
134	<i>Tabernaemontana heyneana</i> Wall (<i>Ervatamia heyneana</i> Wall.) Apocynaceae	Nandhiavattai	Two drops of pure filtered aqueous extract prepared from the flower petal is applied on the eyes for a period of seven days to improve vision.
135	<i>Tamarindus indica</i> L. Caesalpinaceae	Puli	A dried seed is rubbed on a rough floor for few seconds to remove the outer testa and the rubbed surface of the seed is pressed immediately on the spot of scorpion sting to relieve pain.
136	<i>Tephrosia purpurea</i> (L.) Pers Fabaceae	Kattikolingi	One teaspoonful of juice prepared from the fresh root bark is mixed with a pinch of asafoetida (<i>Ferula assafoetida</i> L.) and given to children in single dose to get relief from bowel disorder.
137	<i>Thespesia populnea</i> (L.) Soland ex <i>Correa</i> Malvaceae	Puvarasu	A few tender shoots are made into a paste along with one or two small vengayam (<i>Allium cepa</i> L.) This paste is applied immediately on the area of scorpion sting to relieve pain.
138	<i>Thottea siliquosa</i> (Lam.) Ding Hou Aristolochiaceae	Kuravan kandi mooli	Twenty grams of dried roots is powdered with an equal amount of the roots of avalpori (<i>Rauwolfia serpentina</i> (L.) Benth ex Kurz) and vaathaneerpatchilai (<i>Aristolochia indica</i> (L.) Kuntze) is boiled in coconut oil (<i>Cocos nucifera</i> L.) and this extract is applied externally twice a day to treat eczema scabies and ringworm infection.
139	<i>Tinospora cordifolia</i> (Willd.) Miers ex. Hk. f & Th Menispermaceae	Senthilkodi	Two hundred ml of juice is extracted from a sufficient quantity of leaves without adding water. This juice is boiled in one litre of neem oil (<i>Azadirachta indica</i> A. Juss) along with twenty grams of cumin seeds (<i>Cuminum cyminum</i> L.), twenty grams of pepper seeds (<i>Piper nigrum</i> L.) twenty grams of mustard seeds (<i>Brassica juncea</i> (L.) Czern) twenty grams of dried ginger (<i>Zingiber officinale</i> Roscoe) hundred grams of vellaipoondu (<i>Allium sativum</i> L.) and fifty grams of crushed stem bark of murungai (<i>Moringa pterygosperma</i> Gaertn) on a low flame for ten minutes. This medicated oil is massaged for a period of ten days which helps to give relief from rheumatic pain.
140	<i>Toddalia asiatica</i> (L.) Lam. var <i>asiatica</i> Rutaceae	Milagaraniai	The shade dried plants are powdered and one teaspoon of the powder is taken orally along with water in empty stomach for a period of two to three days to get relief from gastric problems. A teaspoon of shade dried stem bark powder is taken after meals with honey three times a day for five to ten days to get relief from rheumatic pain.
141	<i>Tribulus terrestris</i> L. Zygophyllaceae	Sirunerinji	The juice prepared from ten grams of fruit with two hundred ml of goat's milk is taken orally two times a day for a period of three days to treat leucorrhoea.
142	<i>Trichodesma zeylanicum</i> (Burm.f) R.Br. (<i>Borago zeylanica</i> Burm.f) Boraginaceae	Kavuthumbai	Thirty to forty grams of fresh leaves are roasted with eight to ten vengayam (<i>Allium cepa</i> L.) in coconut oil (<i>Cocos nucifera</i> L.) and made into curry. This curry is taken one hour before meals twice a day for a period of four to five days to treat bleeding piles.
143	<i>Tridax procumbens</i> L. Asteraceae	Mookuthielai	Fifty grams of fresh leaves are made into juice. The juice is applied externally once in a day for period of three to four days to get relief from shoulder pain. Ten grams of fresh leaves are made into paste along with a pinch of calcium hydroxide. This paste is externally applied on the eczema affected area or an injury made by weapon once in a day for three or four days for complete cure.
144	<i>Urginea indica</i> (Roxb.) Kunth Liliaceae	Kattuvengam	The paste prepared from ten grams of bulb with water is applied externally once in a day for a period of three days to treat painful corns on the lower surface of the feet.
145	<i>Ventilago madraspatana</i> Gaertn Rhamnaceae	Vembadan	One hundred grams of the stem bark is coarsely powdered with fifty grams of roots of veliparuthi (<i>Pergularia daemia</i> (Forssk.) Chiov) and is mixed with one litre of neem oil (<i>Azadirachta indica</i> A. Juss) and heated for twenty minutes on a low flame. This oil is massaged on the joints twice a day.
146	<i>Vitex negundo</i> L. Verbenaceae	Notchi	One hundred ml of juice prepared by boiling fresh leaves is taken orally once in a day for a week. Cooked leaves are also used to foment the affected joints to disperse swelling in case of acute rheumatism.

147	<i>Vetiveria zizanioides</i> (L.) Nash Poaceae	Vetiver	One hundred grams of fresh roots are made into a juice along with root of nannari (<i>Hemidesmus indicus</i> (L.) B.R. var. <i>indicus</i>) and the entire plant of embural (<i>Hedyotis puberula</i> (G. Don) Arn.) are boiled in coconut oil (<i>Cocos nucifera</i> L.). The oil extract is applied externally twice a day to treat skin diseases and also is applied on the head daily as hair tonic, to induce hair growth and to arrest falling of hair.
148	<i>Wrightia tinctoria</i> (Roxb.) R.Br. Apocynaceae	Vetpalai	Ten to fifty grams of fresh stem bark is made into paste with water and the paste is taken orally two times a day for period of three days to reduce body heat.
149	<i>Zanthoxylum rhetsa</i> (Roxb.)DC(Z. <i>budrunga</i> (Roxb)DC) Rutaceae	Malvapouou	The paste prepared by rubbing the hard spines on a rock along with water is applied on the breast to give relief from pain and increase lactation in nursing mothers.
150	<i>Ziziphus xylopyrus</i> (Retz.) Willd Rhamnaceae	Mullukottai	Fifty grams of fresh stem bark is soaked in two hundred ml of water for twelve hours and filtered. This filtrate is taken orally in empty stomach for a period of three days in single dose to relieve stomachache.
151	<i>Ziziphus rugosa</i> Lam. Rhamnaceae	Thodali	The paste prepared from the handful of leaves ground into a paste is applied externally on the skin before the morning bath to treat scabies and ringworm infection.

RESULTS AND DISCUSSION

The present study focuses the extensive usage of as many as 174 medicinal plants by the *Kanikkars* tribe inhabiting the Agasthiarmalai Biosphere Reserves, Western Ghats, Tamil Nadu. As an outcome of the present investigation, 174 plants (151 plants collected and 23 plants/extracts procured) belonging to 155 genera and 69 families including 2 pteridophytes were recorded. Of the recorded plants, a maximum of 10 ethnomedicinal plants belong to Fabaceae, it is followed by Euphorbiaceae (9 species), Caesalpiniaceae (7 species), Rubiaceae (6 species), Apocynaceae, Acanthaceae and Rutaceae (5 species each). Among the 151 plants reported as herbal drugs, 48 plants are herbaceous in habit, while 50 plants are shrubs, 32 plants are trees, 20 plants are climbers and 1 is an epiphyte.

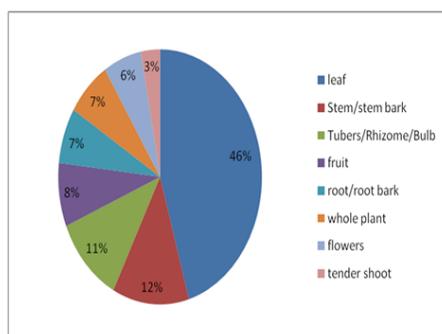


Figure 1: Percentage of plant parts used

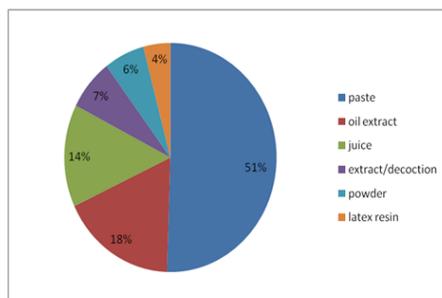


Figure 2: Percentage of form of administration

This is consistent with the general observations made earlier in relation to ethnomedicinal studies on some of the other tribal communities of India (Karthikeyani, 2003; Karuppusamy, 2007;

Kamble *et al.*, 2009; Yasodharan and Sujana, 2009; Subramanian *et al.*, 2010; Mohan *et al.*, 2010). The percentage of plant parts used and the form of administration is represented in figure 1 and figure 2. The enumerated 174 plants are used to cure as many as 53 different types of human maladies. A maximum of 63 plants are used to treat skin diseases, followed by 38 plants to treat various body pain, 14 plants for insect bites/general poisonous bites and 6 plants for fever, cold and cough. In the study, some of the ethnomedicinal plants are endemic to Agasthiarmalai Biosphere Reserve Western Ghats, *Acorus calamus*, *Asystasia travancorica*, *Calanthe masuca*, *Eugenia singampattiana*, *Psychotria nudiflora*, *Goniolothalamus wightii* and *Sonerila tinneveliense* (Jain and Rao, 1983; Ahmedullah and Nayar, 1986; Nayar and Sastry, 1987; Nayar, 1996). Of these, *Eugenia singampattiana*, *Psychotria nudiflora* and *Sonerila tinneveliense* are endangered plants. The medicinal plants used by the *Kanikkars* need to be systematically screened by phytochemists and pharmacologists for the potent active principles. Scientific validation of these remedies may help in discovering new drugs from these medicinal plants.

CONCLUSION

This study revealed that medicinal plants still play a vital role in the primary healthcare of this tribal community. The indigenous knowledge and efficacy of these medicinal plants have been proven in their community since time immemorial. There is a need for follow-up ethnopharmacological screening based on tribal claims, by testing these ethnomedicinal recipes in their crude form and also as aqueous and alcoholic extracts on animal models. There is enormous potential for establishing herbal drug centre for collection, processing and preparation of ethnomedicine, developing cultivation farms and documentation of potential and promising ethno medicinal plants in social forestry operation for improving the economy of *Kanikkars* tribe and for general human welfare.

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