An Ethnobotanical Survey on Medicinal Plants Used by Tribal People in Attappadi, Palakkad District, Kerala, South India

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Abstract- *An ethnobotanical survey was conducted to document the medicinal plants which are used by tribes of Attappadi, Palakkad district, Kerala, South India. In the present study 70 medicinal plants belonging to 32 families are documented. The collection and documentation of their empirical knowledge based on the traditional use of plants is no doubt, a remarkable step keeping in view the fading ethnic traditions and culture. More attempts should be made to authenticate and evaluate the efficacy of these medicinal plants and formulation used by the tribes.*

Keywords- Ethnobotany, Irula, Mudugas, Kurumbars.

I. INTRODUCTION

Plants have been used for medicinal purposes long before prehistoric period. Popular knowledge of plants used by humans is based on thousands of years' experience. Due to rich diversity of biotic resources, India is ranked one of the 12 mega diversity countries in the tropics with only 2.4% of the land area. India is harboring about 500000, out of some 10-30 million species of living organisms. India has contributed at least 167 plants to global agriculture and is the home to two of the world's 25 hotspots- Western Ghats and the Eastern Himalayas (Nungki *et al*, 2015). Ethnobotany is the study of a region's plants and their practical uses through the traditional knowledge of a local culture and people.A great deal of information about the traditional uses of plants is still intact with tribal people. It is passed from generation to generation and closely interwoven with people's cultural values. The knowledge of the use of medicinal plants and the procedures applied to their preparation was transmitted to the next generation but this knowledge is in danger because transmission between older and younger generation is not always assured. It is essential to document the medicinal component of the flora of any country for conservation and sustainable use. Traditional societies throughout the world hold a wealth of such knowledge which they have built during prolonged interactions with the natural world and which remains fundamental to their physical, spiritual and social interests. But the native healers are often reluctant to accurately share their knowledge to outsiders. There are still hidden medicines in the world of plants. These resources are found in locally available plants and the benefit from local knowledge that is simple to use and affordable.

The world health organization (WHO) has stated that 80% of the world's population depends on traditional medicine for its primary health care and has become indispensable for its survival (Arjith and Arpita, 2013). The medicinal plant sector has traditionally occupied a pivotal position in the socio cultural, spiritual and medicinal areas of rural and tribal families. To avoid the occurrence of toxic side effects in a long term usage of synthetic drugs during treatment of chronic diseases, herbal drugs are being used widely. Therefore proper documentation of traditional knowledge is needed. Hence the present study is an attempt to identify the important medicinal plants and their uses in different therapies by the tribals.

This study aims to record the medicinal plants used by tribes of Attappadi, to collect the medicinal plants and preserve them by herbarium technique and to know about the medicinal values of the medicinal plants based on indigenous knowledge from tribes.

II. MATERIALS AND METHODS

STUDY AREA

The study area, Attappadi is an extensive mountain valley situated on the north-eastern side of Palakkad district, Kerala and spread over an area of 745SqKm. It is bordered to the east by Coimbatore district in Tamil Nadu, on the north by the Nilgiris, south by the Palakkad district. Attappadi is one of the largest tribal settlements in the state. Many tribes like the Irulas, Mudugas and Kurumbars live here, though the density of the population is very low. The study was conducted among Irulas and Kurumbars tribes. In Attappadi, the study was conducted specifically at Agali and Chindakki area.

PLATE 1: LOCATION OF STUDY AREA- ATTAPPADI

SURVEY

Interview was conducted with tribes of Attappadi. A questionnaire was used to interview the tribes. The questionnaire consists of three sections; Section 1 deals with demographic information such as name, age, gender and educational status. Section 2 consists of mode of treatment of disease and reason for using plants as medicine. Section 3 consist of local name of the plant used as medicine, part of the plant used, name of the disease treated, availability of the plant in natural resources and mode of usage. During the survey local name of the plant, name of the disease treated and the part of the plant used were recorded. Plants were collected from that place and identified using 'Flora of presidency of Madras' (Gamble 1915-1936) and a field guide for ethnobotanical documentation by Karuppusamy.S. The identification was further confirmed with the help of taxonomic experts in Botany.

III. RESULTS

Based on the survey taken in Attappadi, Palakkad district, Kerala, South India, 70 medicinal plants were recorded. The medicinal plants were grouped based on their families, habit, availability, parts used, medicinal uses and mode of usage and represented in Table 1. Among the 70 medicinal plants, 5 Red listed plants were also recorded.

TABLE-1: LIST OF MEDICINAL PLANTS IN ATTAPPADI

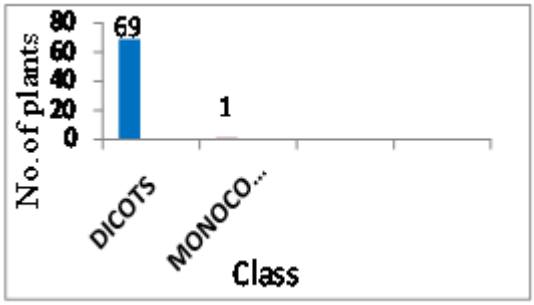
SL.NO	BOTANICAL NAME	FAMILY	SL. NO	BOTANICAL NAME	FAMILY
1	*Abutilon indicum*, G.Don.	Malvaceae	36	*Hemigraphis colorata*, (Bl) Hall.Fil.	Acanthaceae
2	*Acalypha indica*, L.	Euphorbiaceae	37	*Hibiscus rosa-sinensis*, L.	Malvaceae
3	*Achyranthus aspera*, L.	Amaranthaceae	38	*Ixora coccinea*, L.	Rubiaceae
4	*Aerva lanata*, Juss.	Amaranthaceae	39	*Justicia gendarussa*, L.F.	Acanthaceae
5	*Amaranthus viridis*, L.	Amaranthaceae	40	*Kyllinga monocephala*, Rottb.	Cyperaceae
6	*Andrographi spaniculata*, Nees.	Acanthaceae	41	*Lantana camara*, L.	Verbenaceae
7	*Annona squamosa*, L.	Annonaceae	42	*Lawsonia inermis*, L.	Lythraceae
8	*Azadirachta indica*, A.Juss	Meliaceae	43	*Leucas aspera*, Spr.	Lamiaceae
9	*Basella rubra*, L.	Chenopodiaceae	44	*Mangifera indica*, L.	Anacardiaceae
10	*Bauhinia tomentosa*, L.	Fabaceae	45	*Mimosa pudica*, L.	Fabaceae
11	*Biophytum sensitivum*, Dc.	Oxalidaceae	46	*Mirabilis jalapa*, L.	Nyctaginaceae
12	*Boerhaavia diffusa*, L.	Nyctaginaceae	47	*Murraya koenigii*, Spr.	Rutaceae
13	*Boerhaavia erecta*, L.	Nyctaginaceae	48	*Naregami aalata*, W.& A.	Meliaceae
14	*Brassica juncea*, Hk.F& T.	Brassicaceae	49	*Ocimum sanctum*, L.	Lamiaceae
15	*Caesalpinia pulcherrima*, Sw.	Fabaceae	50	*Ocimum tenuiflorum*, L.	Lamiaceae

16	*Calotropis gigantea*, R.Br.	Asclepidaceae	51	*Oxalis corniculata*, L.	Oxalidaceae
17	*Capsicum frutescens*, L.	Solanaceae	52	*Phyallanthus niruri*, L.	Euphorbiaceae
18	*Carica papaya*, L.	Caricaceae	53	*Piper longum*, L.	Piperaceae
19	*Cassia tora*, L.	Fabaceae	54	*Piper nigrum*, L.	Piperaceae
20	*Catharanthus roseus*, G.Don.	Apocynaceae	55	*Psidium guajava*, L.	Myrtaceae
21	*Centella asiatica*, Urb.	Umbelliferae	56	*Punica granatum*, L.	Lythraceae
22	*Chromolaena odorata*, (L) R.M.King&H.E.Robinson	Asteraceae	57	*Rauwolfia serpentina*, Benth.	Apocynaceae
23	*Citrus limon*, (L) Osbeck.	Rutaceae	58	*Ricinus communis*, L.	Euphorbiaceae
24	*Clitoria ternatea*, L.	Fabaceae	59	*Santalum album*, L.	Santalaceaea
25	*Coccinia indica*, W& A.	Cucurbitaceae	60	*Sauropus androgynous*, Err.	Euphorbiaceae
26	*Coffea arabica*, L.	Rubiaceae	61	*Sesbania grandiflora*, Pers.	Fabaceae
27	*Crossandra infundibuliformis*, (L) Nees.	Acanthaceae	62	*Solanum nigrum*, L.	Solanaceae
28	*Datura metel*, L.	Solanaceae	63	*Solanum torvum*, Sw.	Solanaceae
29	*Eclipta alba*, Hassk.	Asteraceae	64	*Taberneamontana divaricata*, (L) R.Br ex Roem&Schult.	Apocynaceae
30	*Eryngium foetidium*, L.	Umbelliferae	65	*Tinospora cordifolia*, Miers.	Menispermaceae
31	*Eucalyptus oblique*, L.	Myrtaceae	66	*Tribulus terrestris*, L.	Zygophyllaceae
32	*Euphorbia heterophylla*, L.	Euphorbiaceae	67	*Tridax procumbens*, L.	Asteraceae
33	*Euphorbia hirta*, L.	Euphorbiaceae	68	*Vernonia cinerea*, Less.	Asteraceae
34	*Ficus religiosa*, L.	Moraceae	69	*Vitex negundo*, L.	Verbenaceae
35	*Heliotropium indicum*, L.	Boraginaceae	70	*Wedelia calendulacea*,Less.	Asteraceae

CLASS WISE REPRESENTATION OF MEDICINAL PLANTS

Medicinal plants were represented based on their class (Chart-1). Majority of the plants belongs to Dicot category. Only one plant namely *Kyllinga monocephala* is monocot among the 70 medicinal plants.

CHART-1: CLASS WISE REPRESENTATION OF MEDICINAL PLANTS



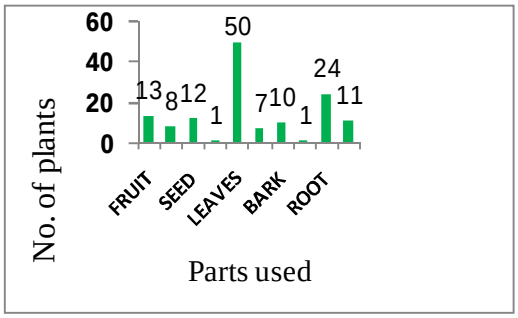
HABIT WISE REPRESENTATION OF MEDICINAL PLANTS

The collected medicinal plants are represented based on their habit. It includes herbs, sub shrub, shrub, tree and vine. Herbs (48.57%) occupy the highest position followed by shrubs (20%), trees (20%), vine (6%) and sub shrub (2.85%).

REPRESENTATION OF MEDICINAL PLANTS BASED ON THE USAGE OF PLANT PART

The plants are represented based on the parts used. Leaves were the most used part for treating various diseases. Leaves are followed by root, fruit, seed, whole plant, bark etc (Chart-2).

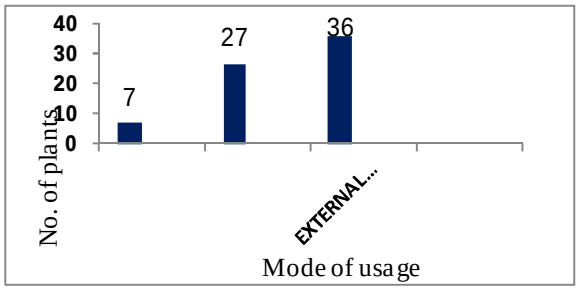
CHART-2: MEDICINAL PLANTS BASED ON THE USAGE OF PLANT PART



REPRESENTATION OF MEDICINAL PLANTS BASED ON THE MODE OF USAGE

The mode of usage of different plants is in different way. Some are used only as external application. Some are used as oral intake. Some plants can be used as both external application and oral intake. Most of the plants that are recorded are used as both externally and orally.

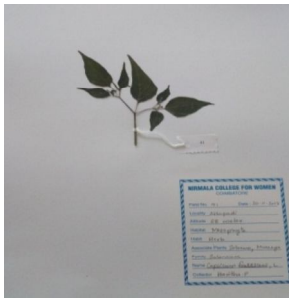
CHART-3: MEDICINAL PLANTS BASED ON MODE OF USAGE



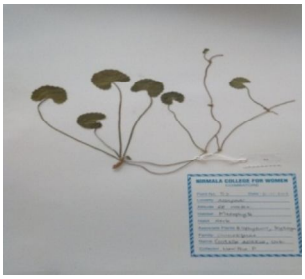
RED LISTED PLANTS AMONG THE RECORDED MEDICINAL PLANTS USED BY TRIBES OF ATTAPPADI

In the survey, about 5 red listed plant species were recorded. It consist 3 **least concerned** plant species. They are ***Capsicum frutescens, Centella asiatica*** and ***Punica granatum***. One **vulnerable** plant is recorded namely, ***Santalum album*** and one **endangered** plant namely, ***Naregamia alata***. The red listed plants were confirmed for their conservation status by using IUCN, 2017.

Capsicum frutescens, L

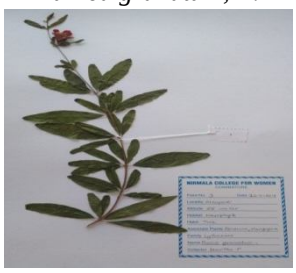


Centella asiatica, Urb.

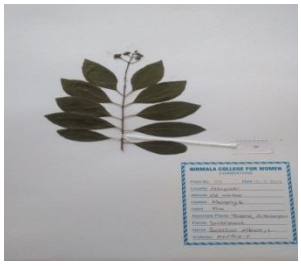


Naregamia alata, W&A.

Punica granatum, L.



Santalum album, L.



IV. DISCUSSION

The current study conducted in Attappadi, Palakkad district, Kerala, South India, was carried out during November 2017. A total of 70 medicinal plants belonging to 32 different families were recorded. The survey was conducted among Irulas and Kurumbars tribal community. The experts in traditional Adhivasi medicine were also consulted and interviewed. A total of 23 tribal people were interviewed for the survey. Among the 70 medicinal plants, the Dicots are dominant. 69 plants belong to Dicotyledons and only one plant belongs to Monocotyledon. Majority of the plants that are used as medicine by the tribes are herbs (48.57%) followed by shrubs and trees (20%), vine (8.57%) and subshrubs (2.85%). A similar result was obtained in the studies conducted by Kannadhasan *et al* (2016) and Amin Shah *et al* (2013). In these 70 medicinal plants belonging to 32 families, Fabaceae (Leguminosae) and Euphorbiaceae are dominant families, each consisting of 6 medicinal plant species. This is followed by Asteraceae (Compositae) having 5 plants, Solanaceae and Achanthaceae consist of 4 plants, Apocynaceae, Lamiaceae (Labiatae), Nyctaginaceae and Amaranthaceae includes 3 plants in each. Other families consist of less number of medicinal plants. When the plant part used are considered,

leaves are the dominant part used (36.49%) followed by root (17.51%), fruit (9.48%), seed (8.75%), whole plant (8.02%), bark (7.29%), flowers (5.83%), stem (5.1%), latex and wood (0.72%). A similar result was obtained by the study conducted by Kadirvelmurugan *et al*, 2014. Maximum number of plants was used for curing skin diseases, followed by wound healing, diabetes, stomach ache, digestive problems, cold, cough and fever etc. Some of the plants were used to cure female disorders such as *Hibiscus rosa-sinensis* is used to regularize periods, *Mirabilis jalapa* and *Crossandra infundibuliformis* for curing menstrual disorders, *Piper longum* to retain uterus in its normal size after delivery, *Sauropus androgynous* and *Euphorbia heterophylla*to increase the production of breast milk. It was also found that a single plant may be used for curing many ailments such as *Sesbania grandiflora* is used for curing liver and spleen disorders, diarrhea, inflammation and rheumatism and *Andrographis paniculata* is used to cure diarrhea, pneumonia, bronchitis, sore throat, tuberculosis and to enhance immune function.

Most of the people of the tribal community depend on both modern and plant medicine to treat their ailments. But for their primary health care needs they mainly depend on plant medicine. There is adequate indigenous knowledge of medicinal plant species among the community of Irulas and Kurumbars residing in the Attappadi area. Much of this knowledge is still prevalent among old folks. The study thus underlines the potential of the ethnobotanical research and the need for the documentation of traditional ecological knowledge pertaining to the medicinal plant utilization for the greater benefit of mankind.

V. SUMMARY

The tribal and ethnic people are highly depending on local and traditional medicine system for their healthcare because they are living in remote forest areas, where hospital and other modern medical facilities are very rare. They use their traditional knowledge for medicinal purposes and the knowledge is passed through oral communication from generation to generation. The study concludes that Irulas and Kurumbars tribes of Attappadi, Palakkad district, Kerala, have good knowledge regarding the utility of plants. This knowledge of medicinal plants had been developed by their ancestors through trial and error methods and passed to them from generation to generation. Unfortunately, due to the lack of written documents most of the traditional knowledge about medicinal plants and their uses survived only by orally to the next generation and are being slowly disappeared. The information may be useful to improve the pharmaceutical application in future and there by producing new drugs to fight against many diseases. Laboratory investigation should also be employed on those plants that have not yet proven to be safe clinically. By this active components of the following plant species can be identify. Many of these plant species may have a potential on becoming an effective drug product. Modernization results in the shrinking habitat of the medicinal plants and the ever increasing demand for the raw drugs pose great threats to some species that are in the verge of extinction. Intensive studies on indigenous medicinal plants and germplasm collection of the various species are therefore very effective. The state government has to conduct vigorous conservation and sustainable management program among local people for the development of this sector.

With all these background information, it is realized that the habitat of medicinal plants is and will continue to be the forests. A holistic approach envisaging the interaction between social, economic and ecological systems will be a significant one towards achieving the most tangible results of conservation and judicious harvesting of medicinal plants.

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