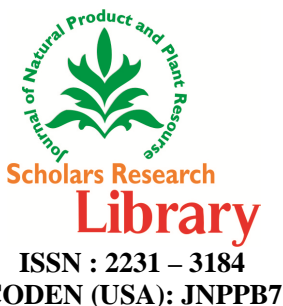




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Ethnomedicinal plants used by the Malayali Tribals in Jawadhu Hills of Thiruvannamalai District, Tamil Nadu, India

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ABSTRACT

The present study was designed to identify traditionally knowledgeable resource persons and document their indigenous knowledge on the utilization of medicinal plants among the Malayalitribals in various tribal villages of Thiruvannamalai district, Tamil Nadu, India. An ethnobotanical survey was carried out from June to September 2012 to identify the traditional uses of plants used by the Malayalitribals. With the help of standardized questionnaires, 17 informants between the ages of 30 to 81 were interviewed on the medicinal uses of the local flora. A total of 54 plant species were recorded in this study with six species of ethnoveterinary medicinal significance. The collected ethnomedicinal plants belong to 32 families and 48 genera. In terms, the number of medicinal plant species, Asclepiadaceae, Solanaceae, Asteraceae, Euphorbiaceae and Moraceae are dominant families. Among the different plant parts used for the preparation of medicine, the leaves were most frequently used for the treatment of diseases. Among the collected plants, trees are dominating other life forms such as herbs, climbers and shrubs. The preparation and utilization of plant parts were grouped into six categories viz., paste, taken as raw, powder, juice, decoction and smoke from the fire of plant parts. The collected ethnomedicinal plants are used to cure 40 types of diseases and the regularly treated ailments are wounds, skin diseases, poison bite, stomachache, diabetes, fever and respiratory problems. The study shows a high quantity of ethnobotanical novelty and use of plants along with the Malayalitribals reflects the revival of interest in traditional folk culture and ethno medicine.

Keywords: Biodiversity, Ethnobotany, Herbal medicine, India, Tribal people

INTRODUCTION

Ethno medicine is one of the systems of medicine that is widely practiced among the tribal and aboriginal populations for the treatment of ailments. Primitive societies have depended on herbal remedies for the treatment of diseases and disorders since time immemorial^[1]. The use of plants for medicinal purposes dates back to Vedic period. However, up to few decades back the herbal medicines were replaced by synthetic medicines due to their quick effect. Interestingly global trend is now going back; natural way of living and the necessity of green medicines are now being realized elsewhere, due to side effects of allopathic medicines. Most of the world's population still relies entirely on plant based medicines and plants yield active ingredients of most traditional medical products^[2]. According to World Health Organization, over 80% of the world population relies on traditional medicine for their primary health care needs^[3]. Though the traditional medical practices are empirical in nature, over 200 million people in India with limited access to the organized health centers, depend on varying degrees in the traditional system of medicine to cater their health care needs^[4]. Tribal communities dwelling the remote areas are depend on the forest resources to meet their livelihood and health care needs. The medicinal plants in the wild contribute to cater 80% of the raw materials used in the preparation of drugs. Herbal medicines have been used since antiquity in

treating diseases including infectious diseases. Therefore, documentation of traditional knowledge and ethnobotanical information play an important role in scientific research^[5].

However, scientific evaluation of herbal medicines is mandatory before they are administered in the mainstream of primary health care practices. In recent times, interest in traditional medicine has continuously been increasing, and therefore ethnobotanical studies have gained prominence to explore the traditional knowledge from tribal communities, particularly in the developing countries^[6]. The knowledge base and the practice have been marginalized due to political, social and economical reasons. On the basis of traditional knowledge, there are several pharmacological activities have been reported to the thousands of plant species and these observed health benefits may be credited to the presence of the various phytochemicals like polyphenols, terpenes, anthocyanins, flavonoids, alkaloids and glycosides^[7].

It has been well recognized that herbal drugs obtained from plants are much safer, with fewer or no side effects in treating various ailments. Several studies have revealed that tribal population, not only depend on plant based resources for medicines, food, forage and fuel, but also play a vital role in natural resource management that forms the core aspect of conservation biology. In the recent years, number of reports on the use of plants in traditional healing by either tribal people or indigenous communities of India is increasing^[8-14].

The main objective of this study was to assess the diversity of ethnomedicinal plant species used by Malayaltribals in Jawadhu hills of Thiruvannamalai district of Tamil Nadu, India and to document the traditional medical practices which are vanishing in a quick manner. Therefore, documenting indigenous knowledge through ethnobotanical studies is important for the conservation of biological resources and their sustainable utilization.

MATERIALS AND METHODS

Study area

The study area, KovilurPanchayath union of Thiruvannamalai district, Tamil Nadu is consisting 52 villages, out of this 10 villages were selected in the present study for the documentation of ethnomedicine. (Figure 1) Ten villages studied were Kovilur, Thombaretti, Thanchankollai, Athippatti, Perungattur, Mamathoor, Aattaiyanur, Mullippattu, Jamunamarathur and Motlapattu which were inhabited by the Malayaltribals.

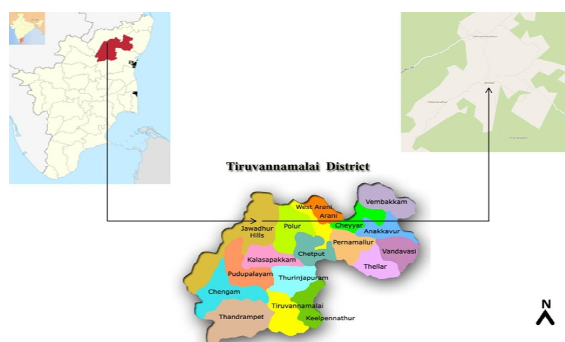


Figure 1. Location of study area

These villages are a part of EasternGhats situated above 3000 feet MSL. Each village consists of 50 – 100 hamlets with the total population of ~ 5000. KovilurPanchyath is occupied by 99% Malayaltribals and remaining 1% with other communities. Among the ten villages studied, eight villages do not have any transportation facilities. Most of the tribals are not in a position to go to the nearby towns for getting treatment due to poverty.

Malayali tribal people

‘Malaiyalis’ means hill dwelling people and they are in no way connected with the malayalis of kerala, the nearby state of Tamil Nadu. In physical appearance, they resemble the people of plains in TamilNadu and speak Tamil dialect of their own. They are considered as descendants of Kanchipuram district -a town near by Chennai City, between seventh and eleventh centuries. Malayaltribals live in thatched abodes with small door in front of it. In addition to this, a small thatched hut is maintained for cattle and poultry population. They have faith in village deities which are found invariably along with sacred groves.

Malaiyaltribals consume simple plants base foods includes *Dioscorea* roots. Each village is administrated by headmen called ‘Nattamai’ and he is considered as leader of the village and even during marriages and festivals, he

only initiates functions and ceremonies. Occupation being cultivation, other jobs like honey gathering, hunting, fruits gathering and selling into markets are observed in these villages. People with medicinal plant acquaintance representing different age group from the age 30 to 81 were selected as resource persons in the present study.

Ethnobotanical survey

Frequent field surveys were carried out in Kovilur Panchayath union in Eastern Ghats of Thiruvannamalai district, Tamil Nadu in different seasons during June to September 2012. Data were collected mainly from the resource persons, rarely from other elders in the community. The collected data were recorded on field note books, conventional methods like tape recorders and questionnaires were not used because of the people's poor response, fearing to convey or share their knowledge. Aged women and elderly people were mostly discussed for the medicinal uses of the collected plants. The correctly named specimens were taken for basic description. The plant twigs are collected along with buds, flowers or fruits. Supplementary collections like wood and bark, fruits of medicinal uses are also collected. The vernacular names of the plants were carefully obtained from the local people. The plant specimens were arranged in alphabetical order by botanical names, followed by families, important synonyms only local vernacular names, brief botanical description along with medicinal significance were noted. The medicinal plants used by the people were collected as voucher specimens following the normal herbarium techniques and the collected plants were identified using 'The Flora of the Presidency of Madras'. The vouchers specimens were deposited in the herbarium of Presidency College, Chennai, Tamil Nadu, and India.

RESULTS

In the present survey, we have documented totally 54 species of plants which are reported with ethnomedicinal uses and are enumerated in table 1. Of these 51 plants are used to treat diseases of humans and 6 plants are used to cure diseases of the domestic animals. The collected ethnomedicinal plants belong to 32 families with 48 genera. Among the 54 plants species collected during the present study, a total of 74 ethnomedicinal uses have been identified. The dominant families of the present study are Asclepiadaceae and Solanaceae (4 plants), Asteraceae, Euphorbiaceae, Moraceae (3 plants each), Apocynaceae, Caesalpiniaceae, Fabaceae, Loganiaceae, Myrtaceae, Rutaceae, Sapotaceae and Verbenaceae (2 plants each). Remaining 19 families have contributed only one plant species.

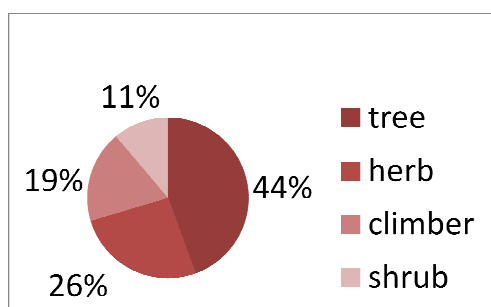


Figure 2. Percentage of life forms (Habits)

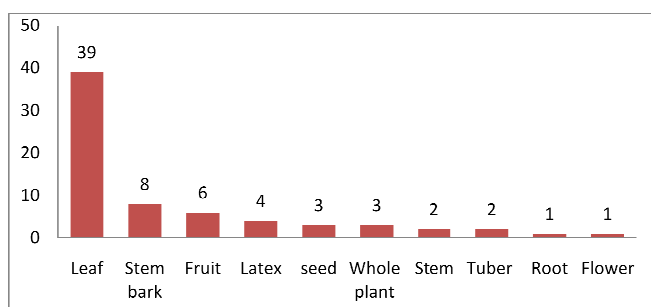


Figure 3. Different plant parts used for the preparation of medicine

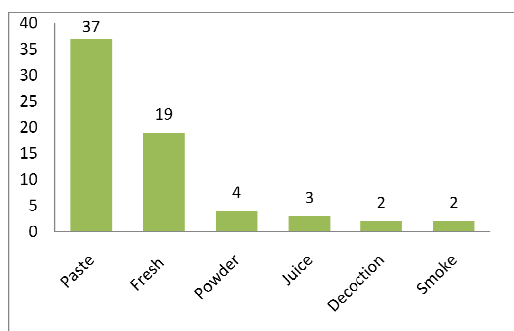


Figure 4. Mode of preparation of herbal medicines Formulation

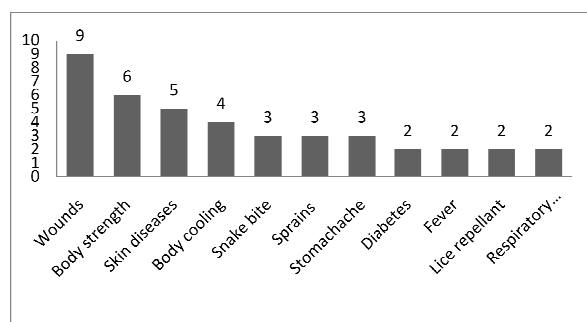


Figure 5. Dominant ailments treated by Malayali tribals in the study area

Among the life forms of enumerated plants in the present study, 24 (44 %) species are trees, 14 (26%) species are herbs, 10 (19 %) species are climbers and 6 (11 %) species are shrubs (Fig. 2). This data proved that trees are used as major sources of medicine among the tribal people. Regarding plants parts used to heal the documented diseases, leaves are used to treat more number of diseases (39), followed by stem bark (8), fruit (6), latex (4), seed (3), whole plant (3), stem (2), Tuber (2), root and flower (1 each) (Fig. 3).

Table 1 List of Ethnomedicinal plants used by the Malayaltribals in Thiruvannamalai district of Tamil Nadu

Name of the plant	Family	Local name	Life form	Ethnomedicinal uses
<i>Agave Americana</i> L.	Agavaceae	Sotrukatraalai	H	Leaf gel portion in heated and applied over infected wounds to heal soon.
<i>Ageratum conyzoides</i> L.	Asteraceae	Nathaboundu	H	Leaf paste is applied to cure cut wounds and injuries.
<i>Alangium salvifolium</i> (L. f.) Wang.	Alangiaceae	Alingimaram	T	Dried leaf powder is mixed with hot water and taken orally to cure bowel complaints. The leaf powder is given to cattle's to cure loss of appetite.
<i>Albizia amara</i> (Roxb.) Boivin.	Mimosaceae	Thurinji	T	The leaf is ground into paste and applied over the head to control hair fall.
<i>Annonasquamosa</i> L.	Annonaceae	Seethamaram	T	The smoke produced from the dried leaves during the heat is used as lice repellent.
<i>Argemone Mexicana</i> L.	Papaveraceae	Brahmathandu	H	Leaves and seeds are ground in to a paste and applied on affected places to cure wounds and itches.
<i>Artocarpus heterophyllus</i> Lam.	Moraceae	Palaa	T	Dried and powdered stem bark is mixed with hot water and taken orally for 40 days to cure dog bite.
<i>Asparagus racemosus</i> Willd.	Asparagaceae	Neervitankilangu	C	Tubers are eaten raw to increase erection in males. Eating the tubers is also believed to increase the body strength.
<i>Azadirachta indica</i> A. Juss.	Meliaceae	Veppamaram	T	Young leaves are taken orally to cure chicken pox.
<i>Bauhinia racemosa</i> Lam.	Caesalpiniaceae	Iruvittanaram	T	Powdered stem bark is mixed with the leaf powder of <i>Cassia fistula</i> and ground into a paste and given to cattle to solve muscle pain and swellings.
<i>Buchanania axillaris</i> (Desr.) Raman.	Anacardiaceae	Sulukamaram	T	Fresh stem bark is ground into paste with coconut oil and applied over the affected places to cure sprains.
<i>Calotropis gigantea</i> (L.) R. Br.	Asclepiadaceae	Eruku	S	Dried leaves are soaked for a night clay-pot and decoction is taken orally along with hot water for eight days to prevent heart attack . Latex is tied with cloths for 3 days on affected places to cure sprains.
<i>Caralluma umbellata</i> (Roxb.) Haw.	Asclepiadaceae	Kallimulliyam	H	Whole plant parts are eaten raw to cure gas troubles. The paste of whole plant parts are used to cure heel cracks.
<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Kotthankodi	C	Young leaves are tied with cloths over the throats of cattle's to recover from throat infection.
<i>Cassia fistula</i> L.	Caesalpiniaceae	Konnamaram	T	Fresh bark is ground into paste and taken orally with hot water to cure insect bites.
<i>Cayratia pedata</i> (Lam.) Juss. ex. Gagnep.	Vitaceae	Anjukakodi	C	Young leaves are ground into paste and applied topically to treat snake bite.
<i>Croton bonplandianum</i> Baillon.	Euphorbiaceae	Yerpoolanpoundu	H	Leaves are ground into paste and applied over the affected places to cure wounds.
<i>Dioscorea oppositifolia</i> L.	Dioscoriaceae	Kavalakilangu	C	Fresh tubers can be eaten raw to strengthen the body.
<i>Diospyros chloroxylon</i> (Roxb.)	Ebenaceae	Vetkanamaram	T	Leaf paste is taken with hot water to cure snake bite and stomachache.
<i>Ficus benghalensis</i> L.	Moraceae	Aalamaram	T	Young leaves are used as tooth brush to cure toothache and gum ache.
<i>Ficus racemosa</i> L.	Moraceae	Athimaram	T	Young leaves are made into paste and taken orally to cures the acidity related problems. Fruit and latex obtained from root is mixed with hot water and taken orally in the empty stomach for controlling over bleeding in women and to prevent premature ejaculation in men.
<i>Gmelina arborea</i> Roxb.	Verbenaceae	Kumilamaram	T	The wood of this tree is used for construction purposes.
<i>Gymnema sylvestre</i> (Retz.) R.Br. ex. Schult.	Apocynaceae	Sirukurinjan	C	Leaves and fruits are made into paste and taken orally to cure diabetes. Leaves are mixed with the fruits of <i>Syzygium cumini</i> and taken orally to cure diabetes.
<i>Hemidesmus indicus</i> (L.) R. Br.	Periplocaceae	Sirumaavalikodi	C	Powdered leaves and root are mixed and taken orally along with hot water to reduce body heat. Roots are eaten raw to cure piles.
<i>Holoptelea integrifolia</i> (Roxb.) Planch.	Ulmaceae	Aavulimaram	T	Bark is made into paste and applied over the affected places to cure paralysis.
<i>Hybanthus enneaspermus</i> (L.) F.V. Muell.	Violaceae	Otharai	H	Leaves used as green vegetable to strengthen the body.
<i>Ipomoea staphylina</i> Roem. & Schult.	Convolvulaceae	Onankodi	C	Tender leaves are mixed with betel leaves and made into paste. The paste obtained is given orally to women during delivery time to ease the falling of placenta.
<i>Jatropha curcas</i> L.	Euphorbiaceae	Kottaamanichedi	H	Stem is used as tooth brush to get relief from foul odour.
<i>Jatrophagossypifolia</i> L.	Euphorbiaceae	Sivappuchedi	S	Latex is applied over wounds to heal soon. The Latex is used for curing wounds in cattle.

<i>Kleiniagrandidiflora</i> (Wall. ex. Dc.) Rani.	Asteraceae	Kallumaram	T	Leaf paste is applied on scalp to rid off lice.
<i>Lantana camara</i> L.	Verbenaceae	Randanachedi	S	Leaf paste is applied to cure cuts and wounds.
<i>Leucasaspera</i> (L.) R. Br.	Lamiaceae	Thumbai	H	Paste of entire plant is applied for hooves infection and to cure wounds in Cattle. Juice of flower is taken along with mother's milk and applied as eye drops to avoid poor eye sight.
<i>Limoniaacidissima</i> L.	Rutaceae	Vilamaram	T	Fruit pulp is eaten to strengthen the body.
<i>Mamlikarahexandra</i> (Roxb.) Dubard.	Sapotaceae	Palaamaram	T	Latex is used to cure sprains.
<i>Mimusopselengi</i> L.	Sapotaceae	Magadamaram	T	Seed paste is mixed with honey and taken orally to treat snake bite.
<i>Ormocarpumcochinchinense</i> (Lour.) Merr.	Fabaceae	Elumottaithalai	S	Leaf paste is mixed with goat's milk and egg and applied on fractured area to heal soon. The mixture is taken orally to boost immunity power and body strength.
<i>Oxalis corniculata</i> L.	Oxalidaceae	Chootuchedi	H	Leaf juice is taken orally to make body cool.
<i>Partheniumhysterophorus</i> L.	Asteraceae	Kasapuchedi	H	Leaf paste is mixed with castor oil and applied over stomach to reduce stomach pain.
<i>Pergulariadaemia</i> (Forsk.) Chiov.	Asclepiadaceae	Uthamanithalai	C	Leaf juice is applied over the throat to cure throat infection.
<i>Plumeriarubra</i> L.	Apocynaceae	Poomaram	T	Bark is made into paste with egg and goat's milk and taken orally in empty stomach to cure spider bite, snake bite and scorpion sting.
<i>Premnatomentosa</i> Willd.	Verbenaceae	Peenjimaram	T	Shade dried leaves and stem are made into powder. The powder is mixed with coconut oil applied to cure wounds and itches.
<i>Psidiumguajava</i> L.	Myrtaceae	Koyya	T	Leaf is mixed with the leaves of <i>Diospyroschloroxylon</i> (Roxb.), <i>Chloroxylonswietenia</i> DC. and made into paste. The paste is taken orally to cure snakebite.
<i>Semmtora</i> (L.) Roxb.	Fabaceae	Thavaraichedi	S	Leaves are cooked with green gram and eaten to reduce body heat.
<i>Solanumerianthum</i> D. Don	Solanaceae	Karupanchanchedi	S	Leaf paste is applied to treat skin infections and skin allergies.
<i>Solanummelongena</i> L.	Solanaceae	Mullikacheddi	H	Fruits are cooked and eaten to reduce indigestion.
<i>Solanumnigrum</i> L.	Solanaceae	Akathikerai	H	Leaf paste is applied to cure skin diseases.
<i>Solanumtrilobatum</i> L.	Solanaceae	Thuthuvilai	C	Dried fruits are taken orally to cure respiratory problems. Leaves are eaten to reduce fever and to strengthen the body.
<i>Strychnosnux-vomica</i> L.	Loganiaceae	Etti	T	Small amount of bark is made into paste along with goat's milk and taken orally for 3 months to cure whooping cough.
<i>Strychnospotatorum</i> L.	Loganiaceae	Thefrankottai	T	Seed paste is mixed with honey and applied topically to treat chronic wounds and infections, particularly knee joint wounds and infection.
<i>Syzygiumcumini</i> (L.) Skeels.	Myrtaceae	Naavamaram	T	Bark paste is taken along with honey goat's milk to control blood pressure.
<i>Terminaliachebula</i> Retz.	Combretaceae	Kadukkamaram	T	Fruit is made into paste with castor oil and applied over cuts and wounds to heal soon. Tender fruits are boiled with salt and eaten to cure ulcer.
<i>Toddaliaasiatica</i> (L.) Lam.	Rutaceae	Melaurinjan	H	Leaves are made into paste and given orally to cure gas troubles in cattle.
<i>Tribulusterrestris</i> L.	Zygophyllaceae	Mulchedi	H	Leaf paste is eaten to cure gonorrhoea and sexually transmitted diseases.
<i>Tylophoraindica</i> (Burm. f.) Merr.	Asclepiadaceae	Paalkodi	C	Leaf paste is mixed with castor oil and applied over scalp before taking bath to keep body cool. Leaf paste is taken orally to treat fever and Cold. Fresh leaves are taken with honey for 48 days to cure respiratory problems.
<i>Wrightiatinctoria</i> (Roxb.) R.Br.	Apocynaceae	Veppalai	T	Smoke obtained from the dried leaves is used to repel flies in cattle.

Life Form (Habit): T – Tree; H – Herb; S – Shrub; C – Climber

The preparation and utilization of plant parts were grouped into six categories (Fig. 4) viz., paste (37 uses), taken as raw (19), powder (4) juice (3), decoction and smoke from the fire of plant parts (2 each). The collected ethnomedicinal plants are used to cure 40 types of diseases such as blood pressure, body cooling, body strength, bone fracture, bowel complaints, chicken pox, cold, cough, cuts, delivery problems, diabetes, dog bite, erection in males, eye diseases, fever, foul odour, gas troubles, gonorrhoea, gum ache, hair fall, heart attack, heel cracks, indigestion, injuries, insect bites, lice repellent, piles, poisonous bites, premature ejaculation in men, respiratory problems, rheumatism, sexually transmitted diseases, skin diseases, snake bite, sprains, stomachache, throat infection, toothache, ulcer and wounds (Fig. 5).

CONCLUSION

The study shows a high degree of ethnobotanical novelty. The use of herbal remedies is important among the Malayaltribals in Thiruvannamalai district and it reflects the revival of interest in traditional folk culture and ethno medicine. Accurate knowledge of the plants and their medicinal properties are held by only a few individuals in this community. The wealth of tribal knowledge on medicinal and other utility of plants gains a huge potential for research on the aspect of discovery of new drugs to fight various diseases, obtaining new foods and other novel uses.

Acknowledgements

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