

Ethnobotanical Survey of Medicinal Plants in kalrayan hills, Eastern Ghats, Tamil Nadu

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ABSTRACT

An ethnomedicinal survey among the kalrayan hills, Salem district, Tamil Nadu during September 2010 to February 2012. A total of 64 species of ethnomedicinal plants belonging to 34 families and 10 species of ethno veterinary plants belonging to 10 families were reported with the help of standard flora among local healers, village head man and elderly tribal persons. The medicinal plants used by village people, tribal and are arranged alphabetically followed by botanical name, family name, local and English name and their therapeutic uses.

Keywords: Ethnomedicine; Ethnoveterinary plants; kalrayan hills; Tamil Nadu

1. INTRODUCTION

India is a veritable emporium of medicinal and aromatic plants. It has been estimated that out of 15,000 higher plants occurring in India, 9,000 are commonly useful, of which 7,500 are medicinal, 3,900 are edible, 700 are culturally important, 525 are used for fibre, 400 are fodder, 300 for pesticide and insecticide, 300 for gum, resin and dye and 100 for incense and perfume. In terms of the plant materials for traditional medicine, it is estimated that local communities has used over 7,500 plants species. Indian flora has innumerable medicinal plants, which are collected from forest by the tribal villagers. Many of them are being exported to the developed countries. Since ancient time, mankind depended mainly on the plant kingdom to meet its need for medicine, fragrance and flavours. Indian sub-continent is blessed with most varied and diverse soil and climatic conditions, which are suitable for the growth of almost every plant species. Medicinal and aromatic plants and their derivatives to the tune of nearly Rs 200 crores are produced annually in the country. Apart from meeting its domestic requirement, the country exports large quantities of medicinal and aromatic plants and derivatives. There is a considerable scope for India to contribute towards the increasing worldwide demand for medicinal and aromatic plant products. Usage of plants in medicine had been a long practice by man from ancient times. This practice of using plants in medicine is still prevailing not only among the tribals and others living in the rural areas.

2. MATERIALS AND METHODS

2. 1. Study area

The kalrayan hills is located in the Eastern Ghats range of eastern coast and situated diagonally south east towards Salem in the Villupuram District of Tamil Nadu. The total area is 1000 square kilo metres.

The latitude and longitude are N 11°38' and 12°01' and E 78°37' and 78°51' respectively. The hills range from 2000-3000 feet from sea level. This hills present along with Pachamalia, Javadi and Shevaroy hills. The Kalrayan hills divided into two sections such as Northern (Little Kalrayan) and Southern (Big Kalrayan) sections. The Northern Kalrayan average 2100 feet in height while the southern kalrayan average 3000 feet. Some streams are along with hills. They are Manimuktar, Gomuki and Mayura. The most prevalent soil type in this hill ranges from Red loam to black clay is the soil.

The annual temperature in summer seasons (April-June) is 40 °C and also in winter seasons (November-January) is 11 °C. Total annual rainfall recorded 971mm at Kallakurichi. According to 2005 census, the population of Kalrayan hills exceeded more than 1,45,000. In which the children population 60,000.

The Male population 40,000 and the women population 45,000. There are three major types of tribal peoples are living in this area such as Ariya gounder, Kurumba gounder and Jadaya gounder, and who are basically agriculturalists and rearing domestic animals such as cow, goat, sheep, buffalo and pigs. Major livelihoods of tribals are cattle farming, agriculture, Collection of fuel wood and forest resources such as herbal medicines, honey and some edible fruits and tubers from the nearby forests.

2. 2. Methodology

Field trips ranging from 2 days to a week were made in the study area in every month of the year of study (September 2010 to February 2012) in the Kalrayan hills. The interviews were conducted in the local language in Tamil. Ethnoveterinary information included with the local name of the particular plant, parts utilized, medicinal uses and methods of preparation and administration. The collected ethnoveterinary information was recorded on field note books and plants were identified using the Flora of the Presidency of Madras (J S Gamble 1935), Flora of Tamil Nadu (A. N. Henry and N. C. Nair) and Flora of Tamil Nadu Carnatic (Matthew 1983).

Ethnoveterinary information was gathered from all categories of village people such as the local healers village, head man, elderly persons and the person having a through knowledge of veterinary practices. Some of the commonly occurring veterinary disease were cross checked and conformed with the officials of the local veterinary department. The information gathered from one place was confirmed by different communities of village people, tribals and ethnic group in different places of investigation.

2. 3. Herborization

All the species cited as medicinal plants were collected from the field at reproductive stage, with the help of informants in duplicate. A field sheet was recorded with collectors name, vernacular name, local name and ecological parameters. The herbarium samples were dried, processed, identified taxonomically and the names were confirmed with the help of standard flora.

3. RESULTS AND DISCUSSION

The present study revealed that the local people of Kalrayan hills, Salem district, Tamil Nadu, were using 64 species of medicinally important plants belonging to 60 genera and 34 families (Table 1). These medicinally important plants were categorized into five major types. They are herbs (28), shrubs (6), climbers (2) and trees (28). The most medicinally important species were observed in Fabaceae (6), Euphorbiaceae (5) and Rutaceae (4) family. These are commonly occurring medicinally important plants used to treat 62 types of diseases, and the common diseases like cold, cough, fever, asthma, tuberculosis and as an antidote for poison and in wound healing.

This is the constant with the other general observation which has been reported earlier in relation to medicinal plant studies by the Indian traditional system of medicine like Siddha and Ayurveda (Kirtikar and Basu, 2001; Gogte 2000, Anonymous 1992).

Table 1. Ethnomedicinal plants used by tribals of kalrayan hills in salem district, Tamilnadu.

Plant Name	Family	Local Name	English Name	Parts Used	Therapeutic uses
<i>Abrus precatorius</i> L.	Fabaceae	Kuntrinmani	Crab's Eye	Root	Bronchitis, fever, hepatitis
<i>Abutilon indicum</i> D.	Malvaceae	Thuthi	CountryM allow	Leaves	Dysentery, jaundice, piles, ulcer
<i>Aegle marmelos</i> L.	Rutaceae	Vilvam	Bael tree	Leaves, Fruit	Blood sugar reduction, Skin boils, Diabetics, Cold and cough.
<i>Albizia lebeck</i> L.	Fabaceae	Vaagai	Siris tree	Bark, Leaves, Seed	Toothache, Antidote, Eye diseases
<i>Aristolochia bracteolata</i> Lam.	Aristolochiaceae	Aduthinnappalai	Bracteated Birthwort	Root	Decoction of roots is used to cure stomach pain.
<i>Artocarpus heterophyllus</i> L.	Moraceae	Pala	Jack fruit	Root, Leaves	Skin diseases, Ulcer, Asthma
<i>Asparagus recemosus</i> W.	Liliaceae	Thannervitan kizhangu	Indian asparagus	Root	Diarrhoea, cough, bronchitis
<i>Borassus flabellifer</i> L.	Arecaceae	Panai	Palmyra Palm	Root, young rachis	Toothache, toothbrush
<i>Borreria verticillata</i> L.	Rubiaceae	Nathaisoori	Shaggy Button Weed	Root	Leucorrhoea
<i>Butea monosperma</i> L.	Fabaceae	Purasu	Flame of the Forest	Seeds	Ringworm
<i>Calamus rotang</i> L.	Arecaceae	Pirambu	Rattan	Tuber	Cold, Cough and

					Fever
<i>Calotropis procera</i> A.	Earukku	Velleruku	Milk Weed	Bark, Flowers	Dysentery, Cold, Cough and Asthma
<i>Calophyllum inophyllum</i> L.	Guttiferae	Punnai	Indian Laurel	Seeds	Scabies
<i>Capparis divaricata</i> L.	Capparaceae	Thoratti	Indian Caper	Bark, Leaves	Dysentery, Stomach Problems
<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Mudakkaruthaan	Ballon Vine	Leaves	Plant leaf extract reduces body pain and decoction of whole plant is used for curing rheumatism.
<i>Cassia auriculata</i> L.	Caesalpiniaceae	Aavarai	Tanner's Cassia	Young stem, Leaves	Toothbrush, Stomach ulcer.
<i>Cassia fistula</i> L.	Caesalpiniaceae	Konrai	Golden Shower	Young leaves	Foetid smell of mouth.
<i>Cissampelos pareira</i> L.	Menispermaceae	Ponmusutai	Velvet-Leaf Pareira	Root, leaves	Fistula, Antidote, Blood purification
<i>Cissus quadrangularis</i> L.	Vitaceae	Pirantai	Adamant Creeper	Whole plant	Stem and leaf paste used to cure bone fracture and root paste used for gas trouble.
<i>Clausena dentate</i>	Rutaceae	Aana	---	Fruit	Rarely edible
<i>Coccinia grandis</i> (L.) Voigt	Cucurbitaceae	Kovai	Ivy-Gourd	Whole plant	Leaves juice taken for internally for ulcer.
<i>Dodonaea viscosa</i> J.	Sapindaceae	Virali	Jamacia Switch Sorrel	Leaves	Wounds, Swelling
<i>Euphorbia hirta</i> L.	Euphorbiaceae	Amman patcharisi	Pill-bearing Spurge	Leaves, flower, fruits	Asthma, respiratory infections
<i>Evolvulus alsinoides</i> L.	Convolvulaceae	Vishnukaranthai	---	Whole plant	Brain disorders, epilepsy, nervous problems
<i>Ficus mollis</i> V.	Moraceae	Kal-Athi	---	Bark	Urinary infections
<i>Ficus religiosa</i> L.	Moraceae	Arasu	Bot-tree	Leaves	Latex is given to children in fever and dullness.
<i>Garcinia indica</i> C.	Guttiferae	Pazhampuli	Kokam Butter tree	Leaves	Cosmetic ingredients
<i>Gmilina arborea</i>	Verbinaceae	Kumala	Candahar tree	Root Bark	Impotency, Prolong coitus time.

<i>Indigofera tinctoria</i> L.	Fabaceae	Avuri, Neeli	Indigo	Leaves	Used in bronchitis, dry cough, respiratory infections, tuberculosis.
<i>Ixora bractiata</i> L.	Rubiaceae	Thetti	---	Root Bark	Root bark paste with coconut pulp applied for inflammation.
<i>Jatropha curcas</i> L.	Euphorbiaceae	Kaatu-amanakku	Physic Nut	Whole plant	Roots are poultice for fractures Seeds are purgative treats diarrhoea.
<i>Limonia acidissima</i> L.	Rutaceae	Vila	---	Bark	Insect bites, diarrhoea, dysentery, snake bite.
<i>Macranga peltata</i>	Euphorbiaceae	Vaadha neeki	---	Wood	As cheap timber.
<i>Madhuca longifolia</i> J.	Sapotaceae	Iluppai	South Indian Mahua	Bark	Skin diseases
<i>Mangifera indica</i> L.	Anacardiaceae	Maa	Mango	Bark	Gargle for mouth ulcer, foetid smell.
<i>Melia azedarach</i> L.	Meliaceae	Malai vembu	Persian Lilac	Leaves, Seed oil, bark	Small box, viral fever, skin infections, bark extracts to control women hormone problems, antiseptic.
<i>Melothria maderaspatana</i> L.	Cucurbitaceae	Musumusukai	---	Leaves	Allergic, Asthma
<i>Michelia champaca</i> L.	Magnoliaceae	Senpagam	Golden Champa	Bark, Leaves, Flowers	Cold, Fever, Stomach ache, Urinary problems
<i>Mimosa pudica</i> L.	Mimosaceae	Thottasuringi	Sensitive-plant	Leaves	Used to Blood purifier, diarrhoea, dysentery.
<i>Mimusops elengi</i> L.	Sapotaceae	Mahizham	Spanish-Cherry	Bark, Leaves, Flowers	Toothache, Uterus problems
<i>Mucuna puriens</i> L.	Fabaceae	Poonaicali	Horse-eye Bean.	Seed	Male sterility, Nervous diseases
<i>Murraya paniculata</i>	Rutaceae	Kattu karuveppilai	---	Root, Leaves	Dropsy, body ache, fever, inflammation.
<i>Ocimum sanctum</i> L.	Lamiaceae	Thulasi	Sacred Basil	Leaves	Common cold, weakness, stress, to treat coughs in children.
<i>Pergularia daemia</i> (Forssk.) Chiov.	Asclepiadaceae	Uthamani	Hairknot Plant	Leaves	Leaves juice used for urinary problems, fever,

					asthma and gas trouble.
<i>Phoenix sylvestris</i> L.	Arecaceae	Echam	Wild Date Palm	Root	Toothache
<i>Phyllanthus amarus</i> Schum. & Thonn.	Euphorbiaceae	Kizha-Nelli	---	Whole Plant	Remedy against scabies, viral hepatitis, Jaundice.
<i>Phyllanthus emblica</i> L.	Euphorbiaceae	Nelli	---	Root bark, Leaves, Fruits	Fever, Mouth ulcer, Blood pressure
<i>Piper betle</i> L.	Piperaceae	Vettilai	Betel pepper	Leaves	Digestive
<i>Portulaca quadrifida</i> L.	Portulacaceae	Siru pasalai keerai		Leaves	Plant decoction is good for cough.
<i>Pterocarpus marsupium</i> L.	Fabaceae	Vengai	Indian Kino tree	Bark, Flowers, Gum	Fever, Toothache
<i>Punica granatum</i> L.	Lythraceae	Madhulai	Pomegranate	Fruit	Dysentery, Diarrhoea
<i>Santalum album</i> L.	Santalaceae	Santhanam	Santal	Wood	Pimples, Urinary infections
<i>Saraca asoca</i> D.	Fabaceae	Asogu	Fake Asoka tree	Bark, Flowers	Skin disease, Dysentery
<i>Senna sophora</i> (L.) Roxb.	Caesalpiniaceae	Ponnaaarai	Tinnivelly senna	Leaves	Used against ringworm and scabies.
<i>Sida cardifolia</i> L.	Malvaceae	Sitramuti	Country Mallow	Leaves	Stomatitis, Asthmatic bronchitis, Nervous disorders
<i>Solanum virgatum</i> L.	Solanaceae	Kanndankathari	---	Fruit	Unripe fruits are eaten to cure cough.
<i>Strychnos nuxvomica</i> L.	Loganiaceae	Eatti	Nuxvomica	Leaves	Body boils
<i>Syzygium cumini</i>	Myrtaceae	Naval	Black Plum	Bark, Seed, Leaves	Dysentery, diabetics, antihelminthic fever.
<i>Tephrosia purpurea</i> L.	Fabaceae	Kolinci	Wild Indigo	Whole Plant	Kidney, liver diseases
<i>Terminalia bellirica</i>	Combretaceae	Thandri	Belleric Myrobalan	Leaves, Fruit	Infertility, Diabetics
<i>Terminalia catappa</i> L.	Combretaceae	Padam	Indian Almond	Gum	Cough, Dysentery
<i>Tribulus terrestris</i> L.	Zygophyllaceae	Nerunjil	Puncture Vine	Root	Urinary stones, infections.
<i>Tylophora indica</i>	Asclepiadaceae	Nancharuppan	Emetic Swallow	Root, Leaves	Asthma, Antidote

			Wort		
<i>Withania somnifera</i> (L.) Dunal	Solanaceae	Ashwakantha	Winter Cherry	Root	Root paste is applied externally for ulcers, inflammatory conditions and scabies.

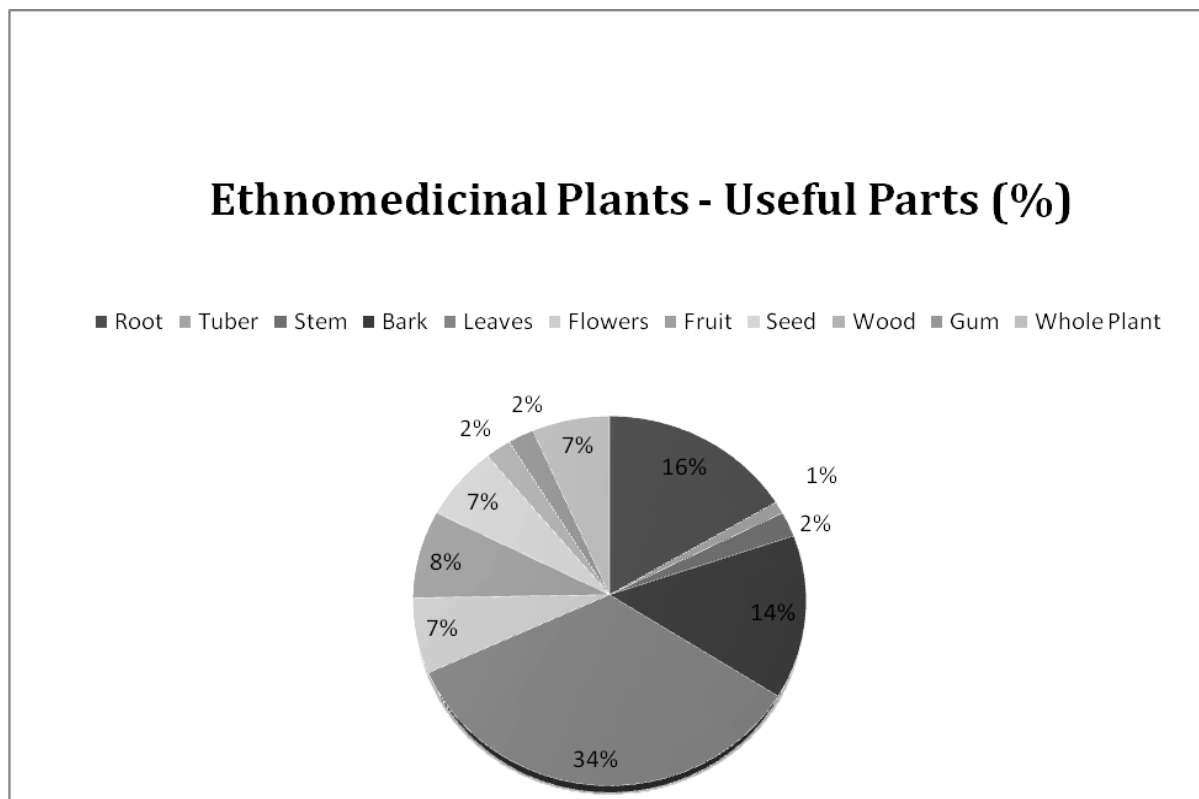
In other side most of the local healers and peoples are using the ethnoveterinary medicinal species (Table 2) such as *Cassia tora* L. (Ceasalpinaceae), *Cissus quadrangularis* L. (Vitaceae), *Citrullus colosynthis* L. (Cucurbitaceae), *Dalbergia latifolia* Roxb. (Fabaceae), *Dendrocalamus strictus* Nees. (Poaceae), *Lannea coramandalica* Merr. (Anacardiaceae), *Leucas aspera* L. (Lamiaceae), *Pedalium murex* L. (Pedaliaceae), *Taddalia asiatica* Lam. (Rutaceae) and *Wattakaka volubilis* L. (Asclepiadaceae). These plants were used for the treatment of skin diseases, fever, cough, worms and swellings in cow, goat and pigs.

Table 2. Ethnoveterinary plants and their therapeutic uses.

Botanical Name	Family	Local Name	English Name	Animals treated	Therapeutic Uses
<i>Cassia tora</i> L.	Ceasalpinaceae	Usithagarai	Sickle Senna	Cow, goat	Seed is mixed with water and ground into paste and applied topically to cure skin diseases.
<i>Cissus quadrangularis</i> L.	Vitaceae	Pirantai	Adamant Creeper	Goat	Leaves are ground with pepper and garlic and made into a decoction. The decoction is given to cure fever.
<i>Citrullus colosynthis</i> L.	Cucurbitaceae	Varikurumathai	Colocynth Bitter Apple	Cow, goat	Root is ground with water and the decoction obtained is given to cure cough.
<i>Dalbergia latifolia</i> Roxb.	Fabaceae	Eettimaram	East Indian Rosewood	Cow, goat	Stem bark is ground with garlic and pepper and the mixture is given for the animals which are lazy in grazing.
<i>Dendrocalamus strictus</i> Nees.	Poaceae	Kalmungil	---	Cow	Roasted fruits are given once a day to treat dysentery and cough until cure.
<i>Lannea coramandalica</i> Merr.	Anacardiaceae	Uthiyamaram	---	Pigs	Stem bark is ground with ginger and garlic and the paste is given to cure fever
<i>Leucas aspera</i> L.	Lamiaceae	Thumbai	White Dead	Cow	The leaf juice used to cure cut wounds and worms

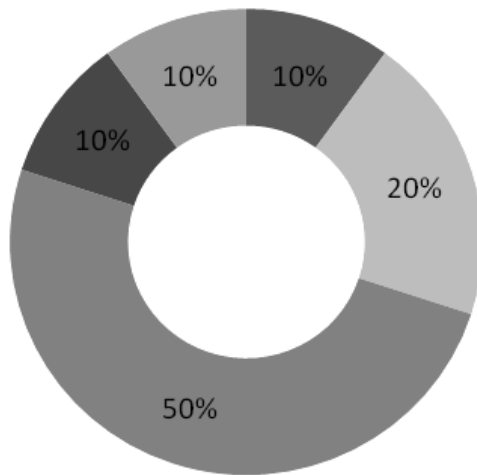
			Nettle		
<i>Pedaliium murex</i> L.	Pedaliaceae	Perunerunjil	Caltrops	Cow	Leaf is ground with ginger and common salt and given to cure fever
<i>Toddalia asiatica</i> Lam.	Rutaceae	Milagaranai	Forest Pepper	Cow, goat	Leaf is mixed with onion, pepper and garlic, ground into a paste and given to cure swellings.
<i>Wattakaka volubilis</i> (L. f.) Stapf.	Asclepiadaceae	Perunkurinjan	---	Cow, goat	Leaf paste is mixed with common salt and applied on affected places to treat all types of swellings.

Different types of preparations were made from medicinally important plants include decoction, juice, powder, oil, paste and whole plant extract. Some plants were even used in more than one form of preparations. Majority of the plants preparation were in the form of decoction obtained from the roots, seeds, stems, leaves and flowers. In this, the leaves are the predominant part utilized in ethnomedicinal treatments.



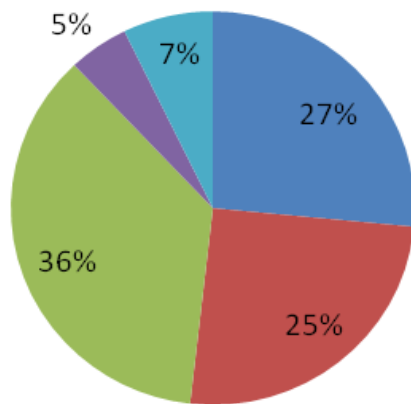
Ethnoveterinary Plants- Useful Parts(%)

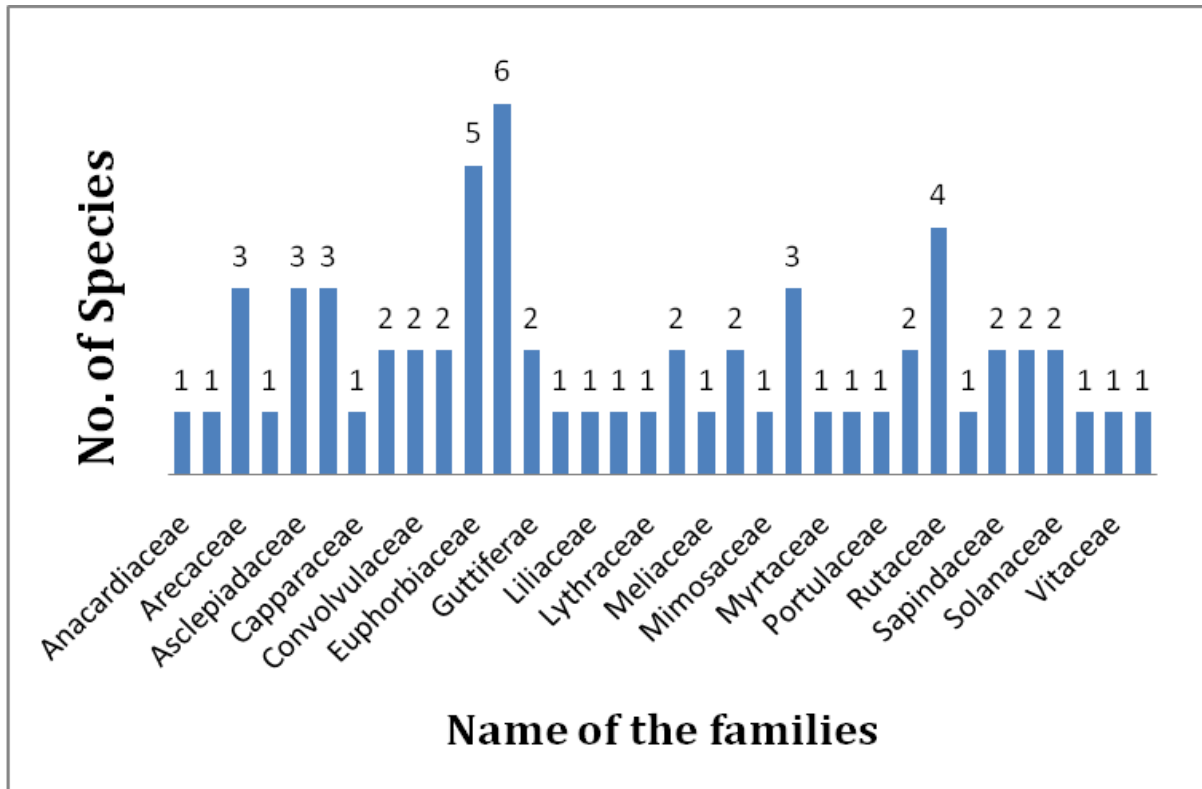
■ Root ■ Stem ■ Leaves ■ Fruit ■ Seed



Types of Preparations (%)

■ Decoction ■ Juice ■ Paste ■ Infusion ■ Food supplement





4. CONCLUSIONS

Tribal knowledge of plants in many tribal communities is changing because of rapid socioeconomic and cultural changes. Documentation of this knowledge is valuable for the communities and their future generations and for scientific consideration of wider uses of traditional knowledge in treating domestic animals. The low cost and almost no side effects of these traditional preparations with medicinal plants make them adaptable by the local community. The wealth of this tribal knowledge of medicinal plants points to a great potential for research and the discovery of new drugs to cure the diseases of animals. So, further scientific assesment of these medicines for phytochemical, biological and pre-clinical and clinical studies is, however, greatly needed.

Basically, medicinal plants play an important role in providing knowledge to the researches in the field of ethnobotany and ethnopharmacology. The observations of present study showed that traditional medicine plays a significant role among the local healers and people of kalrayan hills.

References

- [1] Anonymous, Ethnobotany in India, A Status report, All India coordinated research project in ethnobotany, Ministry of Environment Forests, Government of India, New Delhi, 1994.
- [2] Anonymous, *Annual Report*, Indian Council of Forestry Research and Education, Dehradun, 1992-1993, 193-207.

- [3] Anonymous, *Envis Newslett* 1(2) (2002) 5.
- [4] Anonymous, *The Useful Plants of India*, Publications and Information Directorate, New Delhi, 1992.
- [5] Anonymous, *Ethnobotany in India, A Status report*, All India coordinated research project in ethnobotany, Ministry of Environment Forests, Government of India, New Delhi, 1994.
- [6] Gamble J. S., Fischer C. E. C., *The flora of the Presidency of Madras*, Reprinted Edition, Vol. I-III, (Botanical Survey of India, Calcutta), 1959.
- [7] Henry A. N., Kumari G. R., Chitra V., *Flora of Tamil Nadu, India*, Series I, Vol II & III, Botanical Survey of India, Southern Circle, Coimbatore, 1987.
- [8] Nair N. C., Henry A. N., *Flora of Tamil Nadu, India*, Series I, Vol I, Botanical Survey of India, Southern Circle, Coimbatore, 1983.
- [9] Mathew K. M., *An excursion flora of Tamil Nadu, India*, Oxford and IBH Publishing Co. Ltd., New Delhi, 1991.
- [10] Jain S. K., Goel A. K., *A Manual of Ethnobotany*, (ed.) S K Jain, (Scientific Publishers, Jodhpur), 1995; 142.
- [11] Binu Thomas A., et al, *Int. Journal of Biological Tech.* 2(2) (2011) 72-75.
- [12] Ganesan S., et al, *Indian Journal of Traditional Knowledge* 7(2) (2008) 347-354.
- [13] Selvaraju A et al, *Medicinal Plants* 3(3) (2011).
- [14] Sankaranarayan S., et al, *J. Med. Plants Research* 4(12) (2010) 1089-1101.
- [15] Balakrishnan V., et al, *Global Journal of Pharmacology* 3(1) (2009) 15-23.
- [16] Mutheeswaran S., et al, *Journal of Ethnopharmacology* 137 (2011) 523-533.
- [17] S. Dhanam, *International Letters of Natural Sciences* 11(2) (2014) 197-208.

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