

EFFICIENT DOCUMENTATION OF PLANT BASED REMEDIES OF FOLK HERBALIST OF DHARMAPURI DISTRICT, TAMIL NADU, INDIA

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ABSTRACT

Documentation of traditional therapeutic uses of medicinal plants can open upon new avenues for research leading to discovery of novel compounds and new drugs. Medicinal herbs have been traditionally used by tribal people since ancient times for the treatment of various ailments. They still depend on medicinal plants for their primary health care needs and most commonly used to cure skin diseases, poison bites, stomachache and nervous disorders. The objective of this study was to document their indigenous knowledge on the utilization of medicinal plants used by a traditional practitioner (TP) of in Dharmapuri district Tamilnadu, India. The data was collected with the help of questionnaire and the guided field study method. The TP used a total of 42 plants distributed into 29 families in his formulations. Maximum plants were Asclepiadaceae, Rutaceae followed by

Solanaceae, Apiaceae, Acanthaceae and Loganiaceae. As a result, the present study clearly revealed that the TP possessed a good knowledge of the medicinal properties of plants. The information documented regarding the therapeutic uses will provide basic data for further studies.

KEYWORDS: Traditional Practitioner, Herbal medicine, Medicinal plants.

INTRODUCTION

The traditional systems of medicine together with folklore systems continue to serve a large portion of the population, particularly in rural areas, in spite of the advent of the modern medicines. India has more than 3000 years of medicinal heritage based on medicinal plants. Medicinal plants are widely used by all sections of the population either directly as folk remedies or indirectly in the preparation of modern pharmaceuticals. Out of nearly 17,000 higher plants recorded in India, 7500 are reported to be in medicinal use by the rural and tribal communities.^[1,2] According to WHO report, 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] 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 from traditional practitioner information play an important role in scientific research.^[5] Tribal population provides considerable information about the use of many plants or plant parts as medicine. Traditional medical practices are an important part of the primary healthcare system in the developing world.^[6]

Herbal medicines are comparatively safer than synthetic drugs. Plant-based traditional knowledge has become a recognized tool in search for new sources of drugs and nutraceuticals.^[7] Many tribal communities in Tamil Nadu meet their healthcare needs using plant products and preparations based on traditional knowledge that has been gained indigenously over a period of time and /or by practice.^[8] The knowledge base and the practice have been marginalized due to political, social and economical reasons. Off late, interest in traditional medicine has continuously been increasing; various ethnobotanical studies have been initiated to explore the knowledge base from the various tribal groups.^[9, 10] The science of drug discovery from plants has been going on for a long time and practically every country has possibly its own history of their ancient people and traditional medicines in which plants have played a dominant role. Many of these traditional medicinal systems are quite sophisticated with their own philosophy of causes of diseases and the eradication of such causes through agents of plant, animal or mineral origin or sometimes combination of these three sources.

Apart from established traditional medicinal system, there also exists folk medicine (a variant being tribal medicine) with its own practitioners with their independent practices and knowledge, the latter quite possibly been acquired over the generations and transmitted orally from one generation to the next. These folk medicinal practitioners or folk herbalists can be quite knowledgeable on the medicinal properties and uses of hundreds of plants or may practice with the knowledge of only a few plants. Considering the current rate of deforestation with the concurrent loss of biodiversity, there is a need for accurate documentation of the knowledge and experience of the traditional herbalists.^[11] In this paper, we report on the information gathered from traditional healers among tribals on the plants used for treatment of various diseases in Dharmapuri, Tamil Nadu, India. The main objective of this study was to document the traditional medical practices in healing ailments.

METHODS

Malayalis are the largest tribal group with a population of 11,261, constituting 49.6% of the state ST population. Generally, Malayali are illiterate and they speak Tamil. They inhabit Vattal Hills, in Dharmapuri district, Tamil Nadu, India. These tribal communities have survived on their traditional knowledge base. Traditional medicines are the primary healthcare resources for the Malayali tribes to protect / maintain their health. Tribal practitioners are curators of the society and have good knowledge of medicinal plants, diseases and treatment modalities. The area of investigation approximately lies between 87°0' to 89°0' longitude and 28°0' to 37° 0' latitude. Every Malayali village has several hamlets. Hamlets are found in different elevations (1400-1700m). Temperature in the study area ranges from 12°C to 25°C during Jan-Mar and averages between 12°C during Dec-Jan and 35°C during Apr-May. The ethnobotanical data were collected using questionnaire, interviews and discussions in their local Tamil language which was spoken fluently by the traditional practitioner as well as interviewer.

The interviews were conducted with the help of a questionnaire and the field study method of Martin^[12] and Maundu.^[13] In this method the TP took the interviewers on guided field-walks through areas from where he collected his medicinal plants or plant parts, pointed out the plants, and described their uses. All plant specimens were photographed and collected on the spot, pressed, dried and brought back to Departmental herbarium in PG and Research Department of Botany, Government Arts College, Dharmapuri, for identification. The Flora

of Presidency of Madras^[14] and The Flora of Tamil Nadu Carnatic^[15] were used for identification and authentication of the plants.

RESULTS

The traditional practitioner used a total of 42 plants distributed into 29 families in his formulations. The results are shown in Table 1. The plants were used to treat diseases, which included pain, head lice, gastrointestinal disorders, poisoning, bleeding from cuts and wounds, helminthiasis, heart disorder, diabetes, skin infections, vomiting, passing of semen with urine, leucorrhea, hernia, eye disorders, respiratory tract disorders, dandruff, and infertility in women. In most cases, a single plant or a plant part was used to treat a single disorder. However, as for example with *Terminalia arjuna*, the bark of the tree was used to treat both diabetes and heart disorder. Similarly, whole plants of *Cuscuta reflexa* were used to treat stomach pain and helminthiasis. The leaves of *Ocimum sanctum* were used for coughs, to clear eyes, and to treat acne.

In a number of cases, the traditional practitioner used several plants separately to treat the same disease. For instance, diabetes was treated with bark of *Terminalia arjuna* or leaves of *Coccinia cordifolia* or tubers of *Solanum tuberosum*. Likewise, toothache was treated with flowers of *Spilanthes calva* or stems of *Glycosmis arborea* or leaves or roots of *Clerodendrum viscosum*. Many plant species belonging to families of Acanthaceae, Solanaceae, Euphorbiaceae, Caesalpinaceae, Apocynaceae and Asclepiadaceae are frequently used. Treatment of the same disorder with different plant species presents a great advantage because some plants may not be available throughout the year because of seasonal variations or other reasons like being absent in any particular area.

For common ailments such as wounds and skin diseases more number of medication were used. On the other hand, few were used to alleviate problems such as cold, cough and asthma. Healers in the area diagnose diseases based on symptoms but sometime they may also associate it to spirit. Therefore, preparation of medicines and treatment of diseases are sometimes accompanied by rituals. Tribal practitioner(s) use specific plant parts and dosages in treatment of specific ailments. Plant products are consumed raw or taken as decoction (juice)/ infusion (oral treatment) and paste (external application). Fresh leaves, root and stem were more frequently used when compared to other parts of the plant.

Table 1: Medicinal plants and formulations of the traditional practitioner from Dharmapuri District, Tamil Nadu, India.

Binomial Name	Family Name	Local Name	Parts Used	Ailments and mode of medicinal use
<i>Acacia arabica</i> (Lam.) Willd.	Mimosaceae	Karuvelam	Seeds	Diabetics, alleviate headache.
<i>Adhatoda zeylanica</i> Medicus.	Acanthaceae	Thavasumurungai	Leaf	Asthma, Cold, Leaf paste taken orally to treat fever. Root, bark, leaves, and flowers used for cough.
<i>Aegle marmelos</i> (L.) Corr.	Rutaceae	Vilvam	Leaf	Leaf powder mixed with cow's milk is taken to treat diabetes.
<i>Amaranthus viridis</i> L.	Amaranthaceae	Pachaikkeeri	Leaf	Leaf paste is applied over the infected area to cure erysipelas.
<i>Andrographis lineata</i> Wall. ex Nees.	Acanthaceae	Nila vambu	Leaf	Leaf powder mixed with cow's milk is taken orally to treat diabetics. Leaf paste applied on snake bitten site.
<i>Anisomeles malabarica</i> (L) R.Br.Ex.Sims.	Lamiaceae	Iruttai bramatti	Leaf	Leaf paste applied externally on wounds.
<i>Argemone mexicana</i> L.	Papavaraceae	Bramathandi	Stem	Latex applied on infected parts to cure ringworm infection.
<i>Asparagus racemosus</i> Willd.	Liliaceae	Thannervittan	Leaf Root	Leaf paste applied to heal cracks on foot, demulcent, diuretic, problems.
<i>Betel piper</i> L.	Piperaceae	Milagu	Leaf, Seed	Leaf petiole mixed with calcium is applied on face to cure pimples.
<i>Brassica juncea</i> (Linn.) Czern. & Coss.	Braceaceae	Kadugu	Seed	Seed powder mixed with goat's milk is taken orally to treat diabetics.
<i>Caralluma umbellata</i> (Roxb.) Haw.	Asclepiadaceae	Kalmulaiyan	Whole plant	Whole plant parts are eaten raw to cure gas troubles and to cure heel cracks.
<i>Calotropis gigantea</i> (Linn.) R.Br. ex Ait.	Asclepiadaceae	Earukku	Stem, Leaf	Latex is applied over insect bite to reduce the effect of insect poison.
<i>Cardiospermum canescens</i> Wall.	Sapindaceae	Malai mudakkathan	Leaf	Leaf juice taken orally for a period of 2 days to arrest dysentery.
<i>Cardiospermum halicacabum</i> L.	Sapindaceae	Mudakkathan	Leaf	Leaves are tied with cloths over the throats of cattle's to recover from throat

				infection.
<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Vallarai	Leaf	Diarrhea, leaf juice is orally taken for 3 consecutive days.
<i>Cissampelos pareira</i> L.	Menispermaceae	Ponmusuttai	Leaf, fruit	Warm leaves are applied to painful areas and fruits are taken orally in the mashed form.
<i>Clausena dentata</i> (Willd.) Roem.	Rutaceae	Nanachedi	Leaf	Leaf paste applied in area to heal cut wounds.
<i>Clerodendrum viscosum</i> Vent.	Verbenaceae		Leaf, root	Paste of leaf or root is applied to base of painful tooth.
<i>Colocasia esculenta</i> (L.) Schott.	Araceae	Senaikkilangu	Root	Boiled root tubers consumed to cure piles.
<i>Costus speciosus</i> (J. Koen.) Smith.	Zingiberaceae	Sevarathai	Leaf	Leaves used to treat diabetes.
<i>Cuminum cyminum</i> Linn.	Apiaceae	Siragam	Leaf	Leaves consumed to alleviate body ache and treat diabetics.
<i>Cuscuta reflexa</i> Roxb.	Cuscutaceae	Sadathari	Whole plant	Stomach pain, helminthiasis.
<i>Dioscorea oppositifolia</i> L.	Dioscoreaceae	Kavalak kilangu	Rhizome	Paste of rhizome taken to treat stomachache.
<i>Diospyros chloroxylon</i> (Roxb.)	Ebenaceae	Kariporasu	Leaf	Leaf paste is taken with hot water to cure snake bite and stomachache.
<i>Glycosmis arborea</i> DC.	Rutaceae	Kattuk kolanji	Stem	Stems are used to brush teeth.
<i>Gymnema sylvestre</i> (Retz.) R. Br.	Asclepiadaceae	Sirukurinjan	Leaf	Leaves are used to cure diabetes.
<i>Holoptelea integrifolia</i> (Roxb.) Planch.	Ulmaceae	Ayanmaram	Bark	Bark is made into paste and applied over the affected places to cure paralysis.
<i>Hybanthus enneaspermus</i> (L.) F.V. Muell.	Violaceae	Orithal thamarai	Leaf	Leaves used as green vegetable to strengthen the body.
<i>Momordica charantia</i> L.	Cucurbitaceae	Pagarkkai	Fruit	Fruit juice is taken to treat diabetics.
<i>Murraya koenigii</i> (L.) Spreng.	Rutaceae	Karuveplai	Leaf	Leaf juice is taken to treat diabetics.
<i>Ocimum sanctum</i> L.	Lamiaceae	Tulasi	Leaf	Leaf juice is mixed with honey and orally taken for 3 days. Leaf juice is applied to eyes for 3 days.
<i>Phyllanthus amarus</i> Schum. & Thonn.	Euphorbiaceae	Kilanelli	Leaf	Leaf paste mixed with buffalo urine, taken internally to cure jaundice.

<i>Piper nigrum</i> L.	Piperaceae	Milagu	Seed	Seeds taken orally to reduce throat infection, cold and cough.
<i>Plumbago zeylanica</i> L.	Plumbaginaceae	Venkodivali	Root	Root powder taken to treat stomachache.
<i>Solanum tuberosum</i> L.	Solanaceae	Urilaikkilangu	Tuber	Diabetes. Tuber juice is taken orally on a regular basis.
<i>Spilanthes calva</i> DC.	Asteraceae	Palvalipundu	Flower	Toothache. Flower paste is applied to painful tooth.
<i>Strychnos nux-vomica</i> L.	Loganiaceae	Etti	Bark	Bark is made into paste along with goat's milk and taken orally for 3 months to cure whooping cough.
<i>Strychnos potatorum</i> L.	Loganiaceae	Thetrankottai	Seed	Seed paste is mixed with honey and applied topically to treat chronic wounds and infections, knee joint infection.
<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Naval	Seed	Seed powdered and used to treat diabetics and reduce the level of sugar in the blood.
<i>Solanum surattrense</i> Burm. f.	Solanaceae	Kandagkathri	Fruit	Fresh fruits kept in fire and the smoke is inhaled to reduce toothache.
<i>Solanum trilobatum</i> L.	Solanaceae	Thuthuvalai	Leaf	Juice of leaves is taken orally to cure asthma and cold.
<i>Terminalia chebula</i> Retz.	Combretaceae	Amutham	Fruit	Fruit is made into paste with castor oil and applied over cuts and wounds to heal soon.
<i>Terminalia arjuna</i> Wight & Arn.	Combretaceae	Marutha maram	Bark	Heart disorder, diabetes. Bark is soaked in water overnight followed by drinking the water in the morning. This is continued for seven consecutive days.
<i>Toddalia asiatica</i> (L) Lam.	Rutaceae	Milakaranai	Leaf	Leaves are made into paste and given orally to cure gas troubles in cattle.
<i>Tribulus lanuginosis</i> L.	Zygophyllaceae	Sirunerinjil	Seed	Seed powder used to increase fertility and sperm production.
<i>Trigonella foenumgraecum</i> L.	Fabaceae	Venthiyam	Seed	Seed soaked in water and used to treat diabetics
<i>Tylophora indica</i> (Burm. f.) Merr.	Asclepiadaceae	Nanjaruppan	Leaf	Leaf paste is taken orally to treat fever and Cold.

				Fresh leaves are taken with honey for 48 days to cure respiratory problems.
<i>Vitex negundo</i> L.	Verbenaceae	Nochi	Leaf	Leaves boiled in water; inhaled to relive headache, cold.
<i>Withania somnifera</i> (L.) Dunal.	Solanaceae	Amukkura	Leaf	Leaf paste in cow's milk used to treat asthma.
<i>Wrightia tinctoria</i> (Roxb.) R.Br.	Apocynaceae	Veppalai	Leaf	Smoke obtained from the dried leaves is used to repel flies in cattle.

DISCUSSION

The traditional practitioner used a number of plants to treat pain arising from diverse causes. These plants included *Mangifera indica* (stomach pain), *Spilanthes calva* (toothache), *Cuscuta reflexa* (stomach pain), *Cissampelos pareira* (rheumatic pain), *Cynodon dactylon* (rheumatic pain), *Neolamarckia cadamba* (rheumatic pain), *Glycosmis arborea* (toothache), *Clerodendrum viscosum* (toothache) and *Cissus quadrangularis* (rheumatic pain). Bark extract of *Mangifera indica* has been reported for analgesic and anti-inflammatory activities.^[16] The analgesic action of *Spilanthes calva* leaf extract has also been demonstrated.^[17] Petroleum ether extract of *Cuscuta reflexa* reportedly demonstrated analgesic activities.^[18] The analgesic and anti-inflammatory action Of *Cissampelos pareira* leaves have also been reported.^[19] The analgesic activity of *Cynodon dactylon* has been reviewed.^[20] Methanol extract of *Neolamarckia cadamba* bark has been shown to possess analgesic activity.^[21] Although *Glycosmis arborea* needs to be scientifically studied, a related plant *Glycosmis pentaphylla* has been reported for possessing analgesic effects.^[22]

Ethanollic root extract of *Clerodendrum viscosum* also showed analgesic activity in acetic acid-induced pain model in mice.^[23] *Cissus quadrangularis* is also known to have pain relieving activity.^[24] A search of the relevant scientific literature on the plants used by the traditional practitioner to treat diabetes yielded the same sort of scientific validations as for the plants used by the traditional practitioner to treat pain. Diabetes was treated with plant parts from *Terminalia arjuna*, *Coccinia cordifolia* or *Solanum tuberosum*. The antidiabetic effect of *Terminalia arjuna* has been shown in alloxan diabetic rats.^[25] Similar antidiabetic effect has been seen of *Coccinia cordifolia* extract in diabetic patients.^[26] It may seem counter-intuitive, but the tubers of *Solanum tuberosum* (potato) reportedly possess hypoglycemic activity.^[27] Taken together, it can be said that the plants used by the traditional practitioner at least to treat pain and diabetes have scientific validations and which may also

apply to other plants used for treatment by traditional practitioner. An example is the use by the traditional practitioner of *Terminalia arjuna* bark to treat heart disorder, which has been validated scientifically.^[28]

The most important aspect of this study, the traditional practitioner has been used for the preparation as medicine is that fresh plant material. Alternatively, if the fresh plant parts are not available, dried plant materials are used. For this reason several plants serve as alternative remedy to cure a single disease. From this study it is clear that traditional practitioner possess innate ability to discern the character of plants and exploit the plant resources to meet their health care needs.

CONCLUSION

The medicinal plants used by the traditional practitioner can be potential sources of new drug discoveries. This study depicts that traditional knowledge forms the basis for the treatment of various ailments among Malayalis. Still, this age old practice forms the basic aspect of their lifestyle and rituals. Plants such as *Andrographis*, *Adhatoda*, *Vitex* and *Plectranthus* are the lead species and members belonging to the family Apocynaceae, Asclepiadaceae, Euphorbiaceae and Caesalpinaceae were more frequently used. Data depicts that most of the remedies are preferred as oral. Further, most of the reported preparations are drawn from a single plant; formulations containing two or more plants are rarely used. Present study reveals that medicinal plants continue to play a major role in healthcare needs of Malayali community.

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