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# Documentation of Medicinal Plants Traditionally Used in Health Care by Poumai Tribe of Manipur, India

**Shihraveine Vemai, Salam Dilip, Gurumayum Ranibala and R. S. Loushambam***

Dept. of Forestry and Environmental Science, Manipur University, Canchipur, Manipur (795 003), India

**Corresponding Author**

R. S. Loushambam
*e-mail*: bentloushambam@gmail.com

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**Abstract**

The paper deals with plants used as a traditional system of medicine by the Poumai tribe of Manipur, India. The Poumai tribe is one among the major tribes of Manipur, mostly resides in the Senapati District, Manipur. Agriculture is the main source of livelihood and also the main sector for employment although it is highly unorganized and unskilled. An ethno-medicinal investigation was conducted to understand the traditional knowledge of medicinal plants being used by the local healers of Poumai tribe, Manipur, India. Some of the medicinal plants used by the community exhibits established pharmacological activities which signify the importance of the traditional knowledge of the tribes. Besides, many other species traditionally used by the tribes assume to have pharmacological potentiality. The result documented 35 plant species belonging to 23 families were found to use for curing 22 ailments. Leaf was used in the majority of cases for medicinal preparation (20 species) followed by bark, fruit, whole plant, flower, stem, bark, seed and rhizome. Among the 35 plant species, they were mainly used to treat diabetes (6 species) followed by diarrhoea and dysentery, hypertension and gastritis (5 species each). The study thus focuses on the potentials of the ethno-botanical research and the need for the proper documentation of indigenous healthcare knowledge pertaining to the medicinal plant utilization for the greater benefit of human mankind.

***Keywords:*** Ethnomedicinal, traditional, local healers, poumai

## 1. Introduction

Medicinal plants continue to provide health security to millions of rural people all over the world. According to WHO's estimates, over 80% of people in developing countries depend on traditional medicines for their primary health needs. Millions of rural households in India use medicinal plants in a self-help mode (Anonymous, 2019). Thus, for some 4-5 hundred million people, traditional medicine is the only alternative source of healthcare in the absence of the ailing Government run healthcare systems. The traditional system of medicine has a heritage of community acceptance, and the experience and knowledge of local herbalists, who can utilize enormous diversity of plants, which is much sought after patronized (Sofowora et al., 2013). At least 70% of the population of the developing world directly rely on traditional medicine for primary health care (Jeelani, 2018). Equally, the industrialized nations indirectly rely on medicinal plants for their pharmaceutical products. China and India are two major international players from Asia in this regard (Vasisht et al., 2016). Asian medicinal plants account for about 50% of export quantity and 45% of global earnings from traditional medicines. They are utilized at the household level and for commerce. Asia accounts for over 38,660 species of medicinal plants (Phumthum et al., 2017); about 78 species are grown and commercialized, with China accounting for about 26 species (Chi et al., 2017). Medicinal plant extraction and cultivation form an integral part of several Asian countries, including Bangladesh, China, India, Nepal, Pakistan, Myanmar, and Indonesia (Rashid et al., 2014).

At present, about 65% of the Indian population is dependent on the traditional system of medicine. There are estimated to be around 8000 manufacturing units of traditional medicinal systems in India, medicinal plants and aromatic plants have also become critically important in supporting livelihoods of millions of rural people who are fully or partially dependent on these plants as a source of income (Astutik et al., 2019). Drugs of plant origin occupy an important position in different pharmacopoeias (Ekor, 2013). Many of the lifesaving drugs in present day allopathic system are obtained from naturally growing plants. Folk medicines are gaining importance. Much of this wealth of knowledge is being lost as traditional culture is gradually disappearing (Ravishankar and Shukla, 2007). The Poumai tribe is one of the major tribes of Manipur, mostly inhabitant in the north-eastern parts of Senapati

District, Manipur. People living in this area lead a rural life and dependent mostly on the forest resources available in their surroundings. Since today many locals still rely on forest as their major source of economy (Dominic, 2018). Tribal people and ethnic races throughout the world have developed their own cultures, customs, cults, religious rites, and myths, folk tales and songs, foods, medicinal practices, etc. (Climate, 2017). Numerous wild and cultivated plants play a very important and vital role among these cultures and this interrelationship has evolved over generations of experience and practices. Tribal population provides considerable information on the use of many plants or plant parts as medicine. Traditional folk medicines hold the heritage of community acceptance because these are derived from indigenous knowledge, beliefs and experiences. Utilization of this traditional knowledge of medicinal plants is not only useful for conservation of cultural traditions and biodiversity but also for community healthcare and drug development. Therefore, documentation of this traditional knowledge is inevitable to throw light into the field of herbal research and to improve socioeconomic development of the people. The work was based on the indigenous knowledge on medicinal plants and methods of treatment against common ailments prevails among the Poumai tribe of Manipur.

## 2. Materials and Methods

### *2.1. Study site*

The present study was conducted in Senapati district of Manipur, India. The district is located in the northern part of Manipur state with an average altitude of 1424 m above the mean sea level and covers a total area of 3271 km$^2$. The district lies between 24°37'N and 25°37'N latitudes and 93°29'E and 94°15'E longitudes (Figure 1). Because of higher altitude, summer is mild with a maximum temperature of 35 °C and a minimum of 3°C. The annual rainfall ranges from 670 to 1450 mm (FSI, 2019). The district has a total forest cover of 2136 km$^2$, i.e. 65.32% of its geographical area (FSI, 2019) while the rest 20% are utilized for cultivation. The forests are grouped into tropical semi-evergreen, tropical moist deciduous, subtropical broadleaved hill forest, sub-tropical pine forest and montane wet temperate forest. The district has a population of 4,79,148 and a density of 109 persons per square kilometre (Tongo, 2007). Most of the villagers are engaged in the traditional shifting cultivation (jhum farming) as their major occupation. Agriculture is the main occupation and many practices shifting cultivation. Peoples depend on the forest for their daily requirements like fuel-wood, foods, water and varieties of forest products.

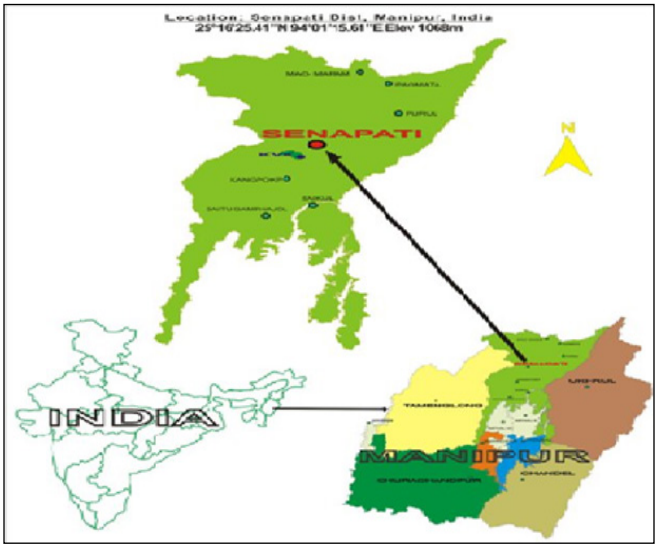



Figure 1: Map showing the study area in the Senapati district of Manipur

### *2.2. Data collection*

A survey was carried out to collect first-hand information on the traditional medicinal practice by the Poumai tribe. To identify the regular herbal healers of the area, a preliminary ethno-medico botanical survey of the Poumai was carried out in 15 selected villages of the district. Only the healers who are well known for their traditional healthcare practices and recognized by the villagers were selected. Altogether 15 herbal healers (8 males and 7 females) were selected through purposive sampling techniques (Martin, 1995). Every village chief was interacted and prior informant consent was taken verbally before the interview and the objectives of the study was clearly explained. For the collection of information on plants used as traditional medicine by the Poumai tribe a questionnaire was prepared and before interviewing them Prior Informed Consent was taken from knowledge providers. The techniques employed for data collection was done by interviewing personal interviews with villagers, group discussion and assistance of local information were used for data collection. For data collection, semi structured questionnaire with flexibility of question was prepared to collect all possible information on Traditional Medicine preparation, application and associated social belief prevailed among the Poumai tribe. The standard data collection methods were followed to document indigenous knowledge of the local community on health, use, conservation, and threats of medicinal plants (Jain and Rao, 1977). It was observed that very often, practice of Traditional Medicine is associated with their culture, worship of deities and superstitions.

### *2.3. Plant identification*

Plants were photographed and collected during guided forest walk during the field survey. The plants, leaves, seeds and reproductive plant parts were collected and preserved in the form of herbarium for identification. Collection and herbarium preparation were made following standard methodology (Sinha, 1996). Collected plants were identified with the help of Herbarium of BSI, Shillong (ASSAM), and consultation with relevant taxonomic literature (Singh et al., 2000; Chowdhery et al., 2009 and Vedavathy, 2003). Identification of the plant species was made using various taxonomic keys, books and monographs (Singh et al., 2000 and Hooker, 1973). For correct

nomenclature and author citation of the collected species, the online database like the International Plant Names Index (www.ipni.org) and The Plant Lists were referred (www.theplantlist.org). The vouchers specimens were deposited in the herbarium of Department of Forestry and Environmental Science, Manipur University.

## 3. Results and Discussion

### *3.1. Medicinal plants and their use pattern by the Poumai tribes*

The interviews and discussions with the local healers revealed the uses of 35 plants as a Traditional medicine for treatment of 22 ailments belonging to 23 families (Table 1) (Plate 1-35). The most dominant family of the present study is Asteraceae with 6 species and second most important families with a record of 3 species of Solanaceae and Rosaceae. Asteraceae and Fabaceae have also been reported as one of the largest families in the flora of Manipur (Sandhyarani, 2010) and its prevalent distribution throughout the state may be the reason behind it being dominant. In Manipur itself, so far 1200 plants of medicinal importance have been registered (Warren and Cashman, 1988). During the field surveys, only few villagers were found engaged in the cultivation of medicinal plants in

Table 1: List of medicinal plants used by the Poumai tribe in Senapati, Manipur

| Plant name | Family | Local name (Poumai) | Habitat | Parts used | Ailments treated for | Mode of preparation |
|---|---|---|---|---|---|---|
| *Ageratina adenophora* | Asteraceae | Japan Pyou Heu | Shurb | Leaf | Gastritis, | Decoction |
| *Alternanthera philoxeroids* | Amaranthaceae | Pipi Hyou | Herb | Leaf | Diarrhoea and Dysentery | Boil as as well as raw vegetable |
| *Areca catechu* | Arecaceae | Tamul | Tree | Fruit/seed | Stomach pain | Raw |
| *Artemisia nilgarica* | Asteraceae | Peku | Herb | Leaf | Diabetes | Decoction |
| *Bidens pilosa* | Asteraceae | Zhucha | Herb | Leaf | Piles | Decoction, Boiled |
| *Blumeopsis flava* | Asteraceae | Dziivu | Herb | Leaf | Blood clotting | Decoction |
| *Brugmansia sauveolens* | Solonaceae | Boubou | Shurb | Leaf | Urinary tract infection | Decoction |
| *Carica papaya* | Caricaceae | Hawai Mambi | Tree | Leaf | Fever | Decoction |
| *Catharanthus roseus* | Apocyanaceae | Ponhuh | Shurb | Leaf | Diabetes | Decoction |
| *Centella asiatica* | Apiaceae | Raivu | Herb | Whole plant | Hypertension, | Raw/Boiled |
| *Cinchona officinalis* | Rubiaceae | Khasii | Tree | Bark | Diabetes | Decoction |
| *Clerodendrum colebrookianum* | Lamiaceae | Nyouvu | Shurb | Leaf | Gastritis | Decoction, Boiled |
| *Conyza canadensis* | Asteraceae | Peku Zairai | Herb | Leaf | Blood clotting | Decoction |
| *Drymaria cordata* | Caryophyllaceae | Heu Pyou | Herb | Leaf and stem | Snake bite | Raw/ Squeeze Paste |
| *Emblica officinalis* | Phyllanthaceae | Hroushi | Tree | Fruit | Cold and cough, Hypertension | Raw/ Boiled/ Fermented |
| *Ficus pumila* | Moraceae | Douroshee | Climber | Fruit | Diabetes | Raw |
| *Fragaria vesca* | Rosaceae | Khou thao phe shi | Herb | Leaf and stem | Snake bite | Decoction |
| *Gynura crepidioides* | Asteraceae | Tou Bou Bou | Herb | Leaf | Gastritis Stomach pain | Raw, Boiled |
| *Houttuynia cordata* | Saururaceae | Hrama Beih | Herb | Whole plant | Worm expulsion | Raw |
| *Mentha arvensis* | Lamiaceae | Phaosopyou | Herb | Leaf and stem | Relief from gas, Diarrhoea and dysentery Vomiting | Raw/Boiled |

Table 1: Continue...

| Plant name | Family | Local name (Poumai) | Habitat | Parts used | Ailments treated for | Mode of Preparation |
|---|---|---|---|---|---|---|
| *Meriandra bengalensis* | Lamiaceae | Louu | Shrub | Leaf | Ulcer | Raw and slightly burnt |
| *Musa balbisiana* | Muraceae | Vethou | Herb | Flower and stem | Typhoid | Boil/vegetables |
| *Nicotiana tabacum* | Solanaceae | Khaopu | Herb | Leaf | Tooth pain | Raw |
| *Oenanthe javanica* | Apiaceae | Kuvu | Herb | Whole plant | Hypertension, skin allergy | Raw/ Boiled |
| *Oxalis corniculata* | Oxalidaceae | Nyahmai Mata | Herb | Whole plant | Diarrhoea | Raw |
| *Phlogacanthus thyrsiformis* | Acanthaceae | Bohkha Sii | Shrub | Leaf and flower | Cough and fever | Decoction |
| *Plantago major* | Plantaginaceae | Pavu | Herb | Whole plant | Cough | Decoction |
| *Prunus persica* | Rosaceae | Kuhshi | Tree | Fruit and bark | Gastritis | Boiled |
| *Psidium guajava* | Myrtaceae | Pundle Shi | Tree | Leaf and fruit | Diabetes | Raw, Boiled as well as vegetable |
| *Pyrus pashia* | Rosaceae | Tyao Shi | Tree | Leaf | Diarrhoea and dysentery | Raw/ Decoction |
| *Rhododendron arboreum* | Ericaceae | Diipa | Tree | Flower | Expulsion of bones stuck in throat | Decoction |
| *Rhus semialata* | Anacardiaceae | Moushi | Tree | Fruit | Diarrhoea | Decoction |
| *Solanum anguivi* | Solanaceae | Khaokha | Shrub | | Vomiting | Raw/Boiled |
| *Trichodesma kumareum* | Boraginaceae | Kiipa Vu | Herb | Fruit | Stomachache | Boiled/vegetables |
| *Zingiber officinale* | Zingiberaceae | Vou | Herb | Leaf and flower | Hypertension | Raw/Boiled/ Decoction |

their home garden. The source of the collection indicated that the majority of the medicinal species are collected from wild habitat while the rest are from semi-cultivated and cultivated source. This indicates the importance and preference of wild plants by the community and their availability in the nearby forested areas. Among the various growth habits of medicinal plants, herbs are the dominant one with 18 species, followed by trees 9 species, shrubs 7 and climber 1 species. In general, herbs are commonly reported as a dominant group when medicinal plants are concern (Abbas et al., 2017; Umair et al., 2017 and Sairam, 2001). The dominance of male healers over female is because most of the healers preferred male as more reliable member in the family or relatives to transfer and carry on their indigenous medicinal plant knowledge and also the males are capable of collection and processing of the required plants from the forests. It is also found that most the local people of the area preferred the herbal medicine and get support from the healers only. The main reasons for it are- i) low financial status and poor transportation to procure modern drugs compel them to opt for herbal medicine and ii) good reputations of the herbal healer where people have good faith in them (Panmei et al., 2019).

Due to lack of adequate communication, remoteness of the villages and unavailability of modern health care facilities the local people use traditional medicine for their common ailments. This traditional knowledge system among the tribes is a complete system of theory and practice that have been evolved through ages of human experiences and independent of conventional biomedicine. The study revealed practice of an age old tradition of herbal medicine for cure and prevention of diseases/ ailments among Poumai tribe of Manipur. The local tribes are largely self-contained, ritually sanctioned way of life where they practice utilization of plant part for diseases and sickness (Anon, 2019). The Convention of Biological Diversity (CBD) has put much emphasis on conservation of this indigenous knowledge invariably in different parts of the world (Anon, 2000 and Dev, 1999). India has a great history of ancient medical systems such as Ayurveda and other similar repositories of knowledge, which represent valuable resource of medicinal plants (Lulekal et al., 2008).


*Ageratina adenophora*


*Alternanthera philoxeroids*


*Areca catechu*


*Artemisia nilgarica*


*Bidens pilosa*


*Blumeopsis flava*


*Brugmansia sauveolens*


*Carica papaya*


*Catharanthus roseus*


*Centella asiatica*


*Cinchona officinalis*


*Clerodendrum colebrookianum*


*Conyza canadensis*


*Drymaria cordata*


*Emblica officinalis*


*Ficus pumila*

Plate 1: Continue...

*Fragaria vesca*

*Gynura crepidioides*

*Houttuynia cordata*

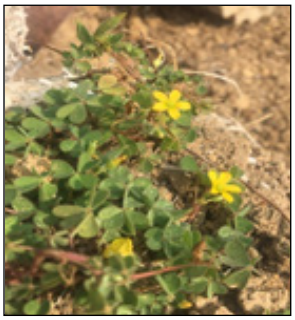
*Mentha arvensis*

*Meriandra bengalensis*

*Musa balbisiana*

*Nicotiana tabacum*

*Oenanthe javanica*



*Oxalis corniculata*

*Phlogacanthus thyrsiformis*

*Plantago major*

*Prunus persica*

*Psidium guajava*

*Pyrus pashia*

*Rhododendron arboreum*

*Rhus semialata*

Plate 1: Continue...

*Solanum anguivi*

*Trichodesma kumareum*

*Zingiber officinale*

Plate 1: List of medicinal plants used by Poumai tribe for different alignments

*3.2. Drug preparation*

For the preparation of the crude drugs, they used different plant parts such as flower, fruit, leaves, root, seed, etc. Based on informants use reports, the leaves and fruits are the most frequently used plant parts for their Traditional Medicine preparation. Some parts of plants were taken as paste, decoction of leaves, fruits and barks were used (Table 1). Maximum usage of leaves in herbal medicine preparation reflects the abundance and ease of collection. In terms of conservation, use of leaves causes minimum harm to the plant as compared to other plant parts thereby ensuring further sustainable utility. The local herbal healers use different forms of the crude drug type for treating various health ailments. Among the crude drug type recorded for medicinal uses, majority of drugs are prepared in the form of decoction from freshly collected plants parts (mostly leaves). To improve the palatability, additives are sometimes used by the healers. All the medicinal plants recorded are used in human healthcare as well as for animal disease. While some of this indigenous preparation is used for topical application for the treatment of diabetes, hypertension, gastritis, diarrhoea, fever, blood clotting, tooth pain, etc. (Table 1). Traditional folk medicines hold the heritage of community acceptance because these were derived from indigenous knowledge, beliefs and experiences. Majority of the healers prescribed the dosage according to the age and physical condition of the patients and duration of treatment are determined until it cures. This absence of standardized measuring units and drawback of traditional medicines have also been revealed by many researchers (Sodipo and Wannang, 2015 and Chekole, 2017) and also suggested that the side effects related to inappropriate dosages might reduce the traditional uses of plants for the healthcare system by the people (Jain et al., 2016).

The most common plants used for hypertion by the Poumai tribe in their day-to-day lives are *Solanum anguivi* and *Clerodendrum colebrookianum.* It was also observed that, the species *Ficus pumila* in the family Moraceae, *Areca catechu* in the family Arecaceae and *Pyrus pashia* were used in the treatment of Diabetes, has been used by the local healers as antidiabetic herbal medicine. Ethanolic leaf extract of *Ficus pumila* was found to reduce blood glucose level in the dose dependent fashion in Streptozotocin (STZ) induced diabetic rates as well as reduction in triglyceride and low-density lipoprotein (LDL) level (Deepa et al., 2018). *F. benghalensis, F. carica, F. glomerata, F. glumosa, F. racemosa* and *F. religiosa* exhibited remarkable antidiabetic properties with various mechanisms of action that might attributed due to the presence of bioactive metabolites such as flavonoids, phenolic acids, tannins, alkaloids, glycosides, coumarins, triterpenoids, sterols and vitamin E (Velmurugan and Bhargava, 2013). Similarly, the species *Areca catechu* was furthermore observed in the treatment of diabetes but there were reports of *Pyrrus communis* used as antidiabetic (Nautiyal et al., 2002). *Emblica officinale* commonly known as Indian gooseberry and *Centella asiatica* are the most common fruit and green leafy vegetable eaten to prevent from hypertension fields. *Carica papaya* or commonly called papaya and *Musa balbisiana* commonly called as wild banana are also found to be very effective in the treatment of fever, malaria/typhoid. Several of these medicinal plant species have slow growth rates, low population densities, and narrow geographic ranges (Jain et al., 2016), therefore they are more prone to extinction (Jablonski, 2004). *Ageratina adenophora*, *Trichodesma kumareum*, *Plantago major* and *Centella asiatica* are the most commonly plants/leafy vegetables used for treating gastritis. Every healer has their own way of diagnosing and managing degenerative disorders like cancer, hypertension and diabetes. Besides the common herbal healing practices, some magico-religious ways are also followed by some spiritual healers. In some cases, when the ailment could not be ascertained (e.g. sudden body pain, swelling, stomach pain, and evil spirit) the healers diagnose it from the symptoms narrated by the patients and relatives, and by monitoring the pulse of the patient. Then based on their personal experiences, the herbal remedies are applied with prayer. Many of the medicinal

plants used by the tribes are also found as edible plants, which are used for both the purposes. This indicates that many of wild edibles species also have therapeutic properties besides providing nutritional requirement. Some healers believe that most of the plants with bitter taste have more curative properties for hypertension and diabetes and medicines are mostly prescribed to take along with meal as side dish. Uses of wild edible plants as medicine have also been reported by (Teklehaymanot and Giday, 2010 and Rajkumari et al., 2013) from other tribal communities. Utilization and consumption should be done base on ecological principles to ensuring sustainability and conservation of the resources.

## 4. Conclusion

The study provides comprehensive information about the traditional knowledge of medicinal plants by the Poumai tribe of Manipur, India. Many of the reported species are rare and threatened; needs urgent attention to conserve resources so as to optimize their use in the primary health care system. It is important to collect this information and develop a data base of medicinal plants for future research, help in imparting knowledge to the local people for the need to conserve for future generation.

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