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ETHNOBOTANICAL STUDY OF KNOWLEDGE AND MEDICINAL PLANTS USE BY THE KURUMBA TRIBES IN CHEMMANKARAI, NILGIRI DISTRICT, TAMIL NADU

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ABSTRACT

The present study initiated with an aim to highlight and document the traditional knowledge and medicinal plants used by the Kurumba tribes inhabiting at Chemmankarai area of Nilgiri district, Tamilnadu. During the study selected study area was visited frequently and information was collected through semi directive, open ended interview among the informants of Kurumba tribes. The details on vernacular name of the plant, mode of diagnosis, disease they treat, usage of plants, mode of application were collected. The plants were identified and deposited at the herbaria of Nirmala College for Women, Coimbatore. The results revealed that the total 56 plant species belonging to 31 families and 47 genera have been documented in the present study. The highest number plants being used for fever and wound healing (7), Insect bite, migraine, bath, ulcer, immunity and throat pain (4) followed by joint pain, tooth ache and asthma (3). The habit of the species showed that 68 % of the drugs were obtained from the herbs compared with the other habit plants. The reported potential ethnomedicinal plants could be conserved and further validation need for better utilization and provisions of the documented knowledge.

Keywords: Ethnobotany, Kurumba tribe, traditional knowledge and Nilgiri District.

1. INTRODUCTION

India is rich in ethnic diversity and indigenous knowledge that has resulted in exhaustive ethanobotanical studies (Uma priya *et al* 2011). According to the World Health Organization (WHO) about 65-80% of the world's population in developing countries depends essentially on plants for their primary healthcare due to the poverty and lack of access to modern medicine (Sharma *et al*., 2010). In Indian medicine systems, Ayurveda, Sidha and Unani entirely and Homeopathy partially depend either on plant materials or their derivatives for treating human ailments (Joseph and Justinraj, 2011).

The Western Ghats of India is one such high bio-cultural diversity region, which is one of the global biodiversity hot-spots (Myers *et al*., 2000). The Nilgiri district has variegated plants propagating both exotic and native flora of substantial recuperative utility. It consists all in all six ethnic groups of anthropological interest. They are Todas, Kotas, Kurumbas, Irulas, Paniyas and Kattunayakas (Rajan and Sethuraman,1991). Every tribal group in this country is unique in the sense that they are characterized with certain special knowledge and skills about medicinal plants used in their traditional system of medicine to cure a wide range of disease (Rajan *et al* 2003). They subside on food such has honey, fruits and tubers besides other variety of cereals. New medicinal uses of plant have been continuously reported by several workers in different localities (Ranjith and Ramachandran, 2010). The present work is an effort to document and analyze the traditional knowledge regarding the practice and use of plants in treatment for various ailments by Kurumba tribes of Chemankarai, Nilgiri District, Tamilnadu.

2. METHODOLOGY

2.1. Study Area

Blue mountains are some of the most picturesque mountain ranges situated in Southern India. It is located in North Western corner of Tamil Nadu, South India and the district has geographical area of 2,543 sq. kms. Chemmankarai area situated in Coonoor Taluk of the Nilgiri district, Tamil Nadu, India at altitude of 800 to 830 metres above mean sea level (Fig. 1). The places cover a large area of thick forest vegetation which habitats wild animals such as Black panther, Elephants, Deer, Bear, Bison etc. In view of exploitation and conservation of tribal knowledge an attempt has been made to study the ethanobotanical aspect from Chemmankarai area in Coonoor.

2.2. Kurumba Tribe

Kurumba tribes are found in the forest area of Chemmankarai, Nilgiri district. They are skilled people in honey collection, food harvesting and

medicine preparation. They collect medicinal plants from the deep forest area and utilize it efficiently. These people live in forest area in habitat of wild animals and they are able to sense the smell of the animals nearby or on the way. They make money by selling jack fruits, citrus, Guava, coffee bean cultivation, wild chillies etc., to the Burliar shops on the way to Mettupalayam to Ooty. These people build their houses with stones and red soil.

2.3. Data collection

The present investigation was carried out from Chemmankarai area of Nilgiri district to get information from the tribal practitioners and also to cross check the information provided by the practitioners during the earlier visits. The survey was conducted during June, 2016 to November, 2016. The medicinal plants growing in natural habitats of Chemmankarai forest was collected, identified and authenticated with the help of valid references (Hooker, 1875-97; Gamble and Fisher, 1935 and Matthew, 1991). At the same time plant species were collected and herbarium sheets were prepared by traditional method and were deposited in Department of Botany, Nirmala College for Women Coimbatore. The details on vernacular name of the plant, mode of diagnosis, disease they treat, usage of plants, mode of administration were collected from the tribal practitioners through direct interviews and oral conversations. The tribal practitioners have a sound knowledge about the medicinal plants around their place to treat the common diseases in family and neighbourhood.

2.4. Ailment categories

On the bases of the information gathered from the tribal healers in the study area all the reported ailments were categories (Table 1) *viz.,* kidney stones, cancer, circulatory system, dermatological infection, endocrine disorders, eye infection, fever, gastro intestinal ailment, genito urinary infection, hair problems, piles, poisonous bite, respiratory system disorder and skeleto muscular system disorder.

3. RESULTS AND DISCUSSION

3.1. Documentation of Indigenous ethnomedicinal knowledge

The Nilgiri Biosphere Reserve is an international biosphere reserve in the Western Ghats and it is very rich in floral and faunal diversity. Many ethnobotany studies have been carried out in the Nilgiri hills, but the outcome of the study have not reached the local and scientific communities to explore further. The results of the present study revealed that the 56 plant species are used by Kurumba tribes for herbal remedy for the treatment of various ailments. These species belonging to 31 families, the most represented being Solanaceae (5), Asteraceae and Oxalidaceae (4), Malvaceae, Piperaceae, Myrtaceae and Rosaceae (3), Arecaceae, Sapindaceae, Caryophyllaceae, Zingiberaceae, Lamiaceae, Euphorbiaceae, polygonaceae, Rutaceae and Fabaceae (2). Among the genera *Oxalis* (3), *Solanum*, *Piper*, *Leucas* and *Rubus* (2) are the most represented genera in the studied plants (Table 2).

Table 1. Ailment grouped under by different ailment categories.

Ailment Categories	Biomedical terms	Tamil Terms
Cancer	Cancer	Putru noi
Circulatory system	Blood clotting, blood purification, cholesterol	Ratham kattu, Rayha suthigaripu, kozhuppu.
Dermatological infection	Cuts, wounds, itching, skin irritation, burning injury	Vettukayam, aripu, thol noi, arinja pun.
Endocrine disorders	Diabetes	Neer elivu noi
Eye infection	Eye infection	Kan vedanai
Fever	Fever, malaria fever	Kachal, Kosu kadi kachal
Gastro intestinal ailment	Ulcer, dysentery, pitta	Kudal pun, pittam
Genito urinary infection	Sexual weekness, menstrual problems, post natal care.	Mada vidai kolaru,
Hair disease	Hair disease	Thala mudi noi
Kidney stones	Kidney stone	Kal
Liver problem	Jaundice	Manja kamalai
Piles	Hemorrhoids	Mulam
Poisonous bite	Snake bite, centipede bite, bee bite, insect bite	Pambu kadi, pooran kadu, then poochi kadi, poochi kadi.
Respiratory system disorder	Cold, bronchitis, pneumonia fever	Jaladosham, nenju Sali,
Skeleto muscular system disorder	Arthritis, inflammation, muscular pain.	Vatham, veekam, chadai pidipu

Table 2. List of commonly used medicinal plants by Kurumba tribes of Chemmankarai, Nilgiri district, Tamilnadu.

S. No.	Binomial Name	Family	Vernacular name	Life form	Chemical constituents	Mode of administration	Parts Used	Medicinal Uses
1	*Abutilon indicum* Sweet	Malvaceae	Thuthi	Shrub	Abutilin A(1)	Oral and External	Leaves	Leaf decoction taken orally in empty stomach for 48 days to cure bleeding piles. Leaf paste and turmeric are mixed with heated coconut oil and heated for 15 -20 min, filtered and applied externally for piles.
2	*Achyranthes aspera* L.	Amaranthaceae	Naayuruvi	Herb	Triterpenoid saponin	Oral	Root and Leaves	Root decoction taken orally for stomach upset. Leaves are cooked as greens and used to reduce fever.
3	*Aloe vera* (L.) Burm.f.	Liliaceae	Kathalai	Herb	Anthraquinone	Oral and External	Leaves	The pulp is collected and mixed with coconut oil, filtered and used for external application for wounds. The pulp is taken raw orally to control white discharge in women.The plant is cut and applied on insect sting to avoid swelling and itching.
4	*Arisaema tortuosum* (Wall.) Schott	Araceae	Naga chedi	Herb	Arisaimenone	External	Tuber	The paste of tuber is used as anitidote for veterinary purposes.
5	*Bidens pilosa* L.	Asteraceae	Thatha thala vetti poo	Herb	Friedelinol(1)	External	Leaves	The leaves are crushed and applied on cut wounds for clotting of blood.
6	*Biophytum intermedium* Wight	Oxalidaceae	Little tree plant	Herb	Bioflavanoids	External	Whole plant	The plant juice is applied on the injured part and also for bleeding. Plant paste is applied on forehead for migraine.
7	*Cardamine africana* L.	Brassicaceae	Kattu kadugu	Herb	Alkaloid	External External	Whole plant	Used as herbal bath for babies. Crushed leaves are tied over wounds to improve healing.
8	*Cardiospermum halicacabum* L.	Sapindaceae	Mudakathan keerai	Climber	Cyclohexane-1,4,5-triol-3-one-1-carbolic acid.	Oral and External	Whole plant	The plant is collected and boiled with pepper water taken to reduce joint pain and strengthen bones. The leaves are grinded into paste with *Cissus quadrangularis* and

								applied on broken bones.
9	*Catharanthus roseus* (L.) G. Don	Apocynaceae	Nithya kalyani	Herb	Limonene	Oral Oral	Whole plant	The plant extract is grinded with rhizome of turmeric and pinch of salt and given internally to cure ulcer. Flower petals are boiled and regularly intaken to cure cancer
10	*Centella asiatica* (L.) Urban	Apiaceae	Vallarai	Herb	Siddiqui BS(1)	Oral	Leaves	The leaf paste is mixed with goat milk to increase memory power. Leaf powder is mixed with *Solanum nigrum* to control mouth ulcer. Leaf powder with empty stomach is taken to control white discharge in women.
11	*Cestrum aurantiacum* Lindl.	Solanaceae	Pnari elai	Shrub	Paraquai	External	Leaves	The leaves are crushed and applied on cut wounds.
12	*Colacassia esculenta* (L.) Schott	Araceae	Chaman keerai	Herb	B-Sitosterol	Oral	Leaves	The leaves and tubers are Cooked with fruit of *Tamarindus indica*.
13	*Commelina benghalensis* L.	Commelinaceae	Amala chedi	Herb	Anthocyanin	Oral	Leaves	The leaf juice with *Piper nigrum* are orally intaken to reduce fever.
14	*Cynodon dactylon* (L.) Pers	Graminae	Arugu	Herb	Cyanogenic hyperoside	Oral	Whole plant	The plant with cumin is boiled in water and taken regularly every day morning in empty stomach to cure digestive disorders.
15	*Dodonaea viscose* Jacq	Sapindaceae	Vellari chedi	Shrub	Viscosol	External External	Leaves	The leaf paste is applied externally on broken bones. The leaves are boiled in hot water and used for bath to get rid of body pain.
16	*Drymaria cordata* (L.) Willd. *ex* Schult.	Caryophyllaceae	Chick weed	Herb	Sphingoglycolipid	External	Whole plant	The plant extract is applied externally to odemas in small children.
17	*Emilia sonchifolia* (L.)DC.	Asteraceae	Pothu poo	Herb	Rhamnetin	External	Whole plant	Plant paste with salt is applied on throat to get rid of tonsillitis.
18	*Galinsoga*	Asteraceae	Potato weed	Herb	Triacontanol	External	Leaves	The crushed leaves are rubbed on

	parviflora Cav.							the body for treating insect sting and other skin inflammation.
19	*Hedychium spicatum* Sm.in A.Rees	Zingiberaceae	Spiked ginger lilly	Herb	α- Terpineol	External Oral	Leaves and Rhizomes	The leaves are burnt and the ash is applied over night to cure head ache. The rhizome powder is mixed with goat milk and used in treating asthma.
20	*Hydrocotyle javanica* Thumb.	Araliaceae	Water penny worth	Herb	Cardiac glycosides	External	Whole plant	The plant juice with ash is mixed and used to treat fever. The paste of plants is used to treat wounds and boils.
21	*Ipomoea cairica* Sweet	Convolvulaceae	Morning glory	Climber	Ergoline alkaloid	Oral	Root	Root decoction taken internally for urinary infection.
22	*Leucas aspera* Spr.	Lamiaceae	Thumbai	Herb	α and β sitosterol	Nasal	Leaves	1-2 drops of fresh leaf juice are dropped inside the nose to cure one side head ache.
23	*L. hirta* Spr.	Lamiaceae	Sema thumba	Herb	Coumarins	Oral	Root	Root decoction is used to treat bronchial diseases.
24	*Mangifera indica* L.	Anacardiaceae	Maa maram	Tree	Mangiferin	Oral	Seed	Seed powder is given in empty stomach to get rid of stomach worms.
25	*Michelia champaca* L.	Magnoliaceae	Chembakam	Tree	Liriodenine	External	Leaves and Bark	Leaves and bark are boiled in water and used for bath during fever.
26	*Mimosa pudica* L.	Ceasalpineaceae	Thotta churungi	Herb	Corcetin-dimethylester	Oral	Root	Root decoction taken orally to cure kidney stones.
27	*Myristica fragrans* Houtt.	Myristicaceae	Jathika	Tree	Erythrosurinamensin	Oral Oral	Fruits and seeds	The fruit are collected and flesh is made into pickles to cure digestion problems. The seed is scraped with breast milk and given to new born babies to increase immunity.
28	*Nicandra physaloides* Gaertn.	Solanaceae	Kattu kathiri	Herb	Carotenoid	Oral	Seeds	Decoction of seed is used to treat fever.
29	*Oxalis corniculata* L.	Oxalidaceae	Puli keerai	Herb	Methoxyflavones	Oral	Whole plant	The infusion of the plant is said to be a remedy for hook worm.
30	*O. latifolia*	Oxalidaceae	Puliyan keerai	Herb	β- Sitosterol	Oral	Leaves	The intake of leaf juice of plant treats urinary infection.

31	*O. tuberose*	Oxalidaceae	Neer puli keerai	Herb	Fructooligosaccharides	Oral	Leaves	One hand full of leaves is boiled with one glass of water to reduce fever.
32	*Peperomia tetraphylla*	Piperaceae	Othu chedi	Epiphytic herb	Aristololactam AII(1)	External	Leaves	Leaf paste are applied on fore head to cure migraine
33	*Phyllanthus amarus* Schum. and Thonn.	Euphorbiaceae	Keezhanalli	Herb	Phyllanthine	Oral	Leaves	The leaves are grinded with fresh goat milk and taken internally every morning in empty stomach to cure jaundice.
34	*Physalis peruviana* L.	Solanaceae	Thol thakkali	Herb	Cuscohygrine	Oral	Fruits	Fruits edible
35	*Phytolacca octandra*	Phytollacaceae	Poke weed	Herb	Phytolaccic acid	Oral	Roots	One gram of dried root powder have been used as laxtative.
36	*Piper mulesua*	Piperaceae	Kattu milagu	Climber	Piperine	Oral	Seeds	Seed powder is mixed with honey and taken to cure throat infection and cold.
37	*P. nigrum* L.	Piperaceae	milagu	Climber	α-tocopherol	Oral	Leaves	The leaf, seed decoction are used to treat cough, cold, indigestion.
38	*Polygonum chinense* L.	Polygonaceae	Climbing knot weed	Herb	Squalene	Oral	Stem	The stem is directly broken and chewed to get rid of dysentery.
39	*Psidium gujava L.*	Myrtaceae	Koiya	Small tree	Pentacyclic triterpenoid guajanoic	Oral	Leaves	Leaves are chewed with clove to get rid of tooth ache.
40	*Rhodomyrtus tomentosa* W.	Myrtaceae	Thavuthu palam	Shrub	α-tocopherol	External	Leaves	Fresh leaves are crushed and applied externally on the inflammation to treat tooth ache.
41	*Ricinus communis* L.	Euphorbiaceae	Amma nakku	Small tree	Ricinolein	Oral External External	Seeds	Pregnant women intake oil in size of 50 paise coin every day. The oil is applied on boils. The oil with neem is applied on hair to get rid of ring worm disease in head which causes hair fall.
42	*Rubia cordifolia* L.	Rubiaceae	Pambu vada	Climber	Rubiadin	Oral	Stem	Dried stem powder is mixed with honey and taken for insect bite.
43	*Rubus ellipticus* Sm.	Rosaceae	Mullu palam	Climber	β- Carotene	Oral	Fruit	The fruits are regularly taken by pregnant women as it increase the hemoglobin count in mother and fetus.
44	*R. racemosus* Roxb.	Rosaceae	Sema mullu	Climber	Anthocyanin	Oral Oral	Young Shoot &	Fruits are consumed to increase blood count. Shoots edible.

45	*Rumex nepalensis* Spr.	Polygonaceae		Herb	Anthraquinone	External	Fruits Leaves	The leaves are dipped in heated castor oil and places on swollen wounds and tied over night to reduce swelling.
46	*Ruta graveolance* L.	Rutaceae	Aruvatham pachai	Herb	Sesuiterpene hydrocarbon	External	Leaves and fruits	The leaf paste applied on skin externally to cure skin diseases. The fruits are threaded as chain and tied in hands of new born babies for protect from infection.
47	*Saraca asoca* (Roxb.) de Wilde	Caesalpiniaceae	Asoka maram	Tree	*Catechin*	Oral	Leaves	The leaf decoction is taken for 7 days in empty stomach to cure irregular menstruation.
48	*Sida rhomboidea* Mast.	Malvaceae	Kurunthotti	Herb	Cryptolepinone	Oral	Whole plant	Plant decoction is taken internally to cure rheumatism.
49	*Solanum nigrum* L.	Solanaceae	Manatha kali keerai	Herb	Gentisic acid	Oral Oral	Leaves	Fresh leaves are taken raw to cure mouth ulcer. Leaf decoction is mixed with pepper to reduce fever.
50	*Solanum sisymbrifolium* Lam.	Solanaceae	Thakali mullu palam	Herb	β-sitosterol	Oral	Fruits	Fruits edible.
51	*Spergula arvensis* L.	Caryophyllaceae	Dadhi keerai	Herb	-	Oral	Whole plant	The whole plant is cooked and consumed as body cooler.
52	*Spilanthes clava* W.	Asteraceae	Pal vali poo	Herb	Spilanthol	External	Flowers	The flowers are crushed and placed in place of tooth ache.
53	*Syzigium cumini* (L.) Skeels	Myrtaceae	Naval	Tree	Anthocyanins	Oral	Seeds	The seed powder are dried and taken regularly to have control on diabetics.
54	*Trifolium repens* L.	Fabaceae	Neer thamarai	Herb	-	Oral	Whole plant	Boiled with cumin and taken in empty stomach to cure ulcer problem.
55	*Urena lobata* L.	Malvaceae	Nar chedi	Herb	-	External	Whole plant	The twig is cut and soaked in water for few days and fibre is obtained. The leaves are grinded and applied on inflammation to reduce pain.
56	*Zingiber officinale* Rosc.	Zingiberaceae	Inchi	Herb	Gingerol	Oral	Rhizome	Rhizome juice is mixed with honey to cure throat infection

Table 3. Ingredients added for the preparation of herbal medicines by the Kurumba Tribes.

Botanical names	Other plants added in medicinal preparation	Other ingredients added
Abutilon indicum	*Curcuma longa*	Coconut oil
Aloe vera	--	Coconut oil
Catharanthus roseus	*Curcuma longa*	Salt
Centella asiatica	*Solanum nigrum*	Goat milk
Colacassia esculenta	*Tamarindus indicus*	--
Commelina benghalensis	*Piper nigrum*	--
Cynodon dactylon	*Cuminum cyminum*	--
Emilia Sonchifolia	--	Salt
Hedychium spicatum	--	Goat milk
Hydrocotyle javanica	--	Ash
Myristica fragrans	--	Breast milk
Phyllanthus amarus	--	Goat milk
Piper mulesua	--	Honey
Psidium gujava	*Syzygium aromaticum*	--
Rhodomyrtus tomentosa	*Syzygium aromaticum*	--
Ricinus communis	*Azadirachta indica*	--
Rubia cordifolia	--	Honey
Rumex nepalensis	--	Castor oil
Solanum nigrum	*Piper nigrum*	--
Trifolium repens	*Cuminum cyminum*	--
Zingiber officinale	--	Honey

Fig. 1. Showing the study area of Chemmankarai, Nilgiri District, Tamilnadu.

Fig.2. Showing some medicinal medicinal used by the Kurumba tribes of Chemmankarai, Nilgiri District, Tamilnadu. A- *Arisaema tortuosum*, B- *Hedychium spicatum*, C-*Rubia cordifolia*, D- *Spilanthes clava*, E-*Rubus ellipticus*, F- *Rhodomyrtus tomentosa.*

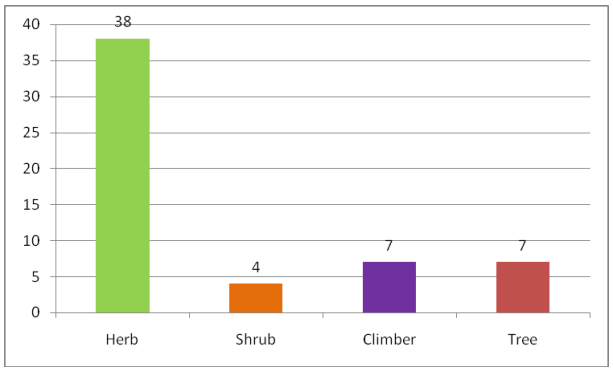

Fig. 3. Analysis of habit with respect to no. of species.

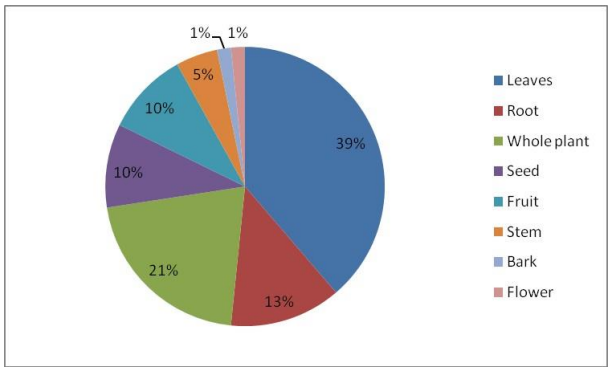

Fig. 4. Statistics of plant parts used.

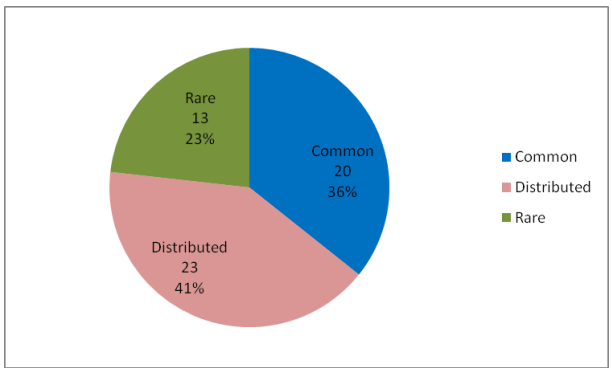

Fig. 5. Status of the plants in the study area.

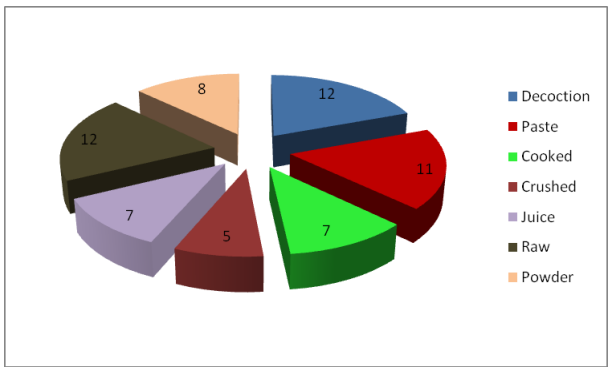

Fig. 6. Categories of Kurumba tribes mode of utilization for the preparation of medicine.

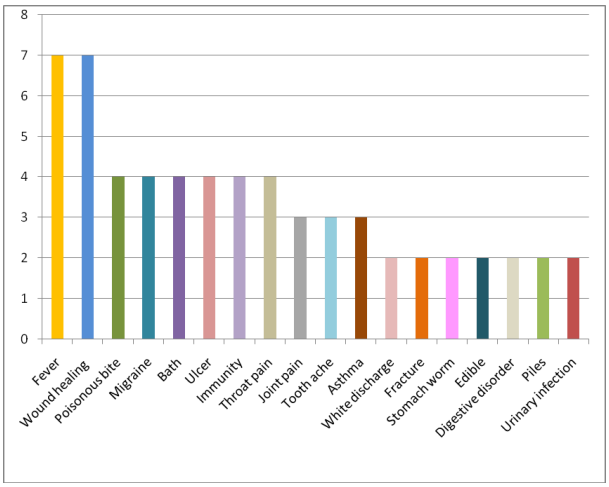

Fig. 7. Plants used for treating various diseases

In the present study more than a single plant used for same ailment, for example *Achyranthes aspera, Commelina benghalensis, Hydrocotyle javanica, Michelia champaca, Nicandra physaloides*, *Oxalis tuberose, Solanum nigrum* (fever), *Bidens pilosa, Cardamine africana, Cestrum aurantiacum, Hydrocotyle javanica, Rumex nepalensis, Aloe vera* (wound) likewise single plant is used for more than 1 disease *Achyranthes aspera* (fever and stomach problems), *Aloe vera* (wound, white discharge and insect sting), *Biophytum intermedium* (bleeding and migraine), *Cardamine africana* (bath and wound healing), *Cardiospermum halicacabum* (joint pain and fracture), *Catharanthus roseus* (stomach ulcer and cancer), *Centella asiatica* (increase memory,white discharge and mouth ulcer), *Dodonaea viscose* (fracture and body pain), *Hedychium spicatum* (Head ache and body pain), *Hydrocotyle javanica* (fever, boils and wounds), *Myristica fragrans* (digestive disorder and immunity), *Ricinus communis* (Ring worm disease and boils), *Ruta graveolance* (skin disease and immunity) and *Solanum nigrum* (mouth ulcer and fever). Several studies have reported the plants used for wound healing, fever, stomach problem, itching, skin irritations and other skin diseases in various parts of the world (Harsha *et al*., 2003; Ayyanar and Ignacimuthu, 2005; Chah *et al*., 2006 and Saikia *et al*., 2006) (Table 2 and Fig. 2).

3.2. Life form and parts used

Analysis of habit forms indicates 38 plants were herbs, 7 plants were trees, 7 plants were climbers and 4 plants were shrubs (Fig. 3). Observations were made earlier studies on ethnobotany have also been reported that the herbs are the dominant life form in their study area (Ayyanar and Ignacimuthu,2005; Xavier *et al,* 2014; Kalaiselvan and Gopalan,2014 and Kannadhasan *et*

al 2016). According to medicinal preparation of plant parts used, leaves are the most preferable part to prepare medicine (39%) followed by whole plant (21%), root (13%), seeds and fruits with 10%, stem (5%) and bark and flowers with 1% (Fig. 4). Similarly Xavier *et al.* 2014 found that leafy crude drug preparations are mostly recommended for ethnomedicine. Fig. 5 shows the number plants used for treating various diseases.

3.3. Method of preparation and mode of administration of plants

The preparation and usage of plant parts were categorized as decoction and raw 12% followed by paste 11%, powder 8%, cooked and juice 7% and raw (5% of the raw materials of plant parts such as fruits, leaf etc.) (Fig. 6). The decoctions were prepared by boiling the plants in water and the water level reduce to about required amount. The preparation of decoction is one of the common ailment practices among some tribal in Tamil Nadu (Ranjith and Ramachandran, 2010; Thirumalai *et al.,* 2012). The paste was prepared by grinding the fresh leaves in water or milk. The mode of administration routes were oral (58%), external application (41%) and Nasal (1%). External application were used to treat piles, skin, wound healing, migraine, broken bones, body pain, head ache, asthma and hairfall. Internal application were preferred to treat fever, ulcer, stomach upset, memory power, digestive disorder, urinary infection, stomach worm, jaundice, cold, tooth ache, rheumatism, diabetics, throat infection and nasal application was for head ache (Fig. 7). The utility of the same was mentioned earlier by Upadhya *et al.,* 2012.

3.4. Ingredients added

The medicines were prepared by the Kurumba tribal healers use more than one plants and other ingredients such as honey, goat milk, breast milk, coconut oil, castor oil, salt and ash to improve the tolerability and medicinal property of certain remedies (Table 3). Xavier *et al.* 2014 have been supported the present findings. Honey and Goat milk are used while intake of prepared medicine in powder forms. Oral medicines are prepared mostly using water, goat milk, breast milk and honey based on the needs.

4. CONCLUSION

The tribes of Chemmankarai area have been using numerous medicinal plants for therapeutic purpose since immemorial times. The people depend on these medicinal herbs for the treatment of various diseases such as fever, kidney stone, white discharge in women, asthma, skin disease etc., these plants are used readily as on when needed and so there is need for documentation and conservation of such Medicinal plants.

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