



An Ethnobotanical Survey of Medicinal Plants Used by Ethnic People of Thoubal and Kakching District, Manipur, India

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4.1 Introduction

The infliction of herbs and herbal preparations particularly those based on a traditional system of medicine are increasing in the daily life of people, as a global community is in the search of effective, comparatively safer and better medicine (Sen et al. 2011). According to the World Health Organization (WHO), about 80% of the world's population, especially those who live in rural areas, still depends on herbal medicine for

their primary healthcare needs (Ahmad et al. 2006). Traditional local healers abundantly used the natural sources and they conserved the relationship between human society and environments (Sajem and Gosai 2006). Herbal remedies are very popular all over the world as they contain plenty of bioactive molecules to cure the diverse diseases and also considered as safe compared to allopathic medicine (Thirumalai et al. 2009; Verma and Singh 2008; Sannomiya et al. 2007). Ethnic peoples possess immerse knowledge on the usage of biotic resources of traditional medicinal plants (Halim et al. 2007; Uniyal et al. 2006), which helps researchers for better investigation and to find more potent drug formulation based on such information's (Rana et al. 2010).

Manipur is a state situated in the North East part of India. The total area covered by the state is 22,347 km² of hill territory. The small state forms a part of the Himalayan mountain system

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which carries this cup-shaped wonderland inside its series of hill ranges (Singha 2014). The climate of Manipur is largely influenced by the topography of this hilly region. Lying 790 m above sea level, Manipur is wedged among hills on all sides. This northeastern corner of India enjoys a generally amiable climate, though the winters can be chilly. The maximum temperature in summer is 32 °C, while it often falls below 0 °C in winter (Singha 2014; Shankar et al. 2009).

Manipur was chosen after the survey because it is blessed with rich flora and fauna which in turn is used in medicines since ancient times by the native people as well as the people inhabited in this hilly region of the state. In this present study, attempts are being made to document such ethnomedicinal information commonly used for various health problems by the people of Thoubal and Kakching district of Manipur, India.

4.2 Methodology

4.2.1 Study Location and Duration

Thoubal district of Manipur lies between latitude 23°45'N and 24°45'N and longitude 93°45'E and 94°15'E, it occupies the larger part of the eastern half of the Manipur Valley, takes the shape of an irregular and triangular with its base facing north. In December 2016, Kakching district came into existence when Government bifurcate Thoubal district. These areas of the state are largely inhabited by a number of communities like *Meitei*, *Meitei-Muslim*, *Loi*, *Taithibi*, *Chiru*, *Hmar*, *Gangte*, *Kabui*, *Kom*, *Lamkang*, *Maring*, *Paite*, *Tangkhu*, *Vaiphei*, *Zou*, *Maring*, *Kukis*, and *Thadouetc* (Khan and Yadava 2010). The present study was conducted in different out in different tribal inhabited localities of Thoubal and Kakching district of Manipur during August 2015–June 2016.

4.2.2 Investigating Methods

Ethno-medico-botanical information practised by the different communities of these two dis-

tricts was collected through field survey. Each locality was visited several times and information was collected through interviewing the local informants. The person we are communicated are above 60 years old and have usually been practicing such knowledge in their locality for more than two decades. Briefly, group discussion prior to the survey was made with the local herbal medicine practitioner at each locality to get their consent and to explain the importance of such study. Methods like a semi-structured interview, face-to-face dialogue, group discussion and field observation were made to collect the data on medicinal plants. Information was collected from both tribal and non-tribal medicine men and medicine women of different castes and religions in the study area. Information on the knowledge and practice of those people were collected and documented. Information on the plant species like their local name, parts of the plant used, medicinal importance, mode of preparation and use were collected. All plant specimens were collected during different seasons. Plants were identified using standard manual, available literature and with the help of traditional medical practitioner followed by confirming with expert plant taxonomists.

4.3 Results and Discussion

Among the 16 districts of Manipur, Thoubal and Kakching districts were surveyed. Traditional healers from Meitei community, as well as other communities, possess rich knowledge on plants which are used in the preparation of traditional medicine. However, a large number of plant species and such knowledge have not been scientifically proven and documented. The plants and herbs are being used for promotion and preservation of health, prevention, and treatment of diseases. A total of 40 ethnomedicinal plants belonging to 35 families were documented in the present study. Informants are generally practised in different section of society by using different parts of plants such as roots, stems, leaves, flowers, fruits in the form of infusion, decoction, paste



N.(o) Keinahal Leima
 Age: 70
 Add: Kakching Yaikhom Pareng
 Sex: Female
 Occupation: Housewife



P. Keinahan Devi
 Age: 68
 Add: Thoubal Nongangkhang
 Sex: Female
 Occupation: Housewife



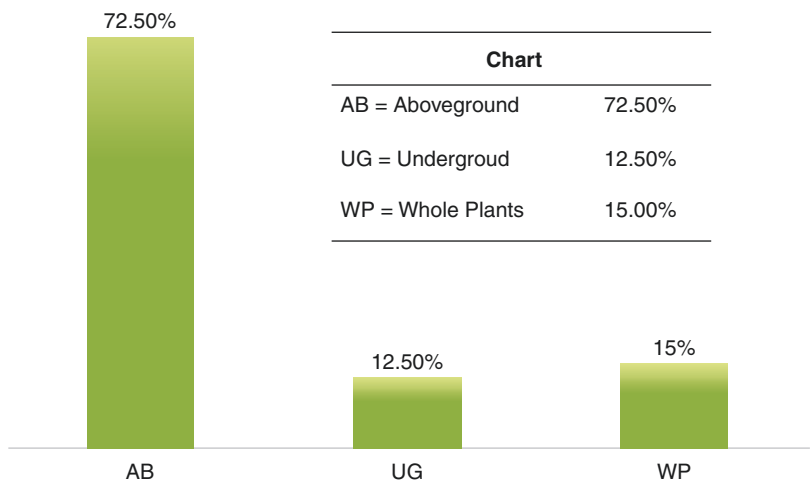
Yengkhom Ibotombi Singh
 Age: 72
 Add: Kakehing sumak leikai yotsungbam pareng
 Occupation: Retired Teacher



Nongmaithem Tomehou Meitei
 Age: 76
 Add: Kakching Mayai leikai Yaikhom Pareng
 Sex : Male
 Occupation: Cultivator

Fig. 4.1 Photograph with traditional healers during the survey

Fig. 4.2 Percentage distribution of aboveground, underground and whole plant parts

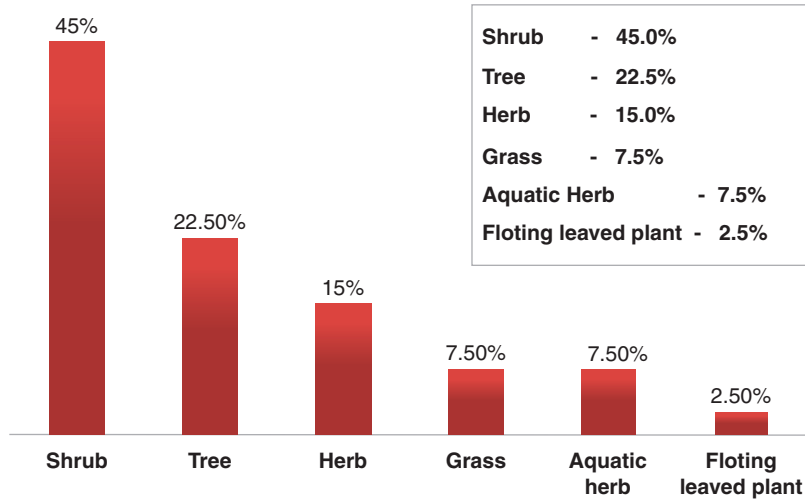


etc. Figure 4.1 shows some clicks captured during the survey with folk medicine practitioners.

Among 40 medicinal plants, the usage of above-ground parts of medicinal plant species

consistently higher (72.5%) than the underground plant parts (12.5%) followed by whole plants (15.0%) (Fig. 4.2). All these medicinal plants were used by people of the different community

Fig. 4.3 Graphical representation of life forms investigated ethno-medicinal plants



of tribes like *Maitei*, *Meitei-Muslim*, *Maring*, *Kukis*, and *Thadou* of Thoubal and Kakching district of Manipur for curing of different ailments. The results showed that the shrub was prevalent (45%), followed by tree (22%), herbs (15%), grass (7.5%), aquatic herb (7.5%) and floating winged plant (2.5%) (Fig. 4.3).

The eminent families of the medicinal plant used by ethnic people were presented in Table 4.1 with plant name, habit, common name, parts used and diseases. The percentage of various plant parts used as drug revealed in Fig. 4.4 as leaves (40%), whole plants (15%), seeds (10%), barks (5%), shoots (5%), roots (5%), rhizomes (5%), aerial parts (5%), fruits (2.5%), stems (2.5%), flowers (2.5%) and petioles (2.5%).

In Thoubal and Kakching, as in other parts of the state, herbs or plants have all along been used for promotion of health and prevention and treatment of diseases. They were used in most cases as an infusion, decoction, juice, powder, extract and paste from the parts of plants such as roots, stems, leaves, flowers, fruits, whole plants, barks, seeds, aerial parts, rhizomes, shoots, petioles. Most of the plants are intended as medicine by orally and externally and some of the medicinal plants were intended by both orally and exter-

nally. The method of preparation and mode of usage of ethnobotanical medicinal plants were exhibited in Table 4.2.

It was observed that local informants were from the different socio-economic background and a large number of informants were women. The informants were practising folk medicine more than 20 years in their localities. They were from the diverse field like some are housewife, farmer, a retired teacher, daily worker etc. During the discussion, it was observed that they learned such knowledge from their ancestor and also based on their experiences for years. The survey indicated that the people of the study area largely depend on folk practitioners for daily healthcare need. The study area has plenty of plants to treat a wide spectrum of human diseases. It was evident during the survey that knowledge of medicinal plants was mostly limited to traditional healers and elderly persons who are living in rural/remote areas. This study observed that even though the accessibility of modern medicine is easy, many people still continue to depend on medicinal plants, at least for the treatment of some common and daily life diseases such as cold, cough, fever, pain, dysentery, poison bites, skin problem, toothache, diabetes etc.

Table 4.1 List of medicinal plants used by different tribes in Manipur, India

Sl. no.	Plant name	Family	Habit	Common name	Parts used	Diseases claim to cure/manage
1	<i>Acacia arabica</i>	Leguminosia	Tree	Babul	Seed, Bark, leaf	Diarrhea, tonsillitis, piles, joint pain
2	<i>Antidesma acidum</i>	Phyllanthaceae	Shrub	Rohitaka	Leaf	Dyspepsia, diabetes
3	<i>Alpinia galangal</i>	Zingiberaceae	Shrub	Blue ginger	Rhizome	Fever, diabetes, irregular menstruation
4	<i>Ageratum conyzoides</i>	Asteraceae	Herb	Goat weed	Leaf, shoot	Cut, injury, flatulence, and as hair lotion
5	<i>Amomum aromaticum</i> Roxb.	Zingiberaceae	Herb	Bengal cardamom	Seed	High blood pressure, mumps
6	<i>Alternanthera philoxeroides</i>	Amaranthaceae	Herb	Alligator weed	Shoot	Dysentery
7	<i>Arundo donax</i> L.	Poaceae	Shrub	Giant seed	Shoot	Intestinal worm, typhoid, pneumonia
8	<i>Artocarpus lakoocha</i> Roxb.	Moraceae	Tree	Monkey jerk	Bark, fruit	Diabetes, bacterial and worm infection, skin rash
9	<i>Maesa indica</i> Roxb	Myrsinaceae	Shrub	Ar- ngeng	Leaf	Diabetes, stomach pain
10	<i>Azadirachta indica</i>	Meliaceae	Shrub	Neem	Leaf, bark, flower, fruit	Rheumatoid arthritis, diabetes, eye infection, microbial infection
11	<i>Adhatoda vasica</i>	Acanthaceae	Shrub	Vasaka	Leaf, flower	Cough, bacterial infection, diabetes
12	<i>Allium hookeri</i>	Amaryllidaceae	Shrub	Hooker chives	Whole plant	Diabetes, hypertension, vomiting
13	<i>Blumea balsamifera</i>	Compositae	Shrub	Sambung	Whole plant	Fever common cold, stomach pain
14	<i>Colocasia esculenta</i> (L) Schott	Araceae	Herb	Green taro, Taro	Petiole, leaf	Injury, body pain, hemorrhage
15	<i>Cynodon dactylon</i>	Poaceae	Grass	Bermuda grass	Arial part	Strangury, dysmenorrheal, urogenital disorders, week vision
16	<i>Cyperus haspan</i> L.	Cyperaceae	Shrub	Dwarf papyrus	Rhizome	Bronchitis, fever
17	<i>Celtis timorensis</i>	Celmaceae	Tree	Stink wood	Bark, leaf	Kidney stone, liver disease, diabetes, respiratory problems
18	<i>Hibiscus camarinus</i>	Malvaceae	Shrub	Kenat	Leaf	Diabetes, cancer, throat diseases
19	<i>Ipomoea aquatica</i>	Convolvulaceae	Shrub	Water morning glory	Leaf	Diarrhea and retinitis, Stress, liver problem
20	<i>Lysimachia obovata</i>	Primulaceae	Shrub	Manipur loosestrife	Leaf	Dyspepsia, and as diuretic
21	<i>Magnolia champaca</i>	Magnoliaceae	Tree	Champak	Seed, bud	Tonsillitis, diabetes
22	<i>Marsilea minuta</i> L.	Marellaceae	Grass	Dwarf water clover	Whole plants	Strangury, sleep diseases, oral infection
23	<i>Musa acuminata</i>	Musaceae	Tree	Banana	Flower, stem	Asthma, diabetes
24	<i>Nasturtium indicum</i> L.	Brassicaceae	Grass	Water cress	Whole plant	Diabetes, fungal infection

(continued)

Table 4.1 (continued)

Sl. no.	Plant name	Family	Habit	Common name	Parts used	Diseases claim to cure/manage
25	<i>Nymphoides indica</i>	Gentianaceae	Herb	Water snowflak, floating	Stem, rhizome	Cut and injury, headache
26	<i>Nymphaea stellata</i> Willd	Nymphaeaceae	Aquatic Herb	Blue water- lily	Whole plants	Erysipelas, and as anti-aphrodisiac and diuretic
27	<i>Oenanthe javanica</i>	Apiaceae	Herb	Water dropwort	Arial part	Influenza, jaundice
28	<i>Parkia javanica</i>	Fabaceae	Tree	Bitter bean	Leaf, root,	Bacterial infection, diabetes, bleeding
29	<i>Persicaria sagittata</i>	Polygonaceae	Shrub	Arrow leaftear thumb	Leaf	Antidote of insect bite, abdominal pain, muscle spasm
30	<i>Polygonum barbatum</i>	Polygonaceae	Shrub	Dense flower natured	Leaf, seed	Constipation, stomach problem, cutaneous infection, colic
31	<i>Punica granatum</i>	Punicaceae	Shrub	Pramangras	Leaf, fruit	Dysentery, diabetes
32	<i>Psidium guajava</i>	Myrtaceae	Tree	Guana	Leaf	Dysentery, diabetes
33	<i>Pistia stratiotes</i>	Araceae	Aquatic herb	Water lettuce	Leaf, Stem	Burnt, boil
34	<i>Ranunculus sceleratus</i>	Ranunculaceae	Shrub	Cursed buttercup	Leaf	Gout, fever, abdominal problem
35	<i>Rhuschinensis</i>	Anacardiaceae	Tree	Chinese gall	Fruit, leaf	Diarrhoea, cough, cancer, diabetes
36	<i>Salvia officinalis</i>	Labiatae	Shrub	Sage	Leaf	Tonsillitis, diabetes
37	<i>Sagittaria sagittifolia</i>	Alismataceae	Aquatic herb	Gauai-gauai	Root	Cough, scurvy
38	<i>Syzygium cumini</i>	Myrtaceae	Tree	Jamun	Seed	Asthma, diabetes, gum infection, ulcer
39	<i>Solanum xanthocarpum</i>	Solanaceae	Shrub	Kantakari	Whole parts	Asthma, bronchitis, diabetes, dental pain
40	<i>Trapa natans</i>	Trapaceae	Floating leaved plant	Water chestnut	Roots, fruits	Fungal and bacterial infection, diabetes, sores

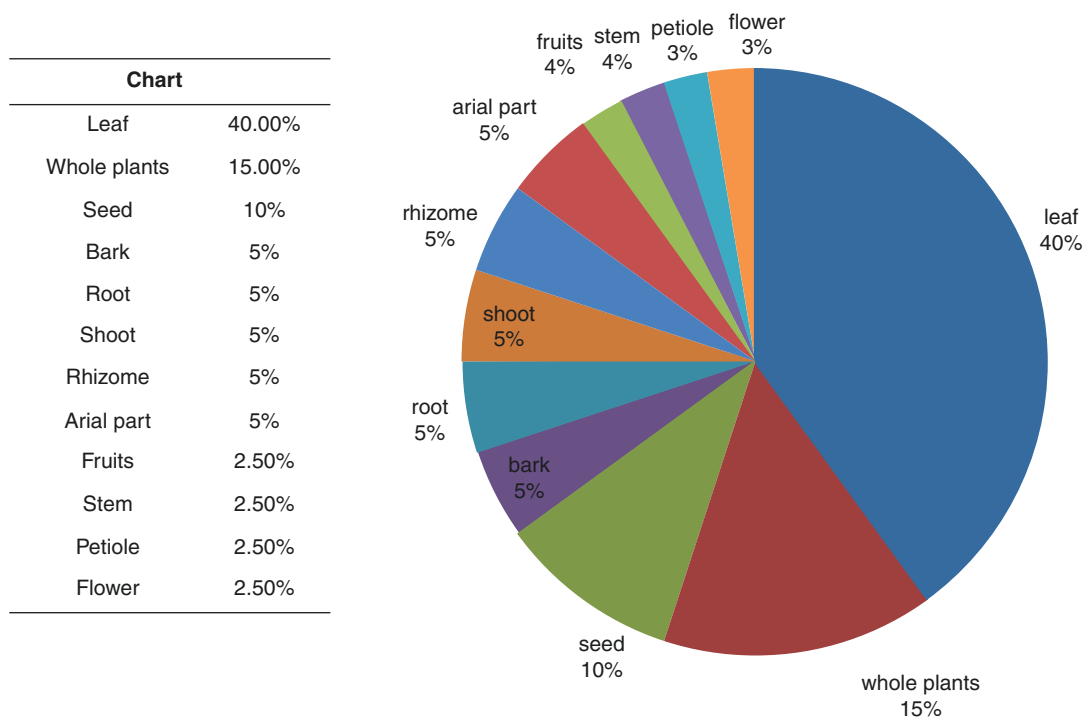


Fig. 4.4 Percentage distribution of medicinal plant parts used as medicine by different tribes for curing ailments

Table 4.2 Mode of application of ethno-botanical medicinal plants (selected uses)

Plant name	Method of preparation and mode of usage
<i>Acacia-arabica</i>	Fruits of the plant were boiled with water and consumed for diarrhoea. A decoction of the bark mixed with salt and used for tonsillitis.
<i>Antidesma acidum</i>	Leaf was boiled with water and mixed with salt and then taken for dyspepsia and diabetes.
<i>Alpinia galangal</i>	Fresh rhizomes were crushed and filtered and mixed with water and taken for dysmenorrhoeal. Also, the decoction of the leaf used to reduce fever and diabetes.
<i>Ageratum conyzoides</i>	Aqueous extract of leaves or whole plants has been used to treat cold and fevers. Leaf juice also applies for the cut and injury.
<i>Amomum aromaticum</i>	Seed powder boiled with water for blood pressure, root extract with water used for mumps.
<i>Alternanthera philoxeroides</i>	Shoot extract with a little salt is used for dysentery.
<i>Arundo donax</i>	Fresh shoot paste mixes with a spoon of honey and taken for the intestinal worm, boiled leave bud with water is used for typhoid & pneumonia.
<i>Artocarpus lakoocha</i>	Seeds and barks of the plant were boiled with water use for the treatment of antibacterial and anthelmintic, fruit is used for diabetes.
<i>Maesa indica</i>	Leaf was boiled with water and mixed with salt and then taken for diabetes.
<i>Azadirachta indica</i>	Raw neem leaf is used for diabetes; Neem leaves paste also apply for relief of pain for arthritis
<i>Adhatoda vasica</i>	Leaves are crushed and mixed with water and filtered, then the filtrate mixed with honey and utilize a cough and diabetes.
<i>Allium hookeri</i>	The plant is taken as raw to reduce blood pressure. The pasted of leaf used for diabetes.

(continued)

Table 4.2 (continued)

Plant name	Method of preparation and mode of usage
<i>Blumea balsamifera</i>	Leaves are crushed and mixed with water and taken for stomach pain, the leaf is crushed and mixed with mustard oil and applied on the top of the skull for fever and cold.
<i>Colocasia esculenta</i>	Petiole juice is applied in fresh cut and injury as antiseptic.
<i>Cynodon dactylon</i>	About 20 gm of stolon boiled or soaked in half litre of drinking water and a spoon of honey is added and taken in the empty stomach twice a day for seven days for urination problem. The mixture also used for dysmenorrhea.
<i>Cyperus haspan</i>	Fresh rhizomes paste along with honey is used for bronchitis and fever.
<i>Celtis timorensis</i>	Leaves are boiled with water which is used for kidney stone. Bark used to be crushed and soaked overnight and the filtrate is taken for diabetes as well as liver disease.
<i>Hibiscus cannabinus</i>	Leaves are boiled with water and taken the liquid part with a little salt for diabetes and cancer.
<i>Ipomoea aquatica</i>	Shoot decoction is used as droplet for eye and ear infections. Leaf decoction also used for diarrhoea.
<i>Lysimachia obovata</i>	Leaves are boiled with water and liquid part is taken with salt to treat dyspepsia and diuretics.
<i>Magnolia champaca</i>	Seed is boiled with water and taken as a gargle for tonsillitis. Bud is crushed and make a semisolid paste and used for diabetes.
<i>Marsilea minuta</i>	The fresh plant is boiled with water and taken twice a day for strangury.
<i>Musa acuminata</i>	The flower is boiled with water and taken the liquid portion of diabetes. Stem part powdered and soaked overnight to use for asthma.
<i>Nasturtium indicum</i>	Leaf is boiled with water for diabetes.
<i>Nymphoides indicum</i>	A paste of the stem applied as a bandage for wound healing. Rhizome paste along with little honey is taken as a diuretic
<i>Nymphaea stellata</i>	Fresh petiole paste mixed with Cuminum cyminum L. seed powder, salt, honey and use for dysmenorrhea. Also, leaf and stem part used for the diuretic purpose.
<i>Oenanthe javanica</i>	Fresh arial part is boiled with water and use for influenza, jaundice.
<i>Parkia javanica</i>	The leaf is boiled with water and takes the liquid extract for diabetes, roots are boiled with water and expose the anus on the liquid for bleeding pile. And also applied as antibacterial purposes.
<i>Persicaria sagittata</i>	Leaves are boiled with water and taken the liquid for stomach pain, the leaf is heated and paste is applied for muscle spasm, the seed is crushed and applied as an antidote for snake bite
<i>Polygonum barbatum</i>	Leaf is boiled with water and use for stomach problem and constipation, leaf paste is applied for cutaneous infection.
<i>Punica granatum</i>	Leaf is crushed and mixed with water and drink the liquid portion of dysentery and diabetes.
<i>Psidium guajava</i>	Raw leaves are crushed and mixed with water and taken for diabetes and dysentery
<i>Pistia stratiotes</i>	Plant paste is applied in burn to reduce the damage of nearby tissue
<i>Ranunculus sceleratus</i>	Leaf is wrapped by banana leaf and slightly burnt in the charcoal then applied internally for gout, leaf is boiled with water for antipyretic.
<i>Rhus chinensis</i>	Fruit is boiled/soaked in the water and drinks the liquid parts for diarrhoea and diabetes. Decoction part is also used for the treatment of cough and cancer.
<i>Salvia officinalis</i>	A decoction of the leaf is used as a gargle for tonsillitis. Dried leaves were soaked for around 12 hours and the liquid part is consumed for management of diabetes.
<i>Sagittaria sagittifolia</i>	Fresh root paste is mixed with honey and used for a cough.
<i>Syzygium cumini</i>	Seed is crushed and mixed with water and taken the liquid fractions for diabetes and asthma.
<i>Solanum xanthocarpum</i>	Fruit is boiled or soaked in the water and taken for bronchitis. The leaf part also used for diabetes by preparing the paste solution of leaf in salty water. Stem part is used for the dental analgesic.
<i>Trapa natans</i>	Fruit peel and root boiled with water and taken for diabetes antibacterial. Dry roots of this plant also used for the antifungal purpose by making the solution of overnight soaked roots.

4.4 Conclusion

Results from the survey revealed that plenty of medicinal plants are available in the area of the study and the local tribal healers used them as a medicine for their common ailments since ancient time. A number of phytochemical moieties like anthocyanins, alkaloids, glycosides, flavonoids, tannin, saponins, carbohydrates etc. present in such plant species may responsible for their curative effect. This study may help towards the conservation of various valuable medicinal plants within the region. Phytochemical and biological screening of different medicinal plants based on such information is a very essential aspect for authors in future. It was also observed during post-study literature survey that a number of plant species were not scientifically investigated and documented, despite the fact that the study area abundantly rich in the medicinal plant and their traditional uses. It thus becomes essential to acquire and preserve such traditional knowledge and diversity of medicinal plant by way of proper documentation and conservation process.

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