

# Ethnomedical survey of medicinal plants having antipyretic effect used by Paliya tribes in Idukki district of Kerala

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## Abstract

The present research is a detailed study of plants used for different purposes by a primitive tribe *Paliya* inhabiting the eastern slopes of the Western Ghats. The study has been conducted at seven Paliya settlements in the Idukki District of Kerala. Ethnobotanical information was collected using primary as well as secondary sources of data. The primary data collection was done through field visits to the seven hamlets of Paliya communities. The method of primary data collection involved three components: field trips, focus group discussion and collection and identification of the plants. The secondary data were collected from the official records maintained in tribal departments, forest department, and records of studies on the life of Paliya. The Ethno-medico-botanical studies among the Paliya tribes in Idukki district of Kerala resulted the documentation of 388 plant species used to cater different needs of Paliya. Among this 237 plant species belonging 78 families are used for treatment for various ailments. The present paper deals with the plants used for the treatment of fever and associated problems by the Paliya tribes. A total of 41 plant species belonging to 26 families used for fever are reported here. The plants recorded were arranged alphabetically with botanical name, vernacular name, family, habit and method of preparation for their health care needs.

**Keywords:** *Paliya tribe, Idukki, Kerala, Ethnobotany and Antipyretic.*

## Introduction

Ethnomedicine is a biodiversity based health care practice developed by the ethnic communities of a region or country, from generation to generation in which plants, animal products and minerals are used for health care/medicinal purpose other than those mentioned in the classical health traditions of the respective cultures (Rajasekharan, 1996). Body temperature rises due to derangement of heat regulating mechanism in the brain. The rise in body temperature above 99° F is called fever. Fever generally occurs due to infection of micro-organisms that produce pyrogens. These pyrogens act on White Blood Cell (WBC) which in turn produces endogenous toxins. They act on the anterior hypothalamus and the body temperature is elevated causing fever. Most traditional medicine system believes that fever is not a disease in itself but, it is the symptom of some other diseases. The antipyretic agents treat these symptoms

and completely eliminate fever. Herbal antipyretic agents are favoured over the chemical ones for their compatibility to the human physiological system, easy availability and the rich knowledge about the traditional healing system (Singh, 2013).

The present study is an ethnomedical survey of antipyretic plants used among the hill tribe, Paliya, inhabiting in the Eastern slopes of the Western Ghats along the boundary between Tamil Nadu and Kerala. Paliya are one of the predominant tribal communities with unique culture, traditional customs and life style. The Paliya tribes are relatively a small group when compared to other tribal groups inhabiting the Idukki district, but they have their own peculiarities.

## The Paliya tribe of Idukki

Paliya are one of the predominant tribal communities with their unique culture and traditional customs and life style. Even though they are less in numbers, they have their own peculiarities. Physically they are

similar to the Semogn Malaya and other Indian tribal communities.

Till the early part of the 20th century the Paliya dressed scantily and lived in rock crevices and caves. Most of them are now transformed to traders of non wood forest produces, agriculturist and beekeepers. Some work intermittently as labourers, mostly on plantations (Gardner, 2006).

In earlier records, Paliya tribes were grouped into three categories based on their life styles namely; nomadic, semi nomadic and settled nomadic. The nomadic Paliya moved as individual families in search of food and non-timber forest produce such as honey, dammer, wild mace, *Garcinia* etc. They lived temporarily in rock caves. Semi nomadic Paliya build semi-permanent houses and confine themselves to small territories. They collected food and non-timber forest products from the nearby forest areas and spend their day time in the forest and return to their settlement in the evening. Their small huts are unique with the wall made up with wiry interwoven stem of *Lantana camera*. Roof is usually thatched with grass, palm leaves or coconut leaves.

Until recently the Paliya were very shy people and afraid to meet or face the outsiders. Their customs, habit and manners have undergone changes due to contact with outside. They have their own special life styles, culture, customs, traditions and religious practices. Paliya do not have a written script. Their history can be traced only through their oral tradition and religious practices. Since Paliyas follow an isolated life, the knowledge about their culture and traditions are vast and precious.

As a result of the changes taking place, even their traditional practices are becoming extinct. Now-a-days many tribes blindly follow the so called 'civilized' culture and they are losing their unique culture, land, language, etc. The settled Paliya are the focus group in this study. Settled Paliya more or less urbanized and live as agriculture labours

(Ignacimuthu *et al.*, 2006). These people live around the villages in the plains at lower elevations. Paliya are traditionally hunters, gatherers and one of the original inhabitants of the high ranges of Kerala and Tamil Nadu. In general, they do not cultivate, but in recent years some of the Paliya became settled groups and cultivate rice, finger millet (ragi), pepper, coffee, cardamom etc. In most of the houses they started keeping hen, goat and beehives. Paliya are also engaged in seasonal collection of minor forest produce such as honey, bee wax, etc.

## Methodology

The study has been conducted at seven Paliya settlements in the Idukki District of Kerala. Ethnomedical information was collected using primary as well as secondary sources of data. The primary data collection was done through field visits to the seven hamlets of Paliya communities. The method of primary data collection involved three components: field trips, focus group discussion and collection and identification of the plants. The secondary data were collected from the official records maintained in tribal departments, forest department and records of studies on the life of Paliya.

The seven Paliya settlements selected for the study includes 'Anakkara IMS', 'Pachupillakudi', 'Kadasikadavu' and 'Hemakadavu' settlements in Vandanmedu Panchayath; 'Sivalingakudi' in Kattappana Panchayath and Paliyakkudi in Kumily and Chakkupallam Panchayaths of Idukki District of Kerala.

The wisdom and knowledge of village heads (Kani/Mooppan), priest (Poojari), medicine men (Vaidyas), traditional birth attenders (Vayattatty), elderly women folk, local guides and other informants have been utilized to locate and collect materials and plant specimens from the premises of the hamlets and nearby forests. The voucher specimens were collected and identified by referring various Flora and checklist (Gamble & Fisher, 1915-1936; Hooker, 1872-1897;

Anilkumar *et al.*, 2005, Sasidharan, 2004 and Nayar *et al.*, 2006). Voucher specimens were deposited in the Bishop Abraham Memorial College, Thuruthikadu, Pathanamthitta district, Kerala.

## Results and Discussion

The tribes and aborigines still depend on medicinal plants as effective, cheap and safe remedies for various ailments. Nowadays the importance of ethnomedical studies are reinforcing in all the systems of medicine like Ayurveda, Siddha, Unani, Homeopathy and over Allopathy. So emphasis should be given to the potentiality of Ethnomedical knowledge as these can provide a very effective strategy for the discovery of useful medicinally active identity. It is very essential to have a proper documentation of medicinal plants and to know their potential for the improvement of the

health and hygiene through an eco friendly system.

The present study revealed that the Palliya tribal community of Idukki district have adequate ethanobotanical knowledge which has been transmitted from generation to generation. The Paliya tribe often keep the knowledge about medicinal plants as a secret within the family circles only. This study may focus researcher's attention for ethnomedical investigation of the antipyretic medicinal plants and to know their efficacy on modern scientific lines which would be a great scientific contribution to the society. In the present study, information of medicinal plants with botanical name, local name, family, parts used, medicinal use and formulation were tabulated (Table 1).

**Table 1:** Information of medicinal plants used as antipyretic.

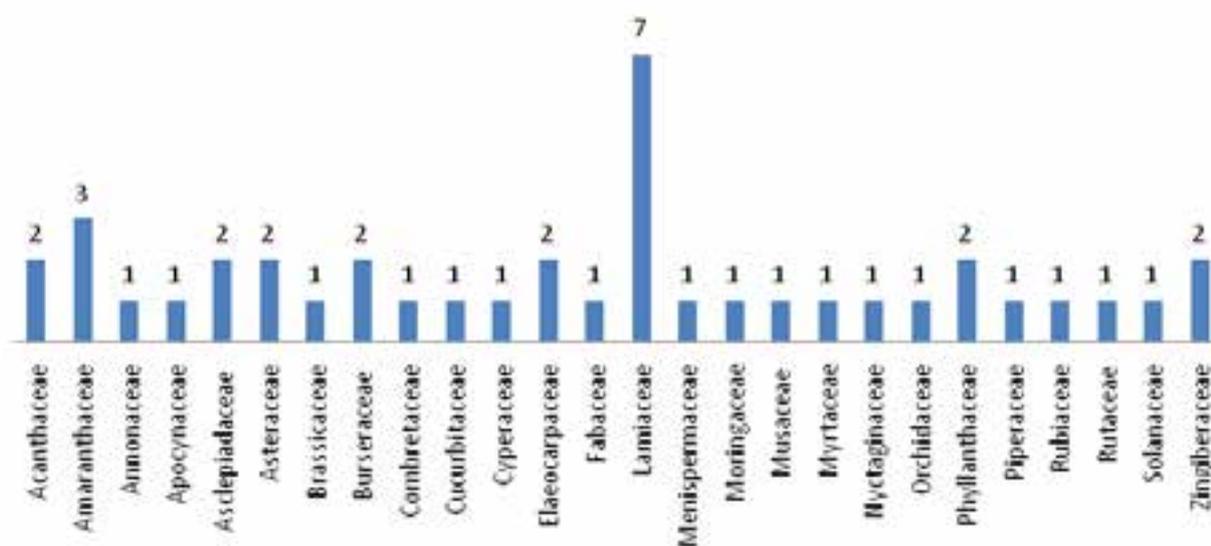
Sl. No	Botanical Name	Local Name	Family	Habit	Medicinal use and formulation
1	<i>Achyranthes aspera</i> L.	Vankadalady	Amaranthaceae	Herb	The decoction of whole plant used to bath children suffering from fever. Leaves are eaten as food directly to cure fever. Extract is taken from 100 g of leaves and give against cough and fever.
2	<i>Aerva lanata</i> (L.) Juss.	Cheruvula	Amaranthaceae	Herb	Leaf juice is taken orally twice in a day for 3 days to cure cold and cough.
3	<i>Alpinia calcarata</i> (Haw.) Rosc.	Chittaratha	Zingiberaceae	Herb	The root of the plant used to cure fever
4	<i>Amaranthus caudatus</i> L.	Chaulai	Amaranthaceae	Herb	Leaf extract used against cut, boils, burns and fever.
5	<i>Annona squamosa</i> L.	Seethappazham	Annonaceae	Tree	Roots are ground to make a fine paste and 1/4 spoon mixed with water, boiled and given orally when it is warm to cure fever and cold.
6	<i>Asystasia gangetica</i> (L.) T. Anderson	Upputhali	Acanthaceae	Shrub	Leaves used to cure fever
7	<i>Barleria cristata</i> L.	Kankambaram	Acanthaceae	Shrub	Young plant used to cure cough and fever

8	<i>Bischofia javanica</i> Blume	Cholavega	Phyllanthaceae	Tree	Young leaves and buds are used for curing tonsillitis and fever.
9	<i>Boerhavia diffusa</i> L.	Tazhuthama	Nyctaginaceae	Herb	Leaves and roots are used for fever.
10	<i>Boswellia serrata</i> Roxb. Ex Colebr.	Kunthirikkam	Burseraceae	Tree	Powdered resin is sprayed on burning charcoal & the smoke is inhaled against cold.
11	<i>Brassica juncea</i> (L.) Czern	Cheru Kadugu	Brassicaceae	Herb	Fried mustard used in hot water with inthupu (Rock salt) is used to cure cold and cough. Seed is grind with ginger and sandal and apply on the fore head to cure head ache due to fever.
12	<i>Brassica nigra</i> (L.) Koch.	Kadugu	Brassicaceae	Herb	Seed used to cure cough and fever.
13	<i>Clerodendrum phlomoides</i> L.f.	Thiruthali	Lamiaceae	Shrub	Extract of leaf used with jeera powder to cure fever.
14	<i>Cyperus rotundus</i> L.	Muthanga	Cyperaceae	Herb	The tuber is used against fever.
15	<i>Eclipta prostrata</i> (L.) L.	Kayyunni	Asteraceae	Herb	Whole plant with black pepper are ground together and made in to small pills about 1 g size and administered thrice in a day for 5 days against fever.
16	<i>Elaeocarpus serratus</i> L.	Kara	Elaeocarpaceae	Tree	Seed grind with butter milk used to cure fever.
17	<i>Ensete superbum</i> (Roxb.) Cheesman	Kalluvazha	Musaceae	Herb	Whole plant used to cure stomach ache and cold and cough.
18	<i>Erythrina stricta</i> Roxb.	Mullumurukku	Fabaceae	Tree	Expressed juice from the bark used to cure cold and cough in combination with <i>Allium cepa</i> , <i>Moringa</i> and <i>Vernonia</i> .
19	<i>Eucalyptus grandis</i> W. Hill	Grandis	Myrtaceae	Tree	Leaf is used to cure cold and cough due to fever.
20	<i>Gmelina arborea</i> Roxb.	Kumizhu	Lamiaceae	Tree	Leaf juice is taken orally to cure cold and cough due to fever.
21	<i>Hemidesmus indicus</i> (L.) R.Br.	Naruneendi	Apocynaceae	Climber	Decoction of whole plant is taken internally against fever.
22	<i>Momordica charantia</i> L.	Paval	Cucurbitaceae	Climber	Leaf juice is used against fever.

23	<i>Moringa pterygosperma</i> Gaertn.	Murinaga	Moringaceae	Tree	The leaves are taken as food to reduce body heat. Bark juice used to cure cold and cough due to fever.
24	<i>Murraya koenigii</i> (L.) Spreng.	Karivepu	Rutaceae	Tree	50 ml of the infusion of the roasted leaves is given internally to stop vomiting and leaf used with ginger and mustard to cure cold and cough due to fever.
25	<i>Ocimum americanum</i> L.	Kattuthulasi	Lamiaceae	Herb	Leaf decoction used to cure fever.
26	<i>Ocimum tenuiflorum</i> L.	Tulasi	Lamiaceae	Herb	Whole plant is used for cough, fever.
27	<i>Oldenlandia corymbosa</i> L.	Parpadakapullu	Rubiaceae	Herb	Whole plant used to cure fever with dried ginger.
28	<i>Phyllanthus reticulatus</i> Poir.	Kattuniruri	Phyllanthaceae	Shrub	10 ml root decoction is given orally against Cough and cold.
29	<i>Piper longum</i> L.	Kattuthippali	Piperaceae	Herb	Seed and spike used to cure fever. <i>Piper longum</i> L., <i>Zingiber officinale</i> Rosc and <i>Piper nigrum</i> L. are used to cure throat pain due to fever.
30	<i>Piper nigrum</i> L.	Kurumulaku	Piperaceae	Climber	Seed powder is used with ginger against cold and cough. Seed used to cure fever. Seed powder with <i>Ocimum sanctum</i> L. used to cure head ache due to fever.
31	<i>Plectranthus amboinicus</i> (Lour.) Spreng.	Panikoorka	Lamiaceae	Herb	Leaf juice is used to cure cold, cough and fever. Leaf paste used to cure head ache due to fever.
32	<i>Plectranthus glabratus</i> (Benth.) Alston	Padappayila	Lamiaceae	Shrub	Juice of leaves is taken internally against cold due to fever.
33	<i>Solanum melongena</i> L.	Vazhuthina	Solanaceae	Shrub	Root is used to cure fever.
34	<i>Terminalia chebula</i> Retz.	Kadukka	Combretaceae	Tree	5 g dry fruit powder mixed with water is given orally against Cough and cold due to fever. Seed used against head ache due to fever, with thulasi and kaduku.
35	<i>Terminalia cuneata</i> Roth.	Kattukadukka	Combretaceae	Tree	Roots are collected in the early morning and tied to the waist to cure intermittent fever.
36	<i>Tinospora sinensis</i> (Loure) Merr.	Amritavalli	Menispermaceae	Climber	Stem, leaf & roots are used against fever.

37	<i>Tylophora indica</i> (Burm. f.) Merr.	Vallippala	Asclepiadaceae	Climber	One leaf With Piper beetle is eaten twice in a day for 3 days to cure cough and cold due to fever.
38	<i>Vanda tessellata</i> (Roxb.) Hook.	Maravazha	Orchidaceae	Herb	The leaves are pounded and the paste is applied to the body to bring down fever.
39	<i>Vernonia anthelmintica</i> (L.) Wild.	Karinjeeragum	Asteraceae	Herb	Fruit ground to paste and take it with hot water to cure cold and cough due to fever.
40	<i>Vitex negundo</i> L.	Karunochi	Lamiaceae	Shrub	Whole plant is used to cure body pain, throat pain and cough. Water boiled with young leaves is given for bathing against body pain due to fever. Fresh leaves are boiled with water and the vapour is inhaled twice a day against fever. Fresh leaves are boiled with water and the vapour is inhaled twice a day against head ache due to fever.
41	<i>Zingiber officinale</i> Rosc.	Inchi	Zingiberaceae	Herb	The rhizome paste, pepper powder, turmeric powder and sugar are boiled in milk and taken orally when it is warm to cure asthma, fever and cough. Rhizome paste used against head ache. Dried ginger and garlic. are ground to paste and apply externally against the throat pain due to fever.

**Fig: 1 Family wise analysis of plants used as antipyretic**



The present study reveals 41 species of medicinal plants that are used by the Paliya tribe for the treatment of fever. These plants belong to 26 families (Fig: 1) and the plants of maximum use recorded belong to Lamiaceae (7 sp) followed by Amaranthaceae (3 sp.) then Acanthaceae, Asclepiadaceae, Asteraceae, Burseraceae, Elaeocarpaceae, Phyllanthaceae, Zingiberaceae (2 sp. Species each) and others are represented by one each. Analysis of the data based on the growth forms (Fig: 2) showed that among the 41 species, 18 are herbs (44 %), 11 are trees (27%), 7 are shrubs (17%) and the remaining 5 are climbers (12%). Analysis from the study shows that leaves are the most commonly used part of plant by the *Paliyas*, followed by fruit, seed, root, whole plant, bark, tuber, rhizome and flower bud.

## Conclusion

The present study shows the dependence of Paliya tribe on herbal remedies for different types of fever. Tribal communities, unlike general population, depend almost entirely on plant resources for all their needs. It is noted that the Paliya tribe are hesitant to disclose most of the information, since they have a strong belief that if they share those knowledge about medicinal plants the effect of treatment become reduced or lost. So the elder people in this

community who are generally the repositories of the herbal knowledge, pass away without sharing this valuable information with their descendants. Here the importance of the present study is important for researchers, scientific community, medical practitioners, pharmaceuticals, etc. It is the need of the hour to encode and preserve this oral knowledge for the sake of the society and generations to come.

## Literature cited

1. Anilkumar N, Sivadasan M and Ravi N. 2005. Flora of Pathanamthitta. Daya Publishing House, Delhi.
2. Anonymous 2016. <http://www.theplantlist.org>.
3. Gamble J S and Fisher 1915-1936. The Flora of the Presidency of Madras. West, Newman and Adlard, London.
4. Gardner, P M 2006. Journeys to the Edge in the Footsteps of an Anthropologist. University of Missouri Press. pp 207.
5. Hooker J D 1872-1897. Flora of British India. L. Reeve and Co. London.
6. Ignacimuthu S, Ayyanar M and Sankarasivaraman K 2006. Ethnobotanical investigations among tribes in Madurai district of Tamil Nadu, India. Journal of Ethnobiology and Ethnomedicine, 2:25.
7. Nayar T S, Sibi M, Beegam A R, Mohanan N and Rajkumar G 2006. Flowering Plants of Kerala. Tropical Botanic Garden and Research Institute, Thiruvananthapuram.
8. Rajasekharan S 1996. An introduction to Ethnomedicine – Ayurdigest special issue 8, published by the Kerala Government Ayurveda Graduate Medical Officers Federation, pp. 136-13.
9. Sasidharan N 2004. Checklist of flowering plants of Kerala. Kerala Forest Research Inst, Peechi.
10. Singh A G 2013. Medicinal Plants as a Source of Antipyretic Agent in Terai Region of Western Nepal. International Journal of Applied Sciences and Biotechnology, Vol. 1(3): 118-126.

**Fig:2** Habitwise analysis of plants used as antipyretic

