

ETHNOMEDICINAL PLANTS USED BY THE INDIGENOUS PEOPLES OF PALANI HILLS IN SOUTHERN WESTERN GHATS FOR TREATING RHEUMATISM

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Abstract

Ethnomedicinal plants used by the local indigenous peoples for treating rheumatism in the villages of Palani Hills, Southern Western Ghats (Dindigul district of Tamil Nadu, India) were carried out during the period of January 2012 to March 2013. The local indigenous peoples of the study area are called Paliyars and Pulayars and they are indigenous people of Palani hills. They possess diverse and valuable traditional knowledge about the usage of different plants for curing various ailments. The rheumatism is one of the ailments successfully treated by the application of traditional phytotherapy by their known practice. A total of 39 ethnomedicinal plants belonging to 38 genera and 38 families have been documented for their therapeutic uses against rheumatism and related diseases such as inflammation and swelling of joints. The leaves were the most frequently utilized plant part and most herbal remedies are prepared as decoction followed by paste. The decoction is taken orally and the paste is applied topically in affected part to treat rheumatism.

Key Words: *Paliyars, Pulayars, ailments, ethnomedicinal plants, phytotherapy, rheumatism.*

Introduction

The indigenous traditional knowledge of medicinal plants of various ethnic communities, where it has been transmitted orally for centuries is fast disappearing from the face of the earth due to the advent of modern technology and transformation of traditional culture (Ganesan *et al.*, 2004). Documenting the indigenous knowledge through ethnobotanical studies is important for the conservation of biological resources as well as their sustainable utilization. It is also necessary to collect the information about the knowledge of traditional medicines, preserved in tribal and rural communities of various parts of India in general and Tamil Nadu in particular before it is permanently lost.

Tamil Nadu has a great tradition of preserving its forest wealth and concern for environment, which has taught us to respect nature and understand the complex inter-relationship between living and nonliving things. The ancient Tamil poets have emphasized the importance of dense forests, clean water and fertile soil in providing ecological security to mankind. The forest eco-system of the state consists of a variety of flora and fauna

representing remarkable biodiversity essential for the environmental stability and water conservation thereby creating food security for survival of present and the future generations. Nearly a hundred papers have been published and several unpublished reports are also available with ethnomedicinal claims among different tribal communities of Tamil Nadu.

The indigenous knowledge based practices disappearing only because of the intrusion of foreign technologies or development concept. The ethno-biological knowledge of people and listing of plants of a particular region are important tools that may help in understanding human environment interaction (Nautiyal *et al.*, 1981). During the last few decades, a considerable number of studies have been published to document the ethno medicinal use of plant species growing in the study region (Ganesan *et al.*, 2004; John Kennedy, 2008; Mayilsamy, 2013; Mayilsamy and Rajendran., 2013). Most of these research efforts have been restricted towards chronicling of the medicinal plants used for treatment of human ailments.

Besides, to the best of my knowledge no ethnobotanical work has been carried out in the study area. Keeping these things in mind, the present study was proposed to document the ethno-botanical knowledge of traditional healers in Palani Hills, the Southern Western Ghats of Tamil Nadu, Southern India.

Materials and Methods

The Palani hills fall into two geographically distinct zones, the Upper and the Lower Palani Hills, along a ravine running from Palani in the north to Periyakulam in the South along the Parappar- Thevankarai Valley. From Palani Hills of Southern Western Ghats, Entire Block of Kodaikanal, Adalur and Pandrimalai Panchayats in Reddiyarchatiram Block, Manalur Panchayat in Authur Block of Dindigul District were included during this study.. The study area has the highest rain fall during the period of November and December, while January - March are the driest months. The indigenous people of study area are Paliyars and Pulayars.

The present investigation of ethnobotanical survey was carried out among the traditional healers in the Palani Hills of Southern Western Ghats, India for a period of two years. Field trips ranging from 3 days to a week were made to the study area every month, throughout the year of study. Systematic field trips for ethnobotanical exploration were undertaken during 2011 to 2013 in the study region. The trips were staggered over different seasons to make the study more comprehensive. The field survey was undertaken with help of forests officials and local people assistance who have a thorough knowledge about the routes and the environment.

The collected plant species were identified taxonomically using The Flora of Presidency of Madras (Gamble, 1935), The Flora of Tamil Nadu Carnatic (Matthew, 1983)

and Flora of Tamil Nadu (Henry *et al.*, 1989) to ascertain the nomenclature. The identified plant specimens were then confirmed with the herbaria of Botanical Survey of India (BSI), Southern circle, Coimbatore, India. Data were mainly collected from resource persons/traditional healers, elder people and rarely from others in the field trips and were recorded on field notebooks. Resource persons (informants or tribal practitioners or traditional healers) with the knowledge of medicinal plants were selected based on the experience in the preparation of medicines, whether he/she is a professional medicine man or women, their willingness to share their traditional knowledge and their way of acquiring knowledge as per the methodology suggested by (Jain, 1989).

The information was mainly gathered through semi-structured interviews as per the methods described by Jain (1987; 2001) and collected through questionnaire, interviews and discussions among the tribal practitioners in their local language (Tamil). The questionnaire allowed descriptive responses on the plant prescribed, such as part of the plant used, medicinal uses, detailed information about mode of preparation (i.e., decoction, paste, powder and juice), and form of usage either fresh or dried and method of application.

Results and Discussion

The collected medicinal plants with information on botanical name, family, local name, part used, mode of preparation and medicinal uses for the treatment of disease rheumatism by the the traditional healers of Plaiyar and Pulayar in Palani Hills of Southern Western Ghats are given in table 1.

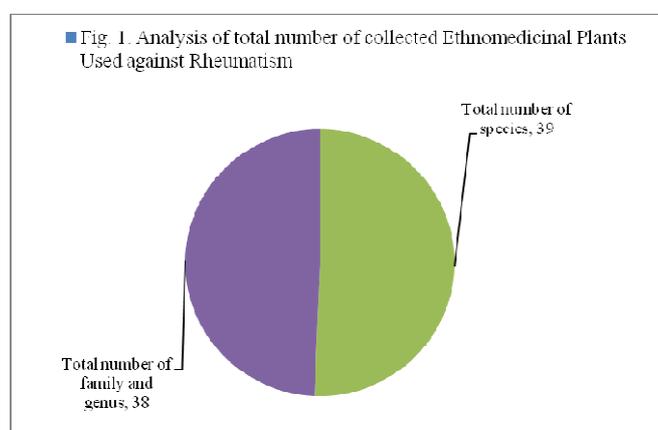
Table 1: Ethnomedicinal Plants Used for Treating Rheumatism

S.No	Botanical Name and Family	Local Name	Ethnomedicinal Uses
1	<i>Abrus precatorius</i> L. (Fabaceae)	Kunthamani	The juice of leaves mixed with coconut oil and applied to relieve pain and reduce swellings due to rheumatism.
2	<i>Adenanthera pavonina</i> L. (Mimosaceae)	Anaikundumani	The powered seeds are made into a paste and applied on affected area to treat rheumatism. The decoction of leaves is taken orally for rheumatism.
3	<i>Adhatoda vasica</i> Nees (Acanthaceae)	Adatoda	The juice of leaves with <i>Pergularia daemia</i> leaves battered with egg white and is taken orally for 10-12 days to treat rheumatic complaint.
4	<i>Aegle mormelos</i> Corr. (Rutaceae)	Vilva maram	The water boiled leaves or juice of fresh leaves applied on swellings due to rheumatism.
5	<i>Ageratum conyzoides</i> L. (Asteraceae)	Pumpillu	The decoction of whole plant is applied topically for rheumatism.
6	<i>Albizia lebbek</i> L.	Vaghai	The leaves used as poultice for the treatment of

	(Mimosaceae)		rheumatic pains.
7	<i>Albizia procera</i> (Roxb.) Benth. (Mimosaceae)	Konda vagai	The decoction of stem bark is given orally for rheumatism.
8	<i>Allophylus serratus</i> (Roxb.) Kurz (Sapindaceae)	Amalai	The paste of leaves and stems are applied for the treatment of chronic rheumatism.
9	<i>Alpinia galanga</i> (L.) Willd. (Zingiberaceae)	Perarattai	The rhizome decoction with 10ml of <i>Ricinus</i> oil is applied upon backache, rheumatic pains and inflammations.
10	<i>Alstonia scholaris</i> R.Br. (Apocynaceae)	Mukumpalei	The stem bark with peper decoction is applied for rheumatic swelling.
11	<i>Alstonia venenata</i> R.Br. (Apocynaceae)	China paalai	The fresh leaves are boiled in hot water and a bath is administered after a few hours, until there is relief from the rheumatic complaint.
12	<i>Anisomeles indica</i> (L.) Kuntz. (Lamiaceae)	Vaathaneer patchilai	A handful of leaves are boiled in steam and used to treat the affected parts until get relief from rheumatic complaints. A handful of leaves are boiled in two litres of water in a closed container. When the steam emanates the lid of the container is slowly removed and vapour bath is administered to get relief from rheumatic pain.
13	<i>Annona muricata</i> L. (Annonaceae)	Mullu Chitta	The mashed leaves are used as a poultice to alleviate skin afflictions and rheumatism.
14	<i>Aristolachia tagala</i> Charo (Aristolochiaceae)	Karungodi	The equal quantity of root and leaves are boiled in coconut oil for about 15-20 minutes over a low flame and the oil is filtered after cooling and applied on the head once in a day for rheumatism.
15	<i>Asystasia gangetica</i> T. And. (Acanthaceae)	Meddykeerai	About 10g of a paste made from the leaves and flowers is mixed with honey and is taken orally twice a day for three weeks to treat rheumatism.
16	<i>Azadirachta indica</i> A. Juss (Meliaceae)	Vembu	About 25g of stem bark is boiled in 500ml of water for 30 minutes and the decoction is taken orally for three weeks for rheumatic complaints.
17	<i>Azima tetracantha</i> Lam. (Salvadoraceae)	Sangan	The root and leaves are added to food for rheumatism.
18	<i>Baliospermum montanum</i> Willd. (Euphorbiaceae)	Niradimullu	The seed oil is applied externally to treat rheumatism.
19	<i>Barleria prionitis</i> L. (Acanthaceae)	Chemmulli	The eaf juice is taken orally for rheumatism.
20	<i>Calotropis procera</i> (Ait.) R. Br. (Asclepiadaceae)	Vellurukku	The paste of root bark is topically for rheumatism.
21	<i>Capsicum frutescens</i> L. (Solanaceae)	Milagai	Paste made from 20g of leaves, along with 10g of ginger (<i>Zingiber officinale</i>) and 10g of <i>Allium</i>

			<i>sativum</i> is topically applied followed by the adding of 50ml of gingelly oil (<i>Sesamum indicum</i>) to prevent rheumatic complaints.
22	<i>Cardiospermum halicacabum</i> L. (Sapindaceae)	Mudukattan	The leaf juice is taken orally with palm sugar for 7 days for rheumatism. Dosai prepared from paste of fresh leaves, rice, black gram, common salt and consumed to prevent rheumatic complaints.
23	<i>Caryota urens</i> L. (Arecaceae)	Koonthal panai	The flower extract is taken orally for rheumatic swellings
24	<i>Catunaregum spinosa</i> (Thunb.) Tirven. (Rubiaceae)	Marukkalankey	The fruit pulp is applied externally for rheumatic pains.
25	<i>Cerbera manghas</i> L. (Apocynaceae)	Kattarali	The fresh is rubbed on legs for rheumatism
26	<i>Chassalia chartacea</i> Craib. (Rubiaceae)	Vellakurinji	The decoction of root is taken orally for rheumatism.
27	<i>Chloroxylon swietenia</i> DC. (Rutaceae)	Porasu	The crushed leaves are topically applied for rheumatism.
28	<i>Christella parasitica</i> (L.) Lev. (Thelypteridaceae)	-	5g fresh root along with 1g fresh root of <i>Asparagus racemosus</i> and 5g of sugar is boiled with 250ml of water and the decoction is taken orally up to 10 for rheumatism.
29	<i>Cinnamomum tamala</i> (Nees) Eberm. (Lauraceae)	Talishappattiri	The leaf decoction is taken orally for rheumatism.
30	<i>Cissus quadrangularis</i> L. (Vitaceae)	Pirandai	About 10g of paste made from the tender shoots is consumed twice a day for three weeks for the treatment of rheumatism.
31	<i>Croton tiglium</i> L. (Euphorbiaceae)	Neervalam	100g of tender leaves crushed to paste is boiled along with 200ml coconut oil until the paste loses its entire water content then the oil is applied over the skin using a feather, twice a day for rheumatic pain.
32	<i>Cymbopogon citratus</i> Stapf (Poaceae)	Vassanapillu	The whole plant decoction with water is used during bath twice a day up to 12 days for rheumatism.
33	<i>Drynaria quercifolia</i> (L.) J. Sm. (Drynariaceae)	Aattukkaal malai vahan	The rhizome decoction in is taken orally along with a teaspoon of Cumin powder twice a day up to 7 days to obtain relief from rheumatic complaints.
34	<i>Erythrina indica</i> Lam. (Fabaceae)	Kaliyanamurungai	The Stem bark is boiled in neem oil together with garlic is massaged over the affected joints twice a day until for rheumatic pain.
35	<i>Eucalyptus globules</i> Labill. (Myrtaceae)	Thailamaram	The oil prepared from leaves is applied topically for rheumatic complaints.
36	<i>Helicteres isora</i> L. (Sterculiaceae)	Valaampuri	The dried, matured fruits are crushed and boiled in gingelly oil is applied topically for rheumatic

			complaints.
37	<i>Holoptelea integrifolia</i> Roxb. (Ulmaceae)	Aavi	The mucilaginous bark is boiled and the juice is squeezed out is applied topically rheumatic swellings.
38	<i>Pterocarpus marsupium</i> L. (Fabaceae)	Vaengai	The infusion of leaves is taken orally for rheumatism .
39	<i>Solanum nigrum</i> L. (Solanaceae)	Manathakkali	The leaf paste is used as poultice to treat rheumatic swellings



A total of 39 ethnomedicinal plants belonging to 38 genera and 38 families have been documented for their therapeutic uses against rheumatism and related diseases such as inflammation and swelling of joints. The family Mimosaceae were represented by two species and remainign families were monospecific. (Table 1, Fig. 1.). The plant parts used for preparation of medicines, leaves were the most frequently utilized plant part and most herbal remedies are prepared as decoction followed by paste. (Fig 2,3). The most of people interviewed traditional healers of Paliyar and Pulayars were familiar with the species dealing with rheumatism was used on regular basis. Like other rural and tribal communities, common knowledge were learned from the elders and community members who share knowledge of mode of collection, preparation and administration of medicinal plants to cure this disease.

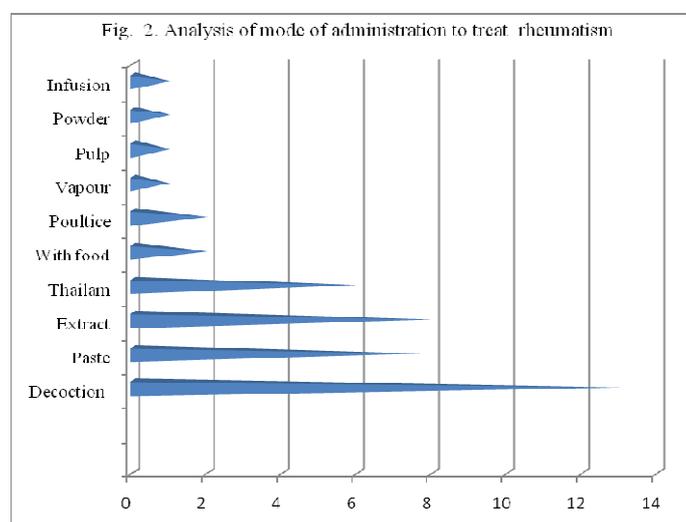
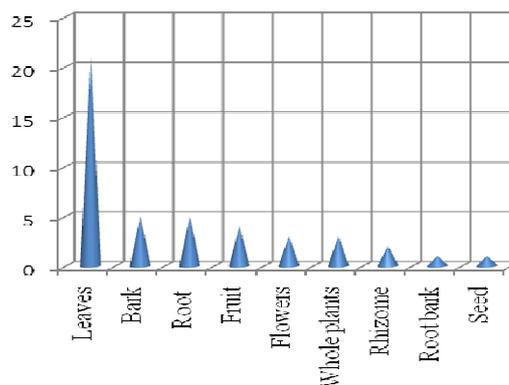


Fig. 3. Analysis of plant part used for preparation of remedies



Earlier studies on traditional medicinal plants reveals that the economically backward local people of Kani tribals in Tirunelveli hills prefer folk medicine due to low cost and sometimes it is a part of their social life and culture (Ignacimuthu et al., 1998; Viswanathan et al., 2001; Ayyanar and Ignacimuthu, 2005).

The findings of the present study are in conformity with previous study published by Nadkarni (1976) and Rastogi and Mehrotra (1990-1994) 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.

Herbs were the primary source of medicine (37%) followed by trees (28%), shrubs (24%) and climbers (11%) (Fig. 5). The frequent use of herbs among the indigenous communities is a result of wealth of herbaceous plants in their environs (Tabuti *et al.*, 2003; Manickam *et al.*, 2004; Ayyanar and Ignacimuthu, 2005; Uniyal *et al.*, 2006; Ragupathy *et al.*, 2008; Giday *et al.*, 2010). The plants were used singly as only one plant or in combination with more than one plant to treat the diseases and time to be taken for the treatment disease either short period of time or long period of time depending on severances of disease and condition of the patient. This is in line with a broader survey conducted for South India by Dharshan and Majumdar (1997).

The Paliyars of the Southern Ghats were using 50 species of plants distributed in 49 genera belonging to 35 families to treat various diseases. The documented medicinal plants were mostly used to cure stomach pain, ulcer, diarrhea, dysentery, cold, cough, headache, skin diseases and diabetes. Other diseases treated by the local traditional healers in the study are asthma, blood pressure, cholera, indigestion, dog bite, expel the worms, fever, hair fall, itches, inflammation, poison bites, swellings, toothache and wounds by Mayilsamy and Rajendran (2013).

Of the reported 217 ethnomedicinal plants as mentioned by the paliyar traditional healers in the southern Western Ghats, 72 different types of diseases were cured by them in single plant part or combination of several plants parts. In which stomach disorders are most commonly cured by the paliyar traditional healers with 35 species of plants. It was followed by diarrhea (23 plants), dysentery, skin diseases and wounds (22 plants each), cold (19 plants), indigestion (17 plants), body cooling, cough and fever (13 plants each), diabetes and headache (12 plants each), ulcer (11 plants), urinary problems (10 plants), dandruff (9 plants), asthma, inflammation and rheumatism (8 plants), hair growth, joint pain, snake bite and to kill intestinal worms (7 plants each), delivery pain, jaundice and swellings (6 plants each), boils, bone fracture, ear diseases, menstrual disorders and scorpion bites (5 plants each), blood pressure, eczema, heel cracks, to induce lactation, nervous disorders, pimples and venereal diseases (4 plants each), appetizer, burns, flatulence, poison bites, throat infection and vomiting (3 plants each) by Mayilsamy (2013).

Conclusion

The results of the present study provide evidence that medicinal plants continue to play an important role in the health care system of these tribal communities Paliyars and Pulayars. Among these tribal communities the older people could provide the full

information regarding the medicinal properties of plants. The documentation found the fact that the specific uses of their plants are known and restricted to the local indigenous peoples only. In fact the present study in the tribal settlement areas of Palani Hills of Southern Western Ghats indicates that most of the younger people are now depending on modern medicines because of their fast curing capacity. So the traditional knowledge of them is eroding fast. Hence, a need for detailed investigation of ethnobotanical knowledge held by the indigenous peoples of Palani Hills, Southern Western Ghats in Dindigul district is required before such valuable knowledge vanishes.

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