

ETHNOMEDICINAL SURVEY OF JAWADHU HILLS IN TAMIL NADU

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ABSTRACT

Ethnobotanical survey was made on the utilization of medicinal plants among the people of selected six villages from Jawadhu hills, in Tamil Nadu, was carried out during December 2009-April 2010. They use forest plants, weeds, fruit plants, vegetables, spices, ornamental plants, ferns and many others as traditional medicine. Although many of these species are known as medicinal plants, others are mainly used for non-medicinal purposes such as preparing agricultural implements. *Santalum album*, *Terminalia bellirica*, *Cassia fistula*, *Gymnema sylvestre*, *Melia dubia* and *Rauvolfia tetraphylla* are the leading species used as remedies against a variety of complaints. The results of the present study provide evidence that medicinal plants continue to play an important role in the health care system of this tribal (Malayalis) community in Jawadhu hills of Tamil Nadu.

Keywords: Ethnomedicinal, Jawadhu Hill's, Malayalis people, Thiruvannamalai

INTRODUCTION

The medicinal plants are rich in secondary metabolites (which are potential sources of drugs) and essential oils of therapeutic importance. The important advantages claimed for therapeutic uses of medicinal plants in various ailments are their safety besides being economical, effective and their easy availability (Atal and Kapoor, 1989; Siddiqui, 1993). Because of these advantages the medicinal plants have been widely used by the traditional medical practitioners in their day to day practice. According to a survey (1993) of World Health Organization (WHO), the practitioners of traditional system of medicine treat about 80% of patients in India, 85% in Burma and 90% in Bangladesh (Siddiqui, 1993; WHO, 1993).

Ethnobotany allows interaction between researcher with the local people that have the knowledge about use of plants. These people manage and conserve significant amounts of biological resources useful for industry and world community (Medeiros *et al.*, 2007).

Ayurveda is one of the most popular codified medical traditions in India. Ayurveda traces its origins to the Vedic ages. The Vedic texts, thereby, mention numerous Indian medicinal plants that are grown throughout the Indian subcontinent. Besides Ayurveda, Siddha and Unani medicinal practices also used several trees to prepare medicines. The usage of medicinal plants for curing diseases goes back several millennia. While most of the medicinal plants are native to India, some have their origin in foreign countries. The probable trade between the ancient civilizations and the arrival of the Europeans paved the way for these plants "entrée" into the subcontinent.

According to World Health Organization (WHO) more than 80% of the world's population relies on traditional medicine for their primary health care needs. Use of herbal medicines in Asia represents a long history of human interactions with the environment. Plants used for traditional medicine contain a wide range of substances that can be used to treat chronic as well as infectious diseases. A vast knowledge of how to use the plants against different illnesses may be expected to have accumulated in areas where the use of plants is still of great importance (Diallo *et al.*, 1999).

Aim of the present study is to highlight the traditional uses of some medicinal plants of Jawadhu hill's in Tamilnadu. To document the natural resources use pattern of the study area and indigenous knowledge associated with them. To encourage the local communities especially the younger generation to propagate and protect the medicinal plant wealth in the study area. To explore the possibilities of conservation and sustainable development of rare and endangered medicinal plant by involvement of rural communities in their native habitats. To assess and identify the factors affecting biodiversity of medicinal and aromatic plants and indigenous knowledge of the area.

Study Area

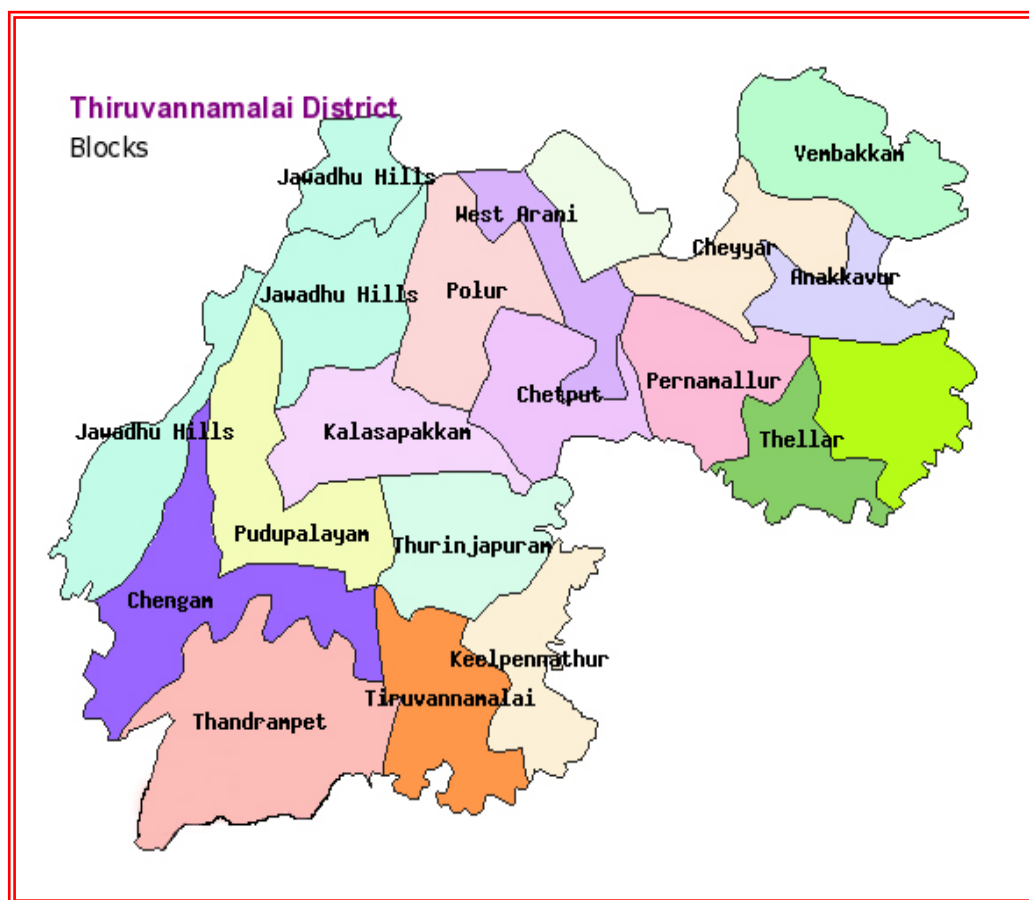
Jawadhu hills is situated in Thiruvannamalai district of Tamil Nadu in Southern India. The hills has an area of 150 km² and a population of 80,00 (with 98% tribals and others 2%) with 11 Panchayat unions and 229 mountainer villages. It is bounded on the East of Pollur (43 kms), on the West of Amirthi (33 kms) and on the North of Allangayam (25 kms) in Thiruvannamalai district and a part of the Eastern Ghats. The beautiful mountain lies at about 2315 to 3000 mtrs at the sea level. Jawadhu hills have many scenic spots. Temperature varies with in the altitude and ranged from 12°C to 33°C. The area is well known for excessive rainfall (> 1000 mm) and dry months are rare. The relative humidity remains high and varies from 40 to 85%.

Ethnobotanical survey of six villages from Jawadhu hills, in Tamil Nadu, was carried out during December 2009-April 2010. During the course of the study, six field trips were carried out in the study area totalling 30 days. Methods of selecting informants depend upon the distribution of local people having folk knowledge. These informants were traditional healers themselves or had tradition of healing in their families and had knowledge of the medicinal use of the plants. The wealth of medicinal plant knowledge among the people of this Jawadhu hills is based on hundreds of years of beliefs and observations. This knowledge has been transmitted orally from generation to generation, however it seems that it is vanishing from the modern society, since younger people are not interested to carry on this tradition.

METHODOLOGY

Extensive field surveys were conducted in the six Malayalis villages. A detailed household survey was conducted involving 50 households in the six villages. All the informations mentioned is based on first hand information on medicinal plants and their utilization, collected through personal interview with the villages of different age group and sex, the patients as well as the key informants locally called, vaidhyas. There were two well knowledgeable vaidhyas in the study villages namely, Shri Govindan (age 56) and Shri Lakshmanan (age 75). The information gathered from them was again crosschecked with the other residents of same community. As the Malayalis are mostly illiterate, no structural questionnaire approach was used. The medicinal plant species were collected from wild and also from the homestead gardens for herbarium preparation. Identification and nomenclature of the listed plants were based on the flora of Presidency of Madras (Gamble, 1935) and the Flora of Tamil Nadu Carnatic (Mathew, 1983). They were later verified at Botanical Survey of India, Southern Circle, Coimbatore, India. The voucher specimens of each species have been deposited at the Department of Botany, Annamalai University.

The map shows Jawadhu Hills in Thiruvannamalai district
(Traditional Medicinal Practices Area/Study Area)



RESULT AND OBSERVATIONS

In the present study the medicinal plants were collected from 6 villages of Jawadhu hills in Thiruvannamalai district. A total of 25 medicinal plant species used by Malayalis in their day-to-day life to cure various diseases have been documented (Table 1). The

medicinal plants are arranged in alphabetical order. These plants represented 25 angiospermic plant families. Most of the plants were collected from the wild habitat. A few species were grown in the Government Herbal Garden. In the Malayalis community, generally men are involved in the preparation of herbal medicine.

Table 1: Medicinal plants used by the Tribals in Jawadhu Hills

S. No.	Plant name	Family	Vernacular name	Parts used	Mode of application
1.	<i>Acorus calamus</i> Linn.	Acoraceae	Vasambu	Rhizome	<ul style="list-style-type: none"> The rhizome contains from 1.5-3.5% essential oil which is extracted from the fresh roots or the unpeeled dried root by steam distillation. The essential oil is anticonvulsant, antiveratrinic and antiarrhythmic. It is also taken as an infusion, tincture or fluid extract. The rhizome alcoholic extract has sedative and analgesic properties and causes depression in blood pressure and respiration. Extracts are used to treat intestinal cholera, anorexia, gastritis and gastric ulcers.
2.	<i>Albizia lebeck</i> (L.) Benth.	Mimosaceae	Vagai	Stem	<ul style="list-style-type: none"> The plant parts used for blood condition-higher blood cholesterol, respiratory tract conditions, asthma, allergic rheumatics. The dried stem bark is used to cure allergic condition, reduce the release of histamines through the stabilizing effect on most cells.
3.	<i>Alpinia galanga</i> (L.) Willd.	Zingiberaceae	Cittarattai	Rhizome	<ul style="list-style-type: none"> The rhizome is a common ingredient in Thai soups and curries, where is used fresh in chunks or thin slices, washed and mixed into curry paste, or dried and powdered. Ground rhizome is washed, crushed and the juice is used to cure the treatment of skin infections like eczema, ringworm, etc.
4.	<i>Artabotrys odoratissimus</i> R.	Annonaceae	Manoranjitham	Leaves, roots	<ul style="list-style-type: none"> Leaves: The leaves are found to contain antifertility principle. A decoction of the leaves is given in cholera.

	Br. exker Gaul.				
5.	<i>Atalantia monophylla</i> L.	Rutaceae	Kattu Elumichai	Leaves, root and bark	<ul style="list-style-type: none"> • Root: The root of <i>A. odoratissimus</i> is a Chinese folk remedy for malaria. • Leaves: A decoction of the leaves is applied in itch and other cutaneous complaints. • Roots: The roots possess anti-spasmodic, stimulant and resolvent properties and used rheumatism and swelling.
6.	<i>Bauhinia tomentosa</i> L.	Caesalpiniaceae	Eruvachi	Flower, root and bark	<ul style="list-style-type: none"> • Flower: The juice of the flowers is used to treat diarrhoea, dysentery and other stomach disorders. • Root: The fresh root with water and made a paste and gives orally or the fresh roots given to cure antidote to snake bites. • Bark: The juice of the bark is drank for treatment of cuts and wounds and skin diseases, scrofula and ulcers.
7.	<i>Caesalpinia bonduc</i> (Linn.) Roxb.	Caesalpiniaceae	Kalichchikkai	Leaves, fruits, and seeds	<ul style="list-style-type: none"> • Leaves: Leaves and bark is used for treatment of febrifuge and antiperiodic. • Fruits: Fruits are used as tonic and antipyretic. • Seeds: Fatty oil extracted from the seeds is used as a cosmetic and for discharges from the ear.
8.	<i>Calophyllum inophyllum</i> L.	Clusiaceae	Punnai	Seeds	<ul style="list-style-type: none"> • The nut should be well dried before cracking after which the oil-laden kernel should be for the dried. • The seed oil meets all the major boil-diesel requirements in the United States. • Medicinal use or hair grease active ingredients in the oil to regenerate the tissue and an ingredients in skin creams.
9.	<i>Cardiospermum luridum</i> (Bl.) Adelb.	Sapindaceae	Kattu mutakathan	Whole plant	<ul style="list-style-type: none"> • Various parts of the plant can be extracted to provide laxative, emetic and diuretic, joint pain effects etc. • Leaves can be made into medic pulmonary complications.
10.	<i>Cassia alata</i> L.	Caesalpiniaceae	Vandukolli	Leaves	<ul style="list-style-type: none"> • The leaves are ground in a mortar to obtain a kind of "green cotton wool". This is mixed with the equal amount of vegetable oil then rubbed on the affected area 2-3 times a day. A fresh preparation is made every day. • <i>Senna alata</i> is often called the ringworm bush because of its very effective fungicidal properties, for treating ringworm and other fungal infections of the skin.
11.	<i>Cassia fistula</i> L.	Fabaceae	Sarakkondri	Whole plant	<ul style="list-style-type: none"> • The leaves for erysipelas, malaria, rheumatism and ulcers. The buds for biliousness, constipation, fever, leprosy and skin disease. • The fruit as anti-inflammatory, antipyretic, purgative and good for chest complaints. • Ayurvedic medicine recognizes the seed as antibilious, aperitif, carminative and laxative. • The root for adenopathy, burning sensations, leprosy, skin diseases, syphilis and tubercular glands.
12.	<i>Chrysopogon zizanioides</i> (L.) Roberty.	Poaceae	Vettiver	Roots	<ul style="list-style-type: none"> • Dried roots are mixed with coconut oil to reduce the dandruff, and hair falling. • Dried roots are used for cosmetics, perfumes and aromatherapy, soaps, lotions, creams to cure for wounds acne and irritating skins. • The roots internally used to cure nervous and circulatory problems, externally used to cure all around tonic bath, to ease muscle pains, as well as treatment for lice.
13.	<i>Coleus forskohlii</i> (Briq.)	Lamiaceae	Maruthuvacoorgan	Whole plant	<ul style="list-style-type: none"> • The leaf is used as an expectorant, ermmenagogue and diuretic. • The tubers are prepared as pickle and eaten. Ayurvedic systems of medicine, the plant has been used for treating heart diseases, respiratory disorder, asthma, intestinal disorders, etc. • The plant is also used for veterinary purposes.
14.	<i>Commelina benghalensis</i> Linn.	Commelinaceae	Kanavazhai	Whole plant	<ul style="list-style-type: none"> • The whole plant used to cure a medicinal herb, that is said to have diuretic, febrifungal and anti-inflammatory effects. • It is used to cure swellings of the skin, leprosy and laxative.
15.	<i>Curculigo orchiioides</i> (Gaertn.)	Amaryllidaceae	Nilapanankilengu	Leaves, shoots	<ul style="list-style-type: none"> • Leaves: The peel is remedy for dysentery and is eaten to overcome halitosis. The distilled juice is given as a sedative. The leaf juice, combined with that of <i>Polygonum</i> and <i>Indigofera</i> is taken after childbirth. A leaf infusion is given as an antispasmodic. • Shoots: A decoction of the shoots of wild plant is administered to improve appetite, relieve stomachache and expel intestinal worms.
16.	<i>Datura fastulosa</i> L.	Solanaceae	Karuomathai	Leaves, flower	<ul style="list-style-type: none"> • Leaves: The leaves or juice of it, is consumed make the person dumb (unable to speak). • Flower: The dry flower, particularly the violet coloured, if

17.	<i>Ficus racemosa</i> Roxb.	Moraceae	Atteeka	Bark, root, latex and fruits	<p>rolled and used like cigar, will help to relieve the asthma or wheezing like symptoms.</p> <ul style="list-style-type: none"> • According to Ayurveda, roots are useful in hydrophobia whereas bark is acrid, cooling, galactagogue and good for gynaecological disorders. • Fruits are astringent to bowels, styptic, tonic and useful in the treatment of leucorrhoea, blood disorders, etc. • According to Unani system of medicine, leaves are astringent to bowels and good in case of bronchitis whereas, fruits are useful in treatment of dry cough, loss of voice diseases of kidney and spleen. Bark is useful in asthma and piles. Latex is applied externally on caronic infected wounds to alleviate edema, pain and to promote the healing.
18.	<i>Guizotia abyssinica</i> (L.f.) cass.	Asteraceae	Malai ellu	Seeds	<ul style="list-style-type: none"> • Seed oil is used reduce the body heat to cure the stomachache. • The oil from the seed is used in the treatment of rheumatism, it is applied to treat burns. • A paste of the seeds is applied as a poultice in the treatment of scabies, antirheumatic parasiticide and poultice.
19.	<i>Gymnema sylvestre</i> R. Br.	Asclepiadaceae	Sirukurinchan	Leaves, root	<ul style="list-style-type: none"> • Leaf powder is mixed with cow's milk and taken orally to treat diabetes. • A powder of the dried leaves is used to reduce the sugar level of the blood. • The root powder is taken orally and also applied on the bitter spot to treat snakebite.
20.	<i>Hardwickia binata</i> Roxb.	Fabaceae	Achan	Bark	<ul style="list-style-type: none"> • Tannins from the bark are used to produce medicines for the treatment of diarrhoea, worms, indigestion and leprosy. • These tannins also produce an appetizer.
21.	<i>Holoptelea integrifolia</i> (Roxb.) Planch.	Ulmaceae	Aya	Whole plant	<ul style="list-style-type: none"> • The leaves and bark are used in treating, oedema, diabetes, leprosy and other skin diseases, intestinal disorders, piles and spruce.
22.	<i>Limonia acidissima</i> L.	Rutaceae	Vilam pazham	Leaves, fruits	<ul style="list-style-type: none"> • Seed and paste of stem bark is used in treating ringworm. • Leaves: The leaves are aromatic and carminative. Leaves, bark, roots and fruit pulp are all used against snakebite. The pulp is poulticed onto bites and stings of venomous insects, as it the powered rind. • Fruit: The fruit is much used in India as a liver and cardiac tonic, and when curipe, as an astringent means of halting diarrhoea and dysentery and effective treatment for hiccough, sore throat and diseases of the gums.
23.	<i>Madhuca indica</i> Gmel.	Sapotaceae	Elupai	Flowers, seed, bark	<ul style="list-style-type: none"> • Flowers: Flower juice is used in the treatment of enlargement of axillary gland, neurotic disorder and taken with cow's milk as an aphrodisiac, in cough and bronchitis. • Seeds: Seed paste is applied to curve muscle fatigue and relieve pain in the muscle and joints to improve the texture and vigor of skin. • Bark: Bark decoction is used in curing bleeding gums and ulcers.
24.	<i>Marsilea quadrifolia</i> L.	Marsileaceae	Aarakeerai	Leaves	<ul style="list-style-type: none"> • A juice made from the leaves is diuretic and febrifuge. It is also used to treat snakebite and applied abscesses.
25.	<i>Melia dubia</i> Willd.Cav.	Meliaceae	Malayvembu	Leaves, seeds	<ul style="list-style-type: none"> • Leaves paste is applied topically on the body to treat small pox, rheumatism and skin diseases. The young twigs are used as toothbrush to develop strong teeth.

The common diseases are diarrhoea, dysentery, whooping cough and malaria. Plant species, which used in traditional medicines are enumerated with their description, botanical and vernacular names, family and uses of the plant parts in the various treatments and mode applications.

DISCUSSIONS

In India about 7300 plant species are used in traditional health care systems such as Ayurveda, Siddha, Unani and folk healing practices. The booming of traditional medicine industry results in an increasing demand on medicinal plant products. 90% of the medicinal plants come from natural habitats. The declining availability of such plants and the fading of local traditional knowledge make the sustainable management of natural habitats a crucial environmental issue in South India, concerning biodiversity conservation and welfare of local communities. The luxuriant flora of Jawadhu Hill's include a large number of medicinal

plants. Since, time immemorial these plants have been used by the inhabitants of tribals in curing diverse ailments such as fever, constipation, leprosy, asthma, bronchitis, anaemia, etc. The plant selected for the present study also exhibit interesting folk medicinal uses. They are used to cure stomachache, fever, chest pain, worm troubles, tooth diseases and amoebiasis (Dagar and Singh, 1999).

In the present study was carried out in six villages of Jawadhu hill's. The name of the area "Jawadhu Hills" is derived from sandalwood in the forest, as Jawadhu means the dry remains of sandalwood after the extraction of oil. In the year of 1985, a separate tribal Panchayat union was formed for sectoral development of tribal community. The cultural background of the Malayalis can be traced back to the culture from the Pallava dynasty of medieval period, as the tribals identify themselves as the descendents of Pallava dynasty. The Jawadhu hills come under the Taluk of Polur in the Thiruvannamalai

district of Tamil Nadu. Jawadhu hill's comprise mostly of hilly forests and come under the national reserved forests of the Government of India.

The present study was made to selected ethnomedicinal plants to screen the tribal Malayalis people of Jawadhu hill's against human pathogenic, bacterial and fungal diseases. Herbal remedies play a fundamental role in traditional medicine in some tribal people of rural regions in Tamil Nadu. The medicinal plants are often used as the therapeutic agents as antiseptic, anti-inflammatory and in treatment of infections, diseases including candidiasis and dermatophytes (Shahidi, 2004).

Tribal people of the Jawadhu hill's in Thiruvannamalai district have strong relations with their surrounding environment. Therefore, the indigenous people have not forgotten their age-old ethnicity and traditions. Knowledge about medicinal plants, which are used in their daily life against various ailments still lies with them.

The present investigation highlights the age-old traditional knowledge about some medicinal plants used as remedy by the tribal people of Jawadhu hill's. Fifty plant species belonging 29 families of angiosperms were enumerated. Of these 46% trees, 36% herbs, 10% climbers and 8% shrubs. Many plant species belonging to families of Fabaceae, Caesalpiniaceae, Verbenaceae and Combretaceae are frequently used.

Santalum album (sandalwood) has various and generally not well documented medicinal uses. In samoa, a decoction of sandalwood and *Homolanthus* leaves is taken to treat elephantiasis or lymphatic filariasis. The oil from the heartwood, extracted by steam distillation or by solvent, is used for cosmetics, scenting of soaps, perfumery, aromatherapy and medicinal purposes. Heartwood from sandalwood trees yields an aromatic oil that is widely valued and has been the basis of a lucrative and exploitative trade for hundreds of years (Thomson, 2001).

The medical form of *Zingifer officinalis* historically was called Jamaica ginger; it was classified as a stimulant and carminative and used frequently for dyspepsia and colic. It was also frequently employed to disguise the taste of medicines. Ginger is contraindicated in people suffering from gallstones as it promotes the production of bile. Ginger may also decrease pain from arthritis, though studies have been inconsistent and may have blood thinning and cholesterol lowering properties that may make it useful for treating heart disease (Wood and Pittler, 2000).

The findings of the present study are in conformity with previous study published by Nadkarni (1976) and Balakrishnan et al (2009) in the treatment of certain diseases with specific medicinal plants. For example, plant species recommended for the treatment of asthma, cough, dysentery, jaundice and snakebite are essentially the same species, although the plant parts differed. However, there are certain examples of other plant species, which are exclusively for the treatment of specific diseases in the study area and represent the first report of such uses.

Most of the species used in the preparation of herbal medicine are collected fresh; very rarely, dried and stored materials were used. Among the various plant parts used for the herbal formulations, leaves, stem, bark followed by root were preferred over other plant parts such as flowers, seeds and fruits.

Hence the role of ethnobotanical survey and field work is the crucial importance as some miraculous medicines for incurable diseases are known to the local communities and aboriginals and much acquired knowledge through the ages is usually passed on generation to generation as a guarded secret of families. Therefore it is necessary to popularize the identify and utility of the medicinal plants.

The collection, identification and documentation of ethnomedicinal data on biological resources were inevitable steps for bioprospecting. The native inhabitants were well-versed with the utilization of plants of their surrounding by their long trial and error method of using the herbal plants. These plants may serve as source of some important medicine against some major diseases. Therefore, these tribal claims should be further validated

scientifically. During scientific evaluation, the process of biopromoting using High Throughput Screening (HTS) is considered an advanced method. Since this technique enables screening of thousands of plant samples in a short time.

CONCLUSION

This study shows that knowledge and usage of herbal medicine for the treatment of various ailments among Jawadhu hills tribals is still a major part of their life and culture. They use forest plants, weeds, fruit plants, vegetables, spices, ornamental plants, ferns and many others as traditional medicine. Although many of these species are known as medicinal plants, others are mainly used for non-medicinal purposes such as preparing agricultural implements. *Santalum album*, *Terminalia bellirica*, *Cassia fistula*, *Gymnema sylvestre*, *Melia dubia* and *Rauvolfia tetraphylla* are the leading species used as remedies against a variety of complaints.

The data collected show that majority of the remedies are taken orally. Most of the reported preparations are drawn from a single plant; mixtures are used rarely. In other parts of the country, the use of mixtures of plant species in treating a particular ailment is fairly common. Generally, the people of the study area still have a strong belief in the efficacy and success of herbal medicine. The results of the present study provide evidence that medicinal plants continue to play an important role in the health care system of this tribal (Malayalis) community in Jawadhu hills of Tami Nadu.

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