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Local Health Traditions: A case study from the Shola forest regions of Idukki district, Kerala state, India

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Abstract

Ethnobotanical uses of36 `Shola' (Tropical montane) forest species of Kerala state, South India, are discussed. The various uses to which the shola species are put into by the *Muthuva* tribes and the Tamilian natives are described with a Credibility Rating (CR) given to each information gathered. The plants are used against several diseases or ailments such as jaundice, alopecia, conjunctivitis, piles, varicose veins, coughs and colds, sprains and muscle spasms, cuts and wounds, fractures; for treating sleeplessness, head and back aches, stomach and tooth aches, boils and skin diseases; as laxatives, anti-diarrheals and anti-emetics; in dog and snake bites; as tick, fly and leech repellents, as fish poison; as mouth freshener, corn and callus remover, hair remover and as shampoo. Uses of certain species are associated with curious traditional beliefs. Such '*Magico-religious*' beliefs have a strong hold on the tribes, but need further tests to prove their truthfulness. Various causes for the decline of the tribal medical practitioners and the practice of the traditional medicines, the need to document such undocumented knowledge which are conveyed verbally from one generation to the others are also discussed.

1. Introduction

'Sholas' are stunted evergreen (*Tropical Montane*) forests situated in the most remote and hostile high altitude regions above 1,500 m msl along the Western Ghats. They are usually found as scattered patches in the valleys and depressions, dispersed among the grasslands and usually recoursing streams and water holes. Since the trees are stunted and profusely branched, without a straight bole, most of them do not possess any timber value. Usefulness of the shola plants also remained as a mystery, since the only tribal group '*Muthuvans*', who live in the close vicinity of these forests do not mingle with the locals to disclose any such information, nor there were any serious studies conducted in these areas.

Researchers usually avoid these forests mainly due to their remoteness and hostile nature. Very few scientific explorations were carried out in the sholas of Kerala. Initiative of the Botanical Survey of India in this respect is noteworthy. Still, a first-hand information on the botanical wealth, usefulness and ecological status of these forests are lacking. All these features, mainly the dearth of information, resulted in the conclusion that shola forests are 'unproductive' in all respects. With the result, vast regions of sholas were

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cleared out for establishing plantations of tea, coffee, eucalypts, wattle, oak etc in addition to those established in the adjacent grasslands - a more logical way to convert these so called 'unproductive' areas to productive.

However, with the onset of certain research projects funded by the Kerala Forest department, studies on the sholas gained momentum during early 90's. The present study on the ethnomedical aspects of the sholas is in fact an outcome of the taxonomical and ecological studies carried out in the various shola forests of Kerala by the author.

2. Materials and Methods

2.1 Study Area

In Kerala, sholas are mainly located in the High Ranges (situated approximately between 9^0 20′ to 10^0 20′ N Lat. and $76^0$30′ to 77^0 30′ E Long.) of Idukki district in the Western Ghats. It is a series of high hills, the highest point of the region being the *Anamudi* peak (2695 m), the tallest peak south of Himalayas.

Fortunately, most of the sholas in the high ranges now lie protected in the *Eravikulam National Park*, where a major part of the study is conducted. The other study areas are *Anamudi Shola National Park*(includes Mannavan Shola & Pullaradi Shola) and *Pambadam Shola, National Park*, all situated in the Marayur Forest Range of Munnar Forest Division, Idukki District, Kerala State.

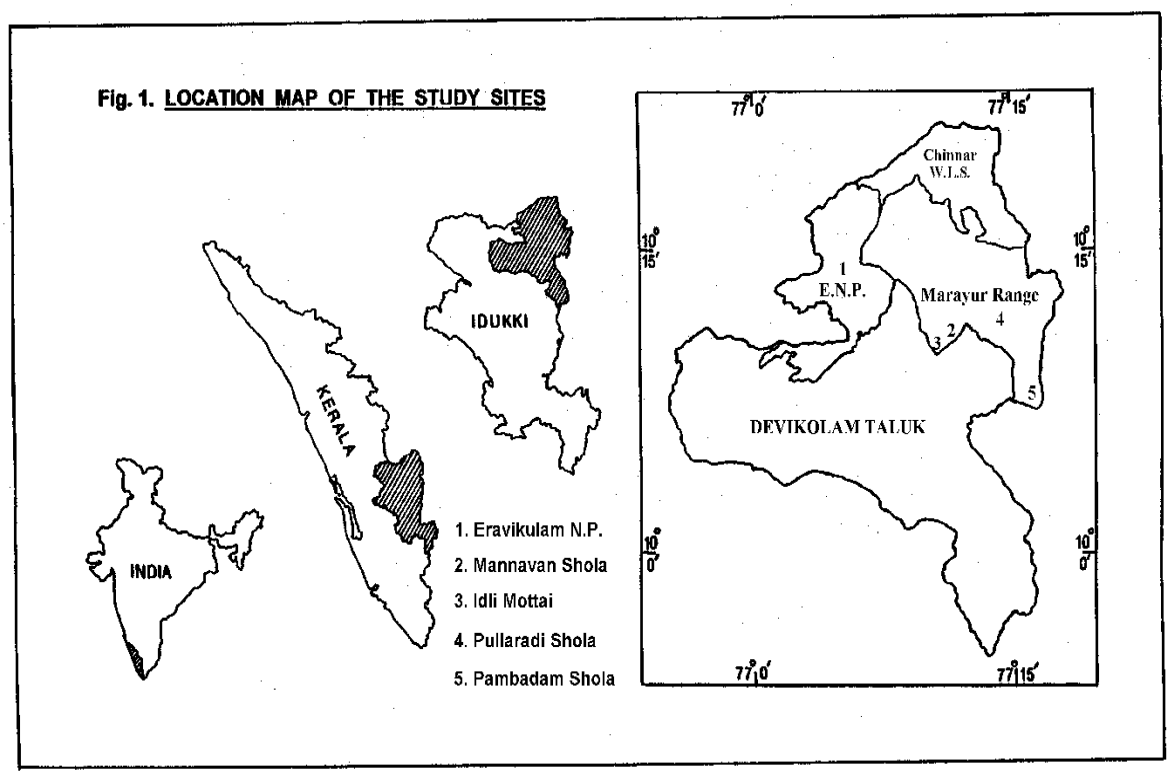

Fig. 1. LOCATION MAP OF THE STUDY SITES

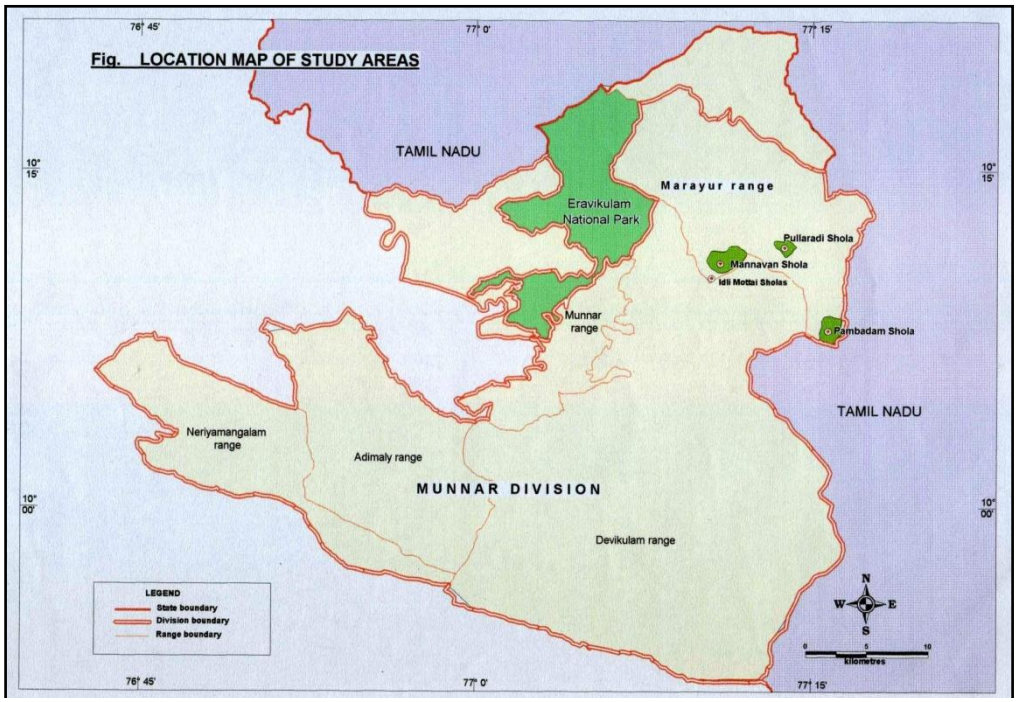

Fig. 1. Map of the study areas

2.2 The ethnic groups

Muthuvans, Mannans, Malapulayans, Ooralis, Mala Arayans and Malampandarams are the different ethnic groups who live in the High Ranges. Among them, Muthuvans are the only group who live in the high altitude shola forest regions and the study was mainly concentrated on them. They had come to the hills, hundreds of years ago from the Madurai plains of Tamil Nadu, following some political cataclysms (Nair, 1994; Singh, 1994). Muthuvans believe they are the superior class among the tribes. They neither mingle with other tribes or locals nor allow them to enter their houses or share food with them. They are good hunters who prefer an isolated life in the forest. They are good cultivators as well, and cultivate various cereals, millets, vegetables and nowadays cash crops such as sugarcane and lemon grass. Some of them are now employed as forest watchers, guides and trackers by the Forest Department due to their extraordinary knowledge of the territory. However, they depend on the forests for their day to day life.

A variety of Non Wood Forest Products (NWFP) are collected by them which include honey, bee-wax, bamboos, reeds, canes, seeds of certain trees like *Elaeocarpus*, fruits of the species of *Syzygium, Elaeocarpus, Rubus, Elaeagnus, Passiflora* etc and a variety of medicinal herbs. Species of *Anaphalis, Helichrysum, Eriocaulon* are collected for sale to the dry flower industry.Species of *Drosera* and *Gaultheria* are collected mainly for sale to the various pharmaceutical companies.

Apart from the *Muthuvans*, Tamilians who migrated from the Madurai District of Tamil Nadu centuries ago also inhabit the area. They belong to *Vellala Chetti* and

Telungu Chetti communities and are basically farmers living in well-established settlements ('*Oors*'). They also collect NWFP's from the forests. The crops mainly cultivated by them include cereals and millets such as Rice, Wheat, Finger Millet/Ragi (*Eleusine coracana*), Italian Millet/Thina (*Setaria italica*) and a variety of vegetables such as Beans, Cabbage, Cauliflower, Garlic, Onion, Potato, Turnip, Carrot, Beetroot, etc. Fruit trees such as Pear, Pomegranate, Apple, Orange, etc. are also cultivated by some, although in a small scale. Lemon grass and Sugarcane are the widely cultivated crops in these areas.

For distilling lemon grass and for processing sugar cane juice into jaggery, large amount of firewood is required in addition to the needs for cooking, room heating and other house hold activities. So their dependence on forest for firewood is more than that of Muthuva tribes. Kanthalloor Panchayath in which the Anamudi Shola National Park and Mannavan Shola is situated is having 2923 households with a total population of 10,963 as per the 2011 census. This include around 2470 people coming under Scheduled tribes and 3105 under Scheduled castes. Near Mannavan Shola there are mainly four Tamilian settlements with around 600+ houses in total. These include Keezhanthoor, Kanthalloor, Puthur and Perumala. Most of these people depend on the forest for their day today activities.

2.3 Methods

Frequent field trips were conducted to the study areas and plants were collected since 1994. Elder Muthuva tribes and other local Tamilians who are knowledgeable about the ethnobotanical details of the plants of the area were contacted personally and gathered the details. For purpose of confirmation of the identity of plants, they were taken to the field to show the plants. All voucher specimens collected are housed at *Kerala Forest Research Institute* herbarium (KFRI).

In many cases, specimens were taken to the elderly people in their settlements who were unable to accompany us to the field and information gathered from them. Even though both the Muthuvans and Tamilian natives disclosed the medicinal uses of the plants, but were reluctant to give details about the formulations of the various medicines they practice and the *Mantras* they were found to murmur during the administration of certain medicines. They also believe that the efficacy of their medicines will be lost if the details are disclosed to outsiders. It was only by love, faith and friendship for years, they disclosed whatever is recorded here.

To ascertain the authenticity of the information gathered on plant utilization, '*Credibility Rating*' were given to each and every documentation based on Balick (1996) – see Table 1. This innovative idea was first implemented at The New York Botanical Garden's (NYBG) *Institute of Economic Botany* (IEB). In the past there was little opportunity to evaluate the quality of data based on the way it was collected during ethnobotanical studies. Here the data with a rating of **1** have a reasonable certainty of being accurate, while those with a rating of **5** or **6** may be

less authoritative. By adopting this standardization method, the credibility of the information gathered is assured.

3. Results

The ethnomedical information collected on 36 species are tabulated below in an alphabetic sequence. Exotic species raised in plantations are indicated by an asterisk (*) mark.The *Credibility Rating* (CR) code number is given after uses.

Ageratina adenophora (Spreng.) King & Robinson - (Family: **Asteraceae**)

Local name: Neelagiri, Thravada
Habit: Perennial branched herb
Parts used: Leaves
Uses: Crushed and applied on fresh wounds.

Ageratum houstonianum Mill (Family:**Asteraceae**)

Local name: Michangala
Habit: Annual herb
Parts used: Leaves
Uses:Crushed along with lime and applied on cuts caused by iron knives or machetes; leaf paste applied over regions affected by *Alopecia* (abnormal hair loss).

Asparagus racemosusWilld. (Family:**Liliaceae**)

Local name: Thali Periyan
Habit: Climbing shrub
Parts used: Tuberous roots
Uses: Crushed and applied over oedematous swellings.

Balanophora fungosaJ. R. & G. Forst. (Family:**Balanophoraceae**)

Local name: Nila Bomb
Habit: Fleshy parasitic herb
Parts used: Whole plant
Uses: Ground into paste and used against Piles.

Centella asiatica (L.) Urb. (Family:**Apiaceae**)

Local name: Kuthirakkulambu Chedi
Habit: Prostrate herb
Parts used: Whole plant
Uses: Crushed and used against boils and skin diseases.

Cirsium wallichii DC. (Family:**Asteraceae**)

Local name: Seethi Mullu
Habit: Tall thistle with hollow stem
Parts used: Young shoots
Uses: Cooked and given to children to cure coughs and colds.

Cissampelopsis walkeri (Arn.) Jeffrey & Chen - (Family: **Asteraceae**)

Local name: Vettuva marunnu Chedi
Habit: Slender climbing herb
Parts used: Shoot
Uses: Crushed and applied on wounds.

Curculigo orchioides Gaertn. (Family:**Hypoxidaceae**)

Local name: Nilappana
Habit: Small stem less herb with fleshy rootstock
Parts used: Roots
Uses: Used as a purgative.

Cyanotis pilosa Schult. & Schult.f. (Family:**Commelinaceae**)

Local name: Kannali
Habit: Decumbent herb
Parts used: Whole plant
Uses: Given as a laxative to cattle.

Cymbopogon travancorensisBor - (Family:**Poaceae**)

Local name: Inchi Pullu, Lemon grass (E)
Habit: Perennial herb
Parts used: Leaves
Uses: Distilled oil is used against pains, coughs and colds.

Dodonaea viscose (L.) Jacq. var. ***angustifolia***(L.f.) Benth. (Family:**Sapindaceae**)

Local name: Vrali
Habit: Stiff bushy shrub
Parts used: Leaves
Uses: For headaches - leaves are stuck on fore head; for back aches - laid over cots spread with leaves; water boiled with the leaves is used to foment swellings, back aches etc or used for steam inhalation in coughs and colds.

Drosera peltata Sm. (Family:**Droseraceae**)

Local name: Koshuvotti Pullu
Habit: Slender insectivorous herb
Parts used: Whole plant
Uses: Plants are crushed and applied over corns on feet to remove them[1].
Note: It is largely collected and sold to pharmaceutical industry.

Emilia scabra DC. (Family:**Asteraceae**)

Local name: Poosha Thala
Habit: Small pubescent herb
Parts used: Leaves
Uses: Made into a paste and used against sprains and muscle spasms.

Eucalyptus globules Labill. (Family:**Myrtaceae**)

Local name: Eucali
Habit: Large tree
Parts used: Leaves
Uses: Distilled oil is used against sprains, painful joints, head&backaches, coughs& colds.

Gaultheria fragrantissima Wall. (Family:**Ericaceae**)

Local name: Kolgatte (Winter green)
Habit: Highly branched shrub
Parts used: Leaves
Uses: Crushed and applied against sprains and muscle spasms
Note: Harvested on a large scale and sold. An active ingredient in several ointments used for sprains and muscle spasms and also a flavouring agent in tooth pastes and tooth powders.

Gnidia glauca (Fres.) Gilg (Family:**Thymeleaceae**)

Local name: Nanju Naar, Nachi Naar
Habit: Large shrub to small tree
Parts used: Stem
Uses: Crushed along with the bark of *Syzygium cumini* and used as fish poison; crushed stems are allowed to putrefy in fields to repel pests.

Hemionitis ariifolia (Burm.) Moore - (Family:**Hemionitidaceae**- Fern)

Local name: Pattichevi, Poonakkathi
Habit: Terrestrial/lithophytic herb
Parts used: Leaves
Uses: Leaves made into a paste with turmeric and applied over cuts and bruises caused by dog bites; relieves pain & prevents infection.

Hypericum mysorense Heyne *ex* Wight & Arn.(Family:**Hypericaceae**)

Local name: Avaram chedi
Habit: Large shrub
Parts used: Leaves
Uses: Leaf paste is used to remove body hairs[2]. It is applied over body, wrapped with a piece of cloth and when dried, pulled out to remove the body hairs.

Lobelia leschenaultiana (Presl) Skottsb.(Family:**Lobeliaceae**)

Local name: Kattu pukayila
Habit: Tall course herb
Parts used: Leaves
Uses: Leaf paste mixed with water is used as a tick repellent in cattle. Crushed leaves are allowed to putrefy in paddy fields to repel destructive worms and beetles.

Mastixia arborea (Wight) Bedd. (Family:**Cornaceae**)

Local name: Kunthirikkam, Eramba Maram

Habit: Large tree

Parts used: Resin

Uses: Burnt to repel flies and mosquitoes.

Mussaenda hirsutissima (Hook.f.) Hutchinson ex Gamble (Family:**Rubiaceae**)

Local name: Vellayila Chedi

Habit: Large climbing shrub

Parts used: Petalloid sepal

Uses: The white coloured petalloid sepal is said to possess powers to cure conjunctivitis, if taken in arms and looked stealthily in darkness.

Oxalis corniculata L. (Family:**Oxalidaceae**)

Local name: Puliyaral, Uppili Chedi

Habit: Trailing herb

Parts used: Leaves

Uses: Chewed as a mouth freshener[1].Whole plant is crushed in goat's milk and used against stomachache and diarrhoea.

Physalis peruviana L. (Family:**Solanaceae**)

Local name: Malathakkali Keera

Habit: Perennial herb

Parts used: Leaves

Uses: Concentrated leaf decoction is used against Jaundice.

Piper mullesua Buch.-Ham. (Family:**Piperaceae**)

Local name: Thippali

Habit: Much branched woody climber

Parts used: Stem, fruits

Uses: Stem crushed and applied for tooth aches. Decoction made out of fruits is used against headaches and stomach aches.

Piper wightii Miq. (Family:**Piperaceae**)

Local name: Kattu Kurumulaku, Eya kodi

Habit: Short climber

Parts used: Fruits

Uses: Decoction made out of fruits used against headaches and stomach aches.

Plantago erosa Wall. (Family:**Plantaginaceae**)

Local name: Nila Chakka, Njaramboori

Habit: Scapigerous herb

Parts used: Leaves

Uses: Leaf paste used against varicose veins; also used as an antiseptic in wounds.

Polygonum chinenseL. (Family:**Polygonaceae**)

Local name: Mukkala, Oduthan

Habit: Scandent under-shrub

Parts used: Roots, leaves

Uses: Roots crushed in milk or water is used given against diarrhoea; crushed leaves used as a shampoo.

Pouzolzia bennettianaWightvar.***acuta*** (Wight) C.E.C. Fisch. (Family:**Urticaceae**)

Local name: Narali Kola, Sera Thandan

Habit: Erect herb

Parts used: Whole plant

Uses: Crushed along with Crabs and eggs and used against cuts and fractures[2].

Note: Crabs are caught by inserting a twig of the fern, *Pteris quadriaurita* into the hole which is slowly pulled out when the crab clutches hold of the dissected leaves of the plant.

Saprosma foetens (Wight) K. Schum. (Family:**Rubiaceae**)

Local name: Peenari, Theeta Nari

Habit: Small tree
Parts used: Wood
Uses: Wood is burned and the smoke inhaled to cure vomiting and diarrhoea in children.

Selaginella brachystachya (Hook. & Grev.) Spring(Family:**Selaginellaceae** (Pteridophyte)
Local name: Urakkenni Poovu
Habit: Prostrate herb
Parts used: Whole plant
Uses: Believed that plants kept over both the ears will induce sleep.

Solanum virginianum L. (Family:**Solanaceae**)
Local name: Kandankathiri
Habit: Stout thorny under shrub
Parts used: Fruit
Uses: Fruit pulp is rubbed on feet to repel leeches which is abundant in the sholas

Spilanthes calva DC. (Family:**Asteraceae**)
Local name: Nai Koppu, Nai Manjal
Habit: Annual herb
Parts used: Flowers
Uses: Crushed and mixed with the urine of opposite sex of the patient and used against dog bites and snake bites.

Syzygium cumini (L.) Skeels (Family:**Myrtaceae**)
Local name: Valiya Njaval
Habit: Large tree
Parts used: Bark
Uses: Bark crushed along with the stem of *Gnidia glauca* is used as fish poison.

Tetrastigma leucostaphylum (Dennst.) Alston (Family:**Vitaceae**)
Local name: Pashala Kodi
Habit: Large climbing shrub
Parts used: Whole plant
Uses: Crushed with Castor oil and applied over boils.

Toddalia asiatica (L.) Lam. (Family:**Rutaceae**)
Local name: Kantham Kolunthu
Habit: Thorny scandent shrub
Parts used: Leavesand buds
Uses: Leaves and buds are ground with rice flour and the cakes made out of it are used against coughs and cold in children. Fruits crushed along with young leaves of *Leucas lamifolia* and *Solanum anguivi* are given to cure stomach ache.

Vernonia conyzoides DC. (Family:**Asteraceae**)
Local name: Kaliyamman Pathiri Chedi
Habit: Stout erect herb
Parts used: Shoot
Uses: Plant crushed with lime is applied on wounds.

Table 1. Credibility rating for use information collected

No	Category	Credibility Rating
A	Collector uses or directly observed use	**1**
B	Informant uses or directly observed use	**2**
C	Informant heard/knew from a further source	**3**
D	Use reported from the literature	**4**
E	Common knowledge	**5**
F	Credibility of use information unknown	**6**

4. Discussion

Although the medicinal importance of several species were revealed by the tribals, in many cases they were reluctant to disclose the formulation of the drugs they employ. Among the 36 medicinal species under mention, at least 15 are used for more than one disease. *Dodonaea viscosa* var. *angustifolia, Eucalyptus globulus, Piper mullesua, P. wightii, Polygonum chinense, Ageratum houstonianum* etc are some the species. Similarly different species are used to cure the same disease. Whole plants or leaves of *Gaultheria fragrantissima* and *Drosera peltata* are collected mainly for sale. Oils extracted from Eucalyptus and Lemon grass, fruits of Pepper etc are collected for both self-use and sale. The only trees used for medicinal purposes are *Eucalyptus globulus, Gnidia glauca, Saprosma foetens, Syzygium cumini* and *Mastixia arborea*.

Major diseases such as jaundice, alopacia, piles, varicose veins etc are treated with traditional medicines. Minor diseases/ailments such as coughs, colds, aches of head, back, stomach and tooth are also treated. There are several antiseptic herbs in use against cuts and wounds. Medicines for fractures, sprains, muscle spasms, painful joints and oedematous swellings are also in use. *Spilanthes calva* is used against snake bite and dog bite, whereas the fern, *Hemionitis ariifolia* is used only against the latter. Certain plants are used as tick, fly or leech repellents or as fish poisons. Some plants are used as laxatives whereas certain others are used as anti-diarrheals and anti-emetic. A few species have cosmetic value. *Oxalis corniculata* is used as a mouth freshener; *Polygonum chinense* as a shampoo; *Drosera peltata* as a corn remover and *Hypericum mysorense* as a hair remover.

Uses of certain species are associated with curious traditional beliefs. *Selaginella brachystachya* is said to possess powers to induce sleep when kept over both the ears, *Mussaenda hirsutissima* to cure Conjunctivitis if taken in arms and looked stealthy in darkness, *Spilanthes calva* to cure dog and snake bite when used along with the urine of the opposite sex of the patient, *Drosera peltata* to detach the arm, if a bunch of the plant is kept in the arm pit for a while. Such beliefs which were referred to as `*Magico-religious*' beliefs by Rao and Shampru (1981) have a strong hold on the tribes, but need further tests to prove their truthfulness. The diseases or ailments under cure along with the species used for the purpose are tabulated below.

- **Jaundice**: *Physalis peruviana*
- **Alopacia**: *Ageratum houstonianum*
- **Conjunctivitis**: *Mussaenda hirsutissima*
- **Dog bite**: *Hemionitis ariifolia, Spilanthes calva*
- **Snake bite**: *Spilanthes calva*
- **Piles**: *Balanophora fungosa*
- **Boils and skin diseases**: *Centella asiatica, Tetrastigma leucostaphylum*
- **Coughs and colds**: *Cirsium wallichii, Cymbopogon travancorensis*
- **Varicose veins**: *Plantago erosa*

- **Sleeplessness**: *Selaginella brachystachya*
- **Cuts and wounds**: *Ageratina adenophora, Ageratum houstonianum, Senecio walkeri, Vernonia conyzoides, Plantago erosa*
- **Fractures**: *Pouzolzia bennettiana*
- **Head and back aches**: *Dodonaea viscosa, Eucalyptus globulus, Piper mullesua, Piper wightii*
- **Stomach aches**: *Piper mullesua, Piper wightii*
- **Tooth aches**: *Piper mullesua, Spilanthes calva*
- **Sprains and muscle spasms**: *Emilia scabra, Eucalyptus globulus, Gaultheria fragrantissima*
- **Painful joints and oedematous swellings**: *Asparagus racemosus, Dodonaea viscosa* var. *angustifolia*
- **Tick and fly repellents**: *Gnidia glauca, Lobelia nicotianifolia, Mastixia arborea*
- **Leech repellent**: *Solanum viarum*
- **Laxatives**: *Curculigo orchioides, Cyanotis pilosa*
- **Anti-diarrheals**: *Polygonum chinense, Saprosma foetens*
- **Anti-emetic**: *Cyanotis pilosa, Saprosma foetens*
- **Mouth freshener**: *Oxalis corniculata*
- **Corn remover**: *Drosera peltata*
- **Hair remover**: *Hypericum mysorense*
- **Shampoo**: *Polygonum chinense*
- **Fish poison**: *Gnidia glauca, Syzygium cumini, Hydrocotyle javanica*

Before this study, there was a dearth of information in this area as indicated from the earlier publications on this aspect (Anonymous, 1948-76; Chopra *et al*, 1956; Ramanathan, 1983; Nambiar *et al*, 1985; Jain, 1991, Mahadevan *et al*, 1998). The study on the taxonomical and ethnobotanical aspects of the shola forests brought forward fantastic information which revealed the importance of the conservation of the area (Kishorekumar, 2004, 2013, 2016; Kishorekumar *et al*, 2000; Kishorekumar & Sasidharan, 2010, 2012a, 2012b). However, many of the plants present in the area which are otherwise documented of their medicinal value are not used for those purposes by the tribes. Furthering studies to prove the medicinal value and efficacy of the various drugs employed in the traditional medicines are the need of the time.

5. Conclusion

Through various tribal development programmes which aided facilities such as good electrified settlements outside the forests, education and literacy programmes, mass communication facilities such as radio and television in the settlements, Muthuva tribes have now become more or less a civilized group. The lifestyle of the tribes have changed considerably in the recent past mainly due to mingling with the settlers from the plains. It is surprising to see that now they have even entered politics and there are a few political leaders among them. These sorts of changes havetheir own serious drawbacks. They have almost abandoned cultivation of traditional food crops

that are replaced by cash crops like Lemon grass, Sugar cane, Cardamom etc, which are more remunerative.

Muthuvans who were once self-reliant have thus become more or less a consumer community. Money spent for dress materials and cosmetics is on the increase. They have now started depending more on modern medicines and those who practice traditional herbal medicines are also declining. Younger generations are not depending on the traditional medicines nowadays due to their inefficacy. According to elder medical practitioners some of the reasons for the inefficacy of the traditional medicines are use of pesticides, chemical fertilizers, changes in the food and life habits and above all, loss of faith in the traditional medicines. The same trend has been reported by Sajeev & Sasidharan (1997) from Chinnar Wildlife Sanctuary, a rain shadow region lying adjacent to the present study areas.

The term 'civilization' should not only mean imposing 'knowledge' of the civilized world on the so called 'uncivilized' classes, but also should include methods and measures to learn from them. Ongoing tribal developmental programmes in the area do not include serious programmes to document the valuable ethnobotanical information which are facing extinction. No one would be able to retrieve these kind of undocumented knowledge which are conveyed verbally from one generation to the other. Urgent measures are so needed, to fill in this lacuna, because if lost it will be lost forever.

6. Acknowledgements

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