

## ETHNOVETERINARY PRACTICES AMONG THE INDIGENOUS PEOPLES OF PALANI HILLS IN SOUTHERN WESTERN GHATS, INDIA

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### ABSTRACT

An ethnomedicinal study of veterinary medicines among the local indigenous peoples of the villages of Palani Hills, Southern Western Ghats, Dindigul district of Tamil Nadu, India were carried out during the period of January 2011 to March 2013. Ethnoveterinary uses of 30 species belonging to 23 families have been documented in this study for their interesting therapeutic properties of various veterinary ailments such as diarrhoea, dysentery, indigestion, constipation, rheumatic pain, wounds, inflammations, neck swelling, skin diseases, foot and mouth diseases, bone fractures and vomiting. The leaves (43%) followed by bark (14%), fruits (9%), tubers (9%), whole plant (9%), seeds (6%), latex (3%), rhizome (3%) and roots (3%) were most frequently used plant parts for ethnoveterinary medicine. Usually the fresh materials were used for medicinal preparation in the form of extract (27%), decoction (21%), paste (21%), juice (19%), powder (9%) and poultice (3%). The most frequently used routes of drug administration have been oral followed by dermal. This study suggests that, documenting the ethnoveterinary medicinal plants and associated indigenous knowledge can be used for conservation and sustainable use of medicinal plants in the study area and for validation of these plant preparations for veterinary treatment.

**Key Words:** Ethnoveterinary medicines, Palani Hills, indigenous knowledge

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## INTRODUCTION

Plants are important source of therapeutic drugs and play a significant role in the survival of the tribal and ethnic communities. The tribal people are the ecosystem people who live in harmony with the nature and maintain a close link between man and environment. The observations concerning the human use of beliefs about and other interactions with plants are the foundation of ethnobotany and while many details remain to be filled in the outlines cure largely in place. As a discipline, ethnobotany gives us a profound understanding and appreciation of the richness and intimacy of relationships between humans and nature.

Ethnobotany deals with the relationship between human societies and plants. It has been recognized as a multidisciplinary science comprising of many interesting and useful aspects of plant science, history, anthropology, culture and literature. The varied economic uses of plants among the primitive human societies which are equally beneficial to modern man. It has also brought to light numerous little known or unknown uses of plants (Jain, 1981). It is the study of tribal and rural people for their unique knowledge about plant wealth in search of new sources of herbal drugs edible parts and other useful aspects of plants.

The ethnoveterinary medicine was practiced as early as 1800 B. C. at the time of king Hamurabi of Babylon who formulated laws of veterinary fees and charged for treating animals (Schillhorn van Veen, 1996). Ethnoveterinary medicine often provides cheaper options than comparable western drugs, and the products are locally available and more easily accessible. In the face of these and other factors, there is increasing interest in the field of ethnoveterinary research and development (Zschocke *et al.*, 2000; Masika *et al.*, 2000; Tabuti *et al.*, 2003; Yineger *et al.*, 2007; Masika and Afolayan, 2003; Kone and Atindehou, 2008). The characteristics, sophistication, and intensity of the ethnoveterinary systems differ greatly among individuals, societies, and regions. Hence, documentation of ethnoveterinary medicine from regions having a rich ethnographic and biodiversity setting would be of great significance. Some studies on ethno veterinary practices from different regions of India have been reported but there is no such studies are available for Tamil Nadu except a few studies in the last decade (Ganesan *et al.*, 2008; Geetha *et al.*, 2006; Kiruba *et al.*, 2006).

A total of 40 species of ethnoveterinary medicinal plants belongs to 27 families and 36 genera were recorded in the study with the help of nine ethnoveterinary traditional healers. Among the plant parts used by the Malayali tribals for their domestic animals, leaves are most commonly used for the preparation of medicine. Of the plants recorded *Abrus precatorius*, *Andrographis paniculata*, *Cassia fistula*, *Dendrocalamus strictus*, *Gymnema sylvestre*, *Strychnos nux-vomica* and *Wattakaka volubilis* are recognized as very commonly used ethnoveterinary medicinal plants (Selvaraju *et al.*, 2011). 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. In view of this, the present study was under taken to identify, collect and document the ethnoveterinary medicinal plants used by the local indigenous peoples of the villages in Palani Hills, Southern Western Ghats, Dindigul district of Tamil Nadu, India..

## MATERIALS AND METHODS

The study was conducting in the villages of Palani Hills, Southern Western Ghats, Dindigul district of Tamil Nadu, India during the period of January 2011 to March 2013. The area is lying between latitude and longitude - 10<sup>o</sup>.5'-10<sup>o</sup>.25' N and 77<sup>o</sup>.15'-

77<sup>o</sup>.50'E with an area of 2068 km<sup>2</sup>. Is an eastward spur of Western Ghats of India with a maximum ( east to west ) length of 65 km, a maximum width of 40 km ( mean width 24 km). The hills fall into two geographically distinct zones, the Upper and the Lower Palnis, along a ravine running from Palani in the north to Periyakulam in the South along the Parappar- Thevankarai Valley. 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.

**Paliyar tribals:** Paliyar tribals are grouped into three categories based on their life styles namely, nomadic, semi nomadic and settled (Ignacimuthu *et al.* 2006). Until recently the Paliyars were very shy people and afraid to meet or face the outsiders. Their custom, habits and manners have undergone changes due to outside contacts. Paliyars do not have any definite pattern of dress. They are engaged in seasonal collection of minor forest products such as honey and bee wax. They cultivate edible plants such as tapioca, banana, millets and cash crops such as pepper, coconut, rubber, areca nut and cashew nut. Their day to- day activities and system of governance today is linked to that of the non-tribals who live in and around the areas they live in.

**Pulayar tribals:** Pulayars are living in colonies at the end of villages (Oorady) or some distance away from the village. Majority of them are living in their traditional thatched shed. The shed constructed by a primitive kind of wall with bamboo reapers and stones and plastered with mud. The Cymbobogan plant is used for the roof. Collection of tubers & honey is the basic activity. They are also involved as labour in the farmer's field. Cattle maintenance is the important activity of this tribe. Their orchestra is known as Singaram (literally meaning beauty), is played by them to invoke the gods. They sing while they dance. They play the different types of music during temple festival and in the deaths.

**Survey of ethnoveterinary medicinal plants:** Frequent field trips were undertaken to survey the inhabitants in Palni hills, Southern Western Ghats, Dindigul district of Tamil Nadu, India were carried out during the period of January 2011 to March 2013. Information regarding medicinal plants was obtained according to ethnomedico-botanical studies suggested by Jain (1964) with the Paliyar and Pulayar tribals who are practicing indigenous ethnoveterinary medicine. Most of the information included in this study was gathered from elderly and experienced practitioners who are very knowledgeable about the medicinal plants. All the usage procedures adopted by these tribals in the field notebook.

The collected data were cross-checked for reliability and accuracy by interacting with different groups of the Paliyars and Pulayars from different habitats to confirm the use and mode of administration of the herbal materials. After eliciting detailed information regarding the medicinal plants, the collected materials were carefully brought to the laboratory for identification. These ethnoveterinary medicinal plants were identified 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). Confirmation of the identifications was made through the comparison of the specimens with those housed in the Herbarium of the Botanical Survey of India (BSI), Southern Circle, Coimbatore, India.

## RESULTS AND DISCUSSION

The collected ethnoveterinary medicinal plants with information on botanical name, family, local name, part used, mode of administration and diseases cured practiced by the local indigenous peoples in Palani Hills of Southern Western Ghats are given in table 1.

TABLE 6: List of ethnoveterinary plants

| S. No | Binomial Name and Family                                   | Local Name             | Part (s) Used         | Mode of administration | Diseases Cured  |
|-------|--|------------------------|-----------------------|------------------------|---|
| 1     | <i>Acacia catechu</i> (L.f.) Willd. (Mimosaceae).          | Karungalli             | Shoots and leaves     | Powder                 | Diarrhoea and dysentery.                              |
| 2     | <i>Achyranthes aspera</i> L. (Amaranthaceae)               | Nayuruvi               | Whole plant           | Decoction and paste    | Indigestion, wounds and inflammations.                |
| 3     | <i>Ageratum conyzoides</i> L. (Asteraceae)                 | Pumpillu               | Leaves                | Juice                  | Insect bites.   |
| 4     | <i>Ailanthus triphysa</i> (Dennst.) Alston (Simroubaceae)  | Perumaram              | Leaves                | Juice                  | Foot and mouth diseases.                              |
| 5     | <i>Albizia lebbek</i> L. (Mimosaceae)                      | Vaghai                 | Stem bark             | Paste                  | Skin diseases and wounds.                             |
| 6     | <i>Ampelocissus arnottiana</i> Planch (Vitaceae)           | Kattukodi -mundhari    | Tuber                 | Extract                | Bone fractures.                                       |
| 7     | <i>Angiopteris evecta</i> (Forst.) Hoff (Angiopteridaceae) | Visirichedi            | Rhizome and stem bark | Extract                | Indigestion, bowels problems, dysentery and injuries. |
| 8     | <i>Anisomeles indica</i> (L.) Kuntz. (Lamiaceae)           | Vaathaneer patchilai   | Whole plant and roots | Decoction and extract  | Dysentery, mouth sores, ulcers and abscess.           |
| 9     | <i>Arisema leschenaultii</i> Blume (Araceae)               | Kattu Karunai Kizhangu | Tuber                 | Extract                | Colic and worms.                                      |
| 10    | <i>Butea monosperma</i> (Lam.) Taub. (Fabaceae)            | Samithu                | Leaves                | Extract                | Eczema and decaying ulcers.                           |
| 11    | <i>Cannabis sativa</i> L. (Cannabinaceae)                  | Ganja                  | Seeds                 | Decoction              | Dysentery.  |
| 12    | <i>Cardiospermum halicacabum</i> L. (Sapindaceae)          | Mudukattan             | Leaves                | Paste                  | Rheumatic pain.                                       |
| 13    | <i>Cassia fistula</i> L. (Caesalpiaceae)                   | Konnei                 | Fruits and leaves     | Decoction and juice    | Stomach pain, ringworms, scabies and wounds.          |
| 14    | <i>Cissampelos pareira</i> L. (Menispermaceae)             | Appatta                | Leaves                | Paste                  | Stomach swellings and ulcer.                          |
| 15    | <i>Coriandrum sativum</i> L. (Apiaceae)                    | Kottamalli             | Seeds                 | Powder                 | Constipation.   |
| 16    | <i>Curcuma amada</i> Roxb. (Zingiberaceae)                 | Mangai inji            | Rhizome               | Paste and powder       | Fractured bones and asthma.                           |
| 17    | <i>Dodonea angustifolia</i> L. (Sapindaceae)               | Viraali                | Leaves                | Paste                  | Muscle swellings and bone fractures.                  |
| 18    | <i>Dioscorea alata</i> L. (Dioscoreaceae)                  | Perumvalli kizhangu    | Tuber                 | Decoction              | Fractured bones.                                      |
| 19    | <i>Emblica officinalis</i> Gaertn. (Euphorbiaceae)         | Nellikkaai             | Fruits                | Extract                | Foot infections.                                      |
| 20    | <i>Equisetum debile</i> Roxb. (Equisetaceae)               | Kuthirai vall chedi    | Whole plant           | Extract                | Bone fractures.                                       |
| 21    | <i>Erythrina indica</i> Lam. (Fabaceae)                    | Kaliyanamur ungai      | Leaves                | Paste                  | Wounds.   |

|    |  |                       |                   |                     |   |
|----|--|-----------------------|-------------------|---------------------|---|
| 22 | <i>Ficus racemosa</i> L.<br>(Moraceae)                       | Atthi                 | Latex and bark    | Juice and decoction | Joint pain, neck swelling and insect bites. |
| 23 | <i>Gisekia pharnaceoides</i> L.<br>(Aizoaceae)               | Manali Keerai         | Leaves            | Poultice            | Sores.                                      |
| 24 | <i>Lobelia nicotianaefolia</i> Heyne. (Campanulaceae).       | Kattuppugai yilai     | Leaves            | Extract             | Wounds.                                     |
| 25 | <i>Mangifera indica</i> L.<br>(Anacardiaceae)                | Mamaram               | Stem bark         | Decoction           | Indigestion.                                |
| 26 | <i>Mimosa pudica</i> L.<br>(Mimosaceae)                      | Thottalsurungi        | Leaves            | Paste               | Fertility problems.                         |
| 27 | <i>Ocimum basilicum</i> L.<br>(Lamiaceae)                    | Tiruneetrup pachhilai | Leaves            | Poultice            | Infections and boils.                       |
| 28 | <i>Ocimum sanctum</i> L.<br>(Lamiaceae)                      | Nalla-Tulasi          | Leaves and fruits | Extract             | Urinary problems.                           |
| 29 | <i>Plectranthus coleoides</i> Benth (Lamiaceae).             | Mudhu pattan          | Leaves            | Juice               | Vomiting.                                   |
| 30 | <i>Terminalia arjuna</i> (Roxb.) Wight & Arn. (Combretaceae) | Marudam               | Stem bark         | Decoction           | Body heat.                                  |

The ethnoveterinary uses of 30 species belonging to 23 families have been documented in this study for their interesting therapeutic properties of various veterinary ailments such as diarrhoea, dysentery, indigestion, constipation, rheumatic pain, wounds, inflammations, neck swelling, skin diseases, foot and mouth diseases, bone fractures and vomiting (Table 1 and Fig. 1). The leaves (43%) followed by bark (14%), fruits (9%), tubers (9%), whole plant (9%), seeds (6%), latex (3%), rhizome (3%) and roots (3%) were most frequently used plant parts for ethnoveterinary medicine (Fig. 2). Usually the fresh materials were used for medicinal preparation in the form of extract (27%), decoction (21%), paste (21%), juice (19%), powder (9%) and poultice (3%) (Fig. 3). The most frequently used routes of drug administration have been oral followed by dermal.

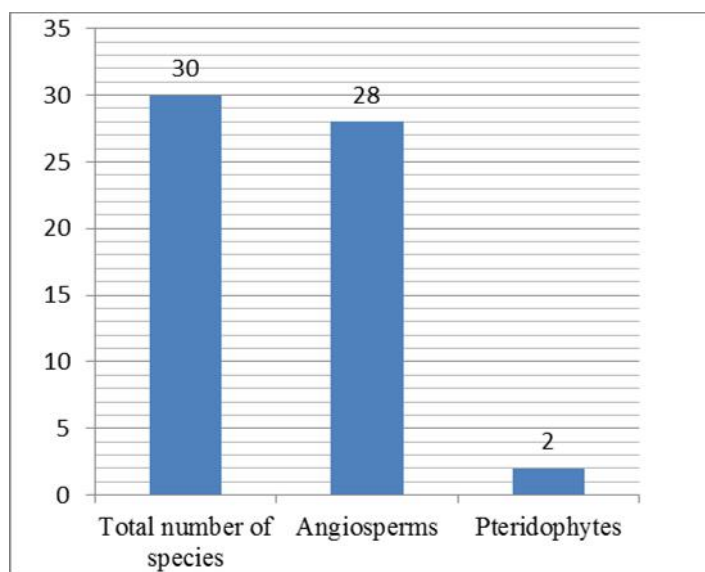


Fig. 1. Analysis of total number of ethnoveterinary plant species in the study

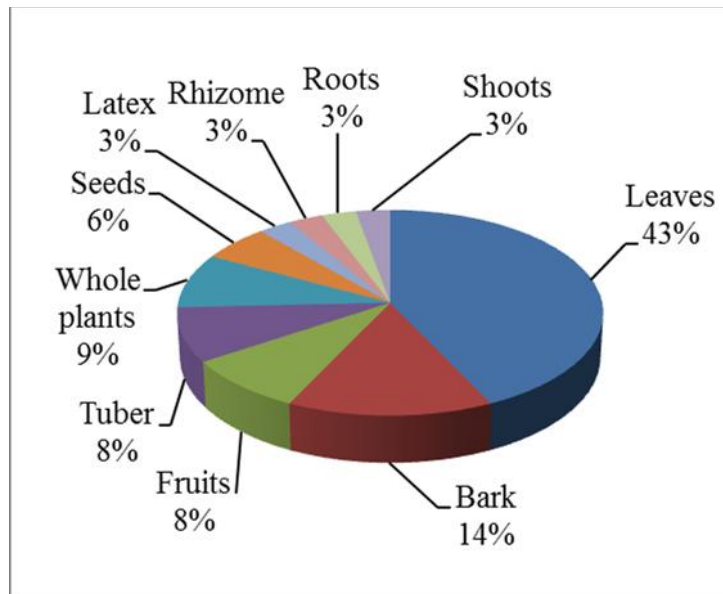


Fig. 2. Analysis of plant parts used for preparation of remedies

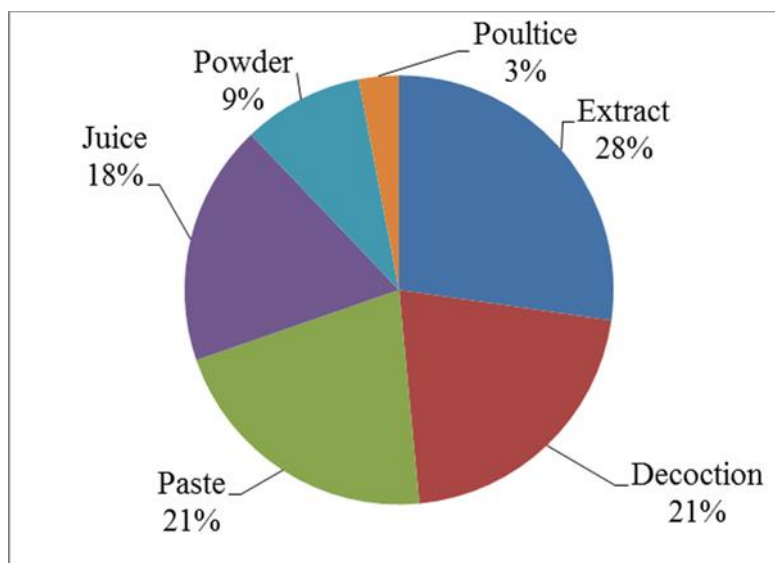


Fig. 3. Analysis of mode of administration to treat the diseases in the study

The present study revealed the use of 30 species of plants used as medicines for the treatment of various types of ailments in animals (Table – 1). Some of the noteworthy ethno-veterinary medicinal plants are: leaves of *Achyranthes aspera* for inflammations, leaves of *Ageratum conyzoides* for insect bites, *Ampelocissus arnottiana* for bone fractures, *Ficus racemosa* for neck swellings, *Ocimum sanctum* for urinary problems, *Terminalia arjuna* for body heat, tender leaves of *Mimosa pudica* for fertility problems, *Cardiospermum halicacabum* for rheumatic pain, roots of *Anisomeles indica* for colic and abscess, stem bark of *Angiopteris evecta* for dysentery and injuries.

Most of the reported plants in the present study are also used by the different types of tribal people in India for the treatment of various diseases in livestock (Girach et al., 1998; Reddy et al., 2006; Mini and Sivadasan, 2007; Harsha et al., 2008;

Satya and Solanki, 2009; Yadhav, 2009; Rahman *et al.*, 2009). Geetha *et al.* (2006) reported that, the plants such as *Aloe vera*, *Azadiracta indica*, *Cardiospermum halicacabum*, *Cissus quadrangularis*, *Citrullus colocynthis* and *Pedaliium murex* are used by the Malaiyali tribals in Kolli hills of Namakkal district.

The uses of 42 ethnoveterinary plant species for treating several ailments of horse and elephants in ancient times is documented by Priyadarsan (1991). The status and prospectus of plants used in Indian ethno veterinary medicines to treat various ailments of animals are well documented by Jain (2000; 2007). Takhar (2004) reported 37 plant species belonging to 25 families are used for the treatment of domestic animals as folk herbal veterinary medicines of Southern Rajasthan had been discussed.

Traditional veterinary practices reported from Dindigul district (Rajan and Sethuraman, 1997) and some southern districts of Tamil Nadu (Ganesan *et al.*, 2008) showed some resemblance with the present study but most of the uses found to be different. Similarly, Kiruba *et al.* (2006) reported that *Abrus precatorius*, *Abutilon indicum*, *Acalypha indica*, *Achyranthes aspera*, *Aloe vera*, *Andrographis paniculata*, *Aristolochia bracteolata*, *Azadiracta indica*, *Calotropis gigantea*, *Cassia tora*, *Cissus quadrangularis*, *Dendrocalamus strictus*, *Euphorbia hirta*, *Gymnema sylvestre*, *Pergularia deamia* and *Vitex negundo* are used by the indigenous people of Kanyakumari district for the treatment of different types of diseases in livestock.

### CONCLUSION

The documentation of this knowledge is valuable for the communities and their future generations and for scientific consideration of wider uses of traditional knowledge in treating domestic animals. The low cost and almost no side effects of these traditional preparations with medicinal plants make them adaptable by the local community. The wealth of this tribal knowledge of medicinal plants points to a great potential for research and the discovery of new drugs to cure the diseases of animals.

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