



Short Communication

Ethnomedicinal plants used by the mising tribe of Dhemaji District of Assam, India

Victor Singh Ayam¹, Pradip Doley¹ and Ch. B.Singh²

¹Department of Botany, Rajiv Gandhi University, Rono Hills, Itanagar 79111, Arunachal Pradesh, India

²Institute of Bioresource and Sustainable Development, Takyelpat, Imphal 795001, Manipur, India

victor_ayamsingh@yahoo.com

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Abstract

Medicinal plants are extensively used as alternative therapeutic tools for the prevention and curing of various diseases and ailments. The present study is focused on the utility of certain medicinal plants on the Mising tribe of Dhemaji district of Assam, India. Dhemaji district is rich in indigenous medicinal plants due to the wide range of habitats. The ethnic people living in the remote areas of the district, depend on traditional medicine. The Misings are distributed all over the district and practised different traditional healing methods, the information of which was generated through field studies and interview with the elderly men or/and women of the community and crosschecking with the information obtained from the local herbalists. The present investigation has revealed in the documentation of a total number of 62 plant species, distributed across 38 families and 57 genera. The most important medicinal plant families were Lamiaceae, Asteraceae, Zingiberaceae, Rutaceae, Apocynaceae, Araceae, Urticaceae, Solanaceae and Piperaceae. Most frequently medicated claims were jaundice, malarial fever, cough, stomach ailments, menstrual problems, piles, tonsillitis, blood purification, and skin diseases etc. The most commonly used plant parts were the leaf, root, and rhizome. All these claims need to be subjected to both phytochemical and pharmacological investigations to discover the potentialities of these plants and plant parts as drugs.

Keywords: Ethnomedicine, Dhemaji district, Assam, Mising tribe, Medicinal plant.

Introduction

Medicinal plants have the dynamic activities and are used as medicine in human health sector since the dawn of civilisation. Ethnobotany is the scientific study of the relationships that exists between indigenous people and plants. There are large numbers of Ethnomedicinal plants found around us which are very useful as antimicrobial, antifungal, antiviral and antioxidant.

The World Health Organization is giving considerable importance to these alternative medicines (as they act as alternative to allopathic medicines) to provide Primary Health Care to millions of people primarily in the developing countries. India has a rich diversity of medicinal plants, knowledge of these medicinal plants has been accumulated in the course of many centuries. In India, more than 43% of the total flowering plants are reported to be of medicinal importance¹.

According to the World Health Organization (WHO), 80% of the rural population in third world countries depends on different kinds of locally available medicinal plants as a part of primary health care needs. India is one of the 12 megabiodiversity centre having 45,000 plants species representing about 7% of world flora². About 7,500 plant species used as medicine have been reported in Indian traditional system of

medicine viz. Ayurveda, Unani, and Sidha³. The North Eastern states (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim) is one of the richest biodiversity regions in India. Assam is one of the culturally rich states of North East India, situated between 24°2' - 27°6' N latitudes and 88°8' - 96° E longitudes and covers an area of 78,523 sq. km.

The state extends between foothills of eastern Himalayas and the Patkai and Naga Hills and is bordered by the countries such as Bhutan to the north-west, Bangladesh to the south-west and Myanmar to the south. Assam has a humid tropical and subtropical climate as it receives heavy rainfall during monsoon. A sizeable area of the state is covered with dense tropical semi-evergreen to evergreen forests with mix crop composition including bamboo. Assam is inhabited by a number of ethnic tribes belonging to the Indo-Mongoloid races which include Bodo, Mising, Karbi, Dimasha, Rabha, Tiwa, Sonowal Kachari, Ahom, Tai Turung, Tai Khamyang, Deori, Chutia, Koch, Motok and Moran. The mising (Miri) tribe are the riverine plain tribes of Assam which is the second largest scheduled tribe (plains) of the state.

The mising tribes are mainly found in Dhemaji, Lakhimpur, Sonitpur, Jorhat, Sivsagar, Dibrugarh and Tinsukia district of Assam. As a riverine tribe, the mising people construct their

houses in raised platforms about 4-5 feet from the ground and is locally called Chang-ghar. Moreover, due to the lack of proper communication and hospitals, they developed traditional healing practices to protect themselves from different diseases and are still depend on traditional healing practices.

Materials and methods

Study area: Dhemaji district is situated at the north of Upper Brahmaputra Valley of Assam which is located between the 94° 12' 18" E and 95° 41' 32" E longitudes and 27° 05' 27" N and 27° 57' 16" N latitudes (Figure-1), the district covers an area of 3237 sq. Km and is basically plain area lying at an altitude of 104 m above the mean sea level.

The boundaries of the district are arch shaped Arunachal hills on the north and the east, Lakhimpur district in the west and the river Brahmaputra in the south. The climate of the area is a warm humid type and temperature varies between 8°C (min) to 35°C (max), average annual rainfall is 2600 mm to 3200 mm. The soil is acidic in nature. The local communities of the study area are Ahom, Sonowal Kacharis, koches, Kalita, Kaibartas, Chutiya, Deoris, Mising. Important natural resources which are abundantly available in the study area have been used in folk medicine by the locals during primary healthcare needs and disease treatments.

Methodology: The villages that are mostly inhabited by the Misings under the study area were surveyed randomly. With prior informing and taking of the personal consent of the local informants' information were collected from the villagers of different age groups and sex of Mising community through normal conversation and interview using semi-structured questionnaire. Medicinal plant specimens were collected from forest and kitchen gardens following standard manuals^{4,5} and herbarium was prepared following chemical sterilization technique.

The collected plant species were identified referring to Botanical Survey of India, Shillong and consulting the floras^{6,7}. The collected information of the medicinal uses of the plants was crossed checked with the information obtained from the local herbalist and further validation was done through discussion among the informants and the obtained higher frequency of citation.

Results and discussion

In the present investigation, 62 plant species belonging to 38 families (Table-1) were collected that are being used to cure different diseases and ailments by the Mising tribe in Dhemaji district.

These plants were used in the treatment of approximately 56 human ailments. The photographs of some of the commonly used medicinal plants from the collection include species of "Least Concerned" category under IUCN Red List of Threatened Species such as *Phyllanthus nodiflora*⁹.

Photo also include Taxon that has not yet been assessed for the IUCN Red List but is in the Catalogue of Life viz. *Croton caudatus* Geiseler, *Croton tiglium* L., *Euphorbia hirta* L., *Clerodendrum glandulosum* Lindl., *Eranthemum purpurascens* Wight ex Nees, *Ohwia caudata* (Thunb.) H. Ohashi, *Mukia maderaspatana* (L.) M. Roem., *Senna alata* (L.) Roxb., *Smilax perfoliata* Lour., *Piper cupreatum longum* Trel., *Catharanthus roseus* (L.) G. Don, *Sarcochlamys pulcherrima* and *Zingiber zerumbet*. This also includes taxon that has not yet been assessed for the IUCN Red List, and also not in the Catalogue of Life such as *Curcumacaesia*, *Portulaca oleracea*, *Chellocostus speciosus*, *Laeisa spinose*, *Portulaca oleracea* L, *Chellocostus speciosus* and *Carrica papaya* (Figure-2).

The majority of the plants described in the present investigation was used in stomach ailments, jaundice, malaria, dysentery and diarrhoea, pneumonia, dyspepsia, abdominal pain, constipation, removal of intestinal worms etc.

The gastrointestinal problems are the common ailments among the rural people because of poor hygienic condition, low sanitation facility along with the contaminated food and water. Next, to stomach problems, the most frequently claimed uses were for gynaecological problems such as menstrual trouble leucorrhoea, abortion, post-natal development, galactagogue to nursing mother etc. The most cited plant family was Leguminosae (5) followed by Compositae, Euphorbiaceae, Lamiaceae, Malvaceae, Zingiberaceae (3 each), Acanthaceae, Apocynaceae, Araceae, Oxalidaceae, Piperaceae, Rutaceae, Solanaceae, Urticaceae (2 each), Acoraceae, Amaranthaceae, Amaryllidaceae, Apiaceae, Asteraceae, Balsaminaceae, Caricaceae, Convolvulaceae, Costaceae, Cucurbitaceae, Dilleniaceae, Meliaceae, Menispermaceae, Moraceae, Myrtaceae, Phyllanthaceae, Plantaginaceae, Poaceae, Polygonaceae, Portulacaceae, Rubiaceae, Sabiaceae, Saururaceae, Smilacaceae, Verbenaceae and Woodsiaceae (1 species each).

A number of plants were also used in daily life as food, spice and fruit. Leaf was the most widely used part accounting for 37% of plant species in a total of 62 reported medicinal plants. This was followed by whole plant (22%), root (14%) rhizome and bulb (9%), fruit/seed (8%), stem/petiole (5%), bark (3%) flower and latex (Figure-3).

The most common mode of administrations during disease management was decoction, paste and juice for both internal and external applications. Taking as a vegetable was also useful in alleviating several ailments. In some cases, the mode of administration was raw (direct internal applications).

Most of the remedies were taken orally. The herbal practitioners usually collect the plants from wild as and when there is a need. In some cases, a few of them maintained small herbal gardens for the purpose.

Table-1: Ethnomedicinal plants used by the Mising tribe of Dhemaji district of Assam.

Scientific Name/Accession No.	Local name (Mising)	Family	Plants Parts used	Diseases/ailments
<i>Abelmoschus moschatus</i> Medik./AVSPD001	Ui-sipak	Malvaceae	Root/leaves/bark	The leaf and stem bark are crushed and used as a pest in boil. The root decoction is taken in gastric.
<i>Acorus calamus</i> L./AVSPD002	Boch	Acoraceae	Rhizome	Rhizome is used in the treatment of diarrhea, tuberculosis, cough and cold.
<i>Aegle marmelos</i> (L.) Corrêa/AVSPD003	Bel	Rutaceae	Leaves	Leaf decoction is taken in gastric and fever.
<i>Ageratum conyzoides</i> L./AVSPD004	Namnin eing	Asteraceae	Leaves	The leaf pest or juice is applied on cut and wound.
<i>Allium sativum</i> L./AVSPD005	Talab	Amaryllidaceae	Bulb	Cough, fever and malaria.
<i>Alpinia nigra</i> (Gaertn.) Burt/ AVSPD006	Taling	Zingiberaceae	Rhizome	The root extract is used in the treatment of pneumonia.
<i>Alstonia scholaris</i> (L.) R. Br./ AVSPD007	Sotiana	Apocynaceae	Bark	Bark decoction is used for curing malaria.
<i>Amaranthus spinosus</i> L./AVSPD008	Genak	Amaranthaceae	Root	Root extract with warm water is used for mensuration over bleeding.
<i>Averrhoa carambola</i> L./AVSPD009	Kordoi	Oxalidaceae	Root	The root bark is used in the treatment of jaundice.
<i>Azadirachta indica</i> A.Juss./AVSPD010	Mahanim	Meliaceae	Leaves	Leaf extract is taken to cure malaria and tapworm. The leaf decoction is used to take bath for skin disease.
<i>Bombax ceiba</i> L./AVSPD011	Himolu	Malvaceae	Root bark	The root extract is used in gastric.
<i>Cajanus cajan</i> (L.) Millsp./AVSPD012	Gos dali	Leguminosae	Leaves	Used for treatment of jaundice and gastric.
<i>Carrica papaya</i> L./AVSPD013	Amita	Carricaceae	Inflorescence	The inflorescence are wrapped in a banana leaf, roasted and taken for curing malaria.
<i>Casealpinia boduc</i> (L) Roxb/AVSPD014	Leta guti	Leguminosae	Seed/leave	The seed ground extract is used for the treatment of pneumonia. The tender twigs juice is taken in the urinary problem.
<i>Catharanthus roseus</i> (L.) G.Don/ AVSPD015	Nayantora	Apocynaceae	Whole plant	The plant past is used for in the treatment of Cancer.
<i>Centella asiatica</i> (L.) Urb./AVSPD016	Manimuni	Apiaceae	Whole plant	Plant extract is taken in malaria and urinary trouble.
<i>Cheilocostus speciosus</i> (J. Koenig) C.D. Specht/AVSPD017	Peki jigjig	Costaceae	Rhizome	Rhizome decoction is taken in jaundice.
<i>Clerodendrum glandulosum</i> Lindl./ AVSPD018	Pakkom	Lamiaceae	Leaves	The leaf are taken as food for reduced high blood pressure.
<i>Colocasia esculenta</i> (L.) Schott/ AVSPD019	Kochu	Araceae	Petiole	The decoction of the petiole is taken in malaria.
<i>Corchorus capsularis</i> L./AVSPD020	Jongli morapt	Malvaceae	Leaves	Anti-allergy.
<i>Croton caudatus</i> Geiseler/AVSPD021	Srat esing	Euphorbiaceae	Leaves	The leaf pest is used for curing cancer.
<i>Croton tiglium</i> L./AVSPD022	Dentura	Euphorbiaceae	Seed/leaves	The leaf or seed pests are used in chest pain.

Scientific Name/Accession No.	Local name (Mising)	Family	Plants Parts used	Diseases/ailments
<i>Curcuma caesia</i> Roxb./ AVSPD023	Kula haldhi	Zingiberaceae	Rhizome	The rhizome taken in pneumonia and stomach trouble.
<i>Cuscuta reflexa</i> Roxb./ AVSPD024	Akaki lota	Convolvulaceae	Whole plant	The plant extract is used in the treatment of jaundice.
<i>Cynodon dactylon</i> (L.) Pers./ AVSPD025	Dubori bon	Poaceae	Whole plant	The plant is ground and extract is used in mensuration trouble and in jaundice.
<i>Dillenia indica</i> L./ AVSPD026	Sompa	Dilleniaceae	Fruits	Placenta of the fruits is used in gastric and used as shampoo and anti-dandruff.
<i>Eclipta prostrata</i> (L.) L./ AVSPD027	Keharaj	Compositae	Whole plant	Used as antimicrobial.
<i>Eranthemum purpurascens</i> Wight ex Nees/ AVSPD028		Acantaceae	Leaves	The hot vapour of leaf decoction is used for jaundice
<i>Euphorbia hirta</i> L./ AVSPD029	Gakhiroti bon	Euphorbiaceae	Whole plant	Stimulation in the secretion of milk for infant-mother.
<i>Ficus lamponga</i> Miq./ AVSPD030	Tajik	Moraceae	Latex	The freshly collected latex is used for curing tonsillitis and bone fracture.
<i>Gonostegia hirta</i> (Blume ex Hassk.) Miq./ AVSPD031	Oik	Urticaceae	Whole plant	Leaf extract is used in the treatment of cancer.
<i>Houttuynia cordata</i> Thunb./ AVSPD032	Mochundori	Saururaceae	leaves	The leaf decoction is taken in stomach trouble.
<i>Impatiens balsamina</i> L./ AVSPD033	Pokkor	Balsaminaceae	Leaves	White discharge, urinary trouble and stop over bleeding during mensuration.
<i>Justicia gendarussa</i> Burm. f./ AVSPD034		Acanthaceae	Leaves	The leaves past is used for bone fracture and joint dislocation treatment.
<i>Laeisa spinosa</i> (L.) Thwaites/ AVSPD035	Yidikoro	Araceae	Stem	The stem extract is used in jaundice.
<i>Leucas zeylanica</i> (L.) W.T. Aiton/ AVSPD036	Durum bon	Sabiaceae	Tender twigs	The twigs juice are applied on the nose for sinusitis, headache.
<i>Matteuccia struthiopteris</i> (L.) Tod./ AVSPD037	Rukji	Woodsiaceae	Fronde	The frond decoction is taken in malaria.
<i>Mimosa pudica</i> L./ AVSPD038	Nilaji bon	Leguminosae	Root	The root decoction is used in malaria.
<i>Mukia maderaspatana</i> (L.) M. Roem./ AVSPD039	Sarat	Cucurbitaceae	Whole plant	Mensuration problem.
<i>Ocimum tenuiflorum</i> L./ AVSPD040	Tulshi	Lamiaceae	Leaves	The leaf juice is used for acough.
<i>Ohwia caudata</i> (Thumb.)/ AVSPD041	Tangom	Leguminosae	Root	The root bark extract is used in Jaundice.
<i>Oxalis corniculata</i> L./ AVSPD042	Tengesi tenga	Oxalidaceae	Whole plant	The plant extract is taken in urinary trouble.
<i>Paederia foetida</i> L./ AVSPD042	Bungki-repuk	Rubiaceae	leaves	The leaf decoction is taken in gastric, stomach pain and pneumonia.
<i>Persicaria chinensis</i> (L.) H. Gross/ AVSPD043	Takkir	Polygonaceae	Whole plant	The plant pest is applied on the boils.
<i>Phyla nodiflora</i> (L.) Greene/ AVSPD045	Aluki mirsi	Verbenaceae	Whole plant	The plant ground and extract is taken in jaundice.
<i>Phyllanthus fraternus</i> G.L. Webster/ AVSPD046	Bon amlokhi	Phyllanthaceae	Whole plant	Plant decoction is taken in the treatment of jaundice.
<i>Piper longum</i> L./ AVSPD047	Pipoli	Piperaceae	Seed	The seed is a spice and also used for a cough, cold and indigestion.

Scientific Name/Accession No.	Local name (Mising)	Family	Plants Parts used	Diseases/ailments
<i>Piper nigrum</i> L./ AVSPD048	Jaluk	Piperaceae	Seed	The seed is used in malaria, pneumonia.
<i>Portulaca oleracea</i> L./ AVSPD049	Poisang oiying	Portulacaceae	Whole plant	The plant extract is taken for relieving stomach pain during mensuration time.
<i>Psidium guajava</i> L./ AVSPD050	Madhuri aam	Myrtaceae	Leaves	The tender leaf is taken in diarrhea.
<i>Sarcochlamys pulcherrima</i> Gaudich./ AVSPD051	Ombey	Urticaceae	Leaves	The leaf decoction is taken in dysentery, diarrhea and cancer.
<i>Scoporia dulcis</i> L./ AVSPD052	Bon jaluk	Plantaginaceae	Root	The root decoction is used in viral infection.
<i>Senna alata</i> (L) Roxb./ AVSPD053	Khor pat	Leguminosae	Leaves	The leaf ground and juice is applied on for curing ringworm
<i>Smilax perfoliata</i> Lour./ AVSPD054	Yorit	Smilacaeae	Tender twigs	Tender twigs pest is applied on affected area for curing cancer.
<i>Solanum aculeatissimum</i> Jacq./ AVSPD055	Bekuli guti	Solanaceae	Root	The root past is used in the treatment of insect bite.
<i>Solanum indicum</i> L/ AVSPD056	Bangko	Solanaceae	Root	The root extract is used for pneumonia and toothache.
<i>Spilanthes acmella</i> (L.) L/ AVSPD057	Marsang	Compositae	Whole plant	The whole plant extract is taken for malaria treatment.
<i>Tinospora cordifolia</i> (Willd.) Miers/ AVSPD058	Amor lota	Menispermaceae	Stem	Stem past used in the treatment of bone fracture and bone dislocation
<i>Vitex negundo</i> L./ AVSPD059	Posotiya	Lamiaceae	Leaves	The leaf extract is taken for curing malaria.
<i>Xanthium strumarium</i> / AVSPD060	Agura	Compositae	Leaves	The leaf juice taken orally for the treatment of piles
<i>Zanthoxylum oxyphyllum</i> Edgew./ AVSPD061	Rikkom	Rutaceae	Root	The root extract is used for the pneumonia.
<i>Zingiber zerumbet</i> (L) Roscoe ex Sm./ AVSPD062	Aadi take	Zingiberaceae	Rhizome	Decoction of rhizome is used in Kidney Stone.

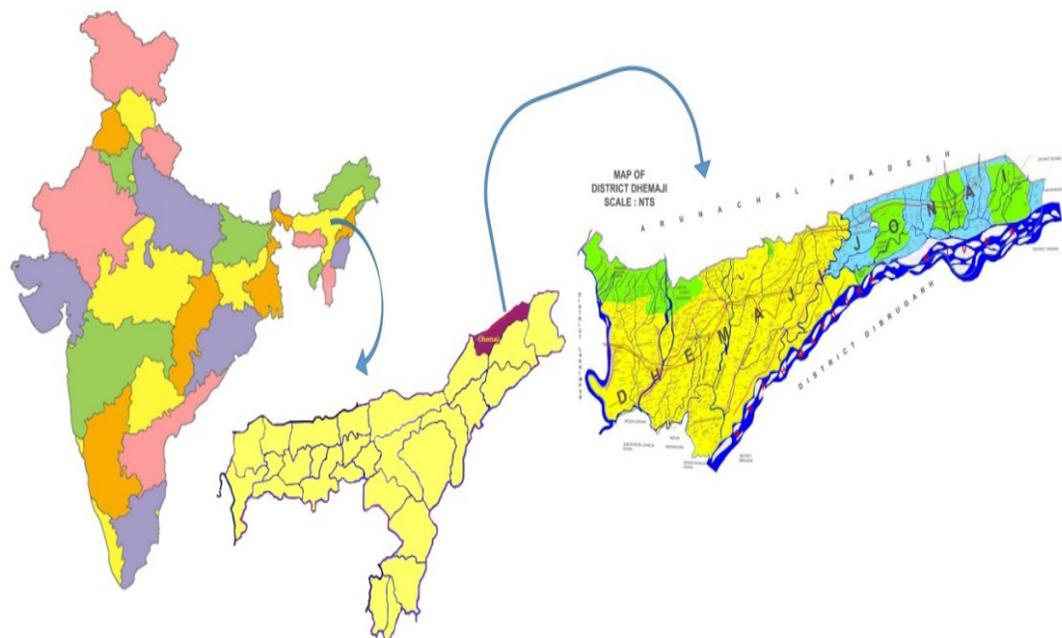


Figure-1: Dhemaji district the Study area.



Figure-2: Photos of some of the medicinal plants used by Misings of Dhemaji, Assam.

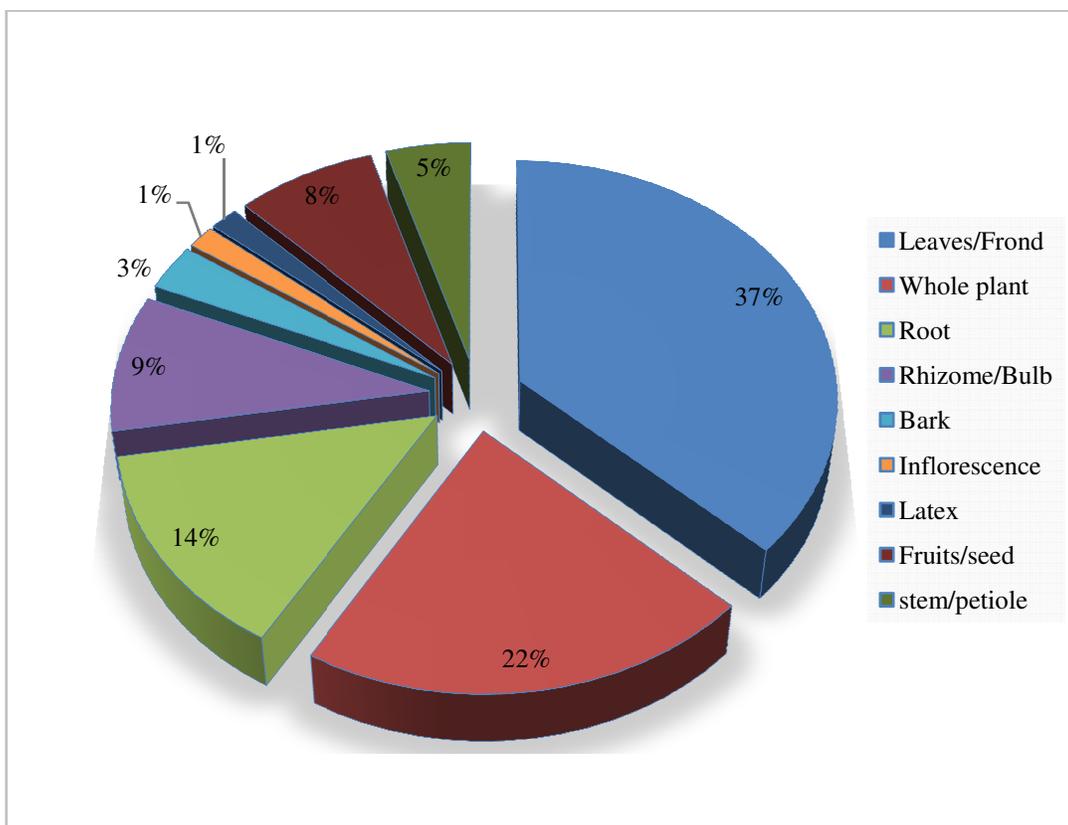


Figure-3: Percentage of different plant parts used for the preparation of herbal medicine.

Conclusion

The knowledge of medicinal plant plays a significant role in various ethnic communities of the society. In the present study, 62 plant species were used by Mising communities in Dhemaji district of Assam for the treatment of various disease/ailments. The traditional practitioners are the main source of knowledge of medicinal plants. Some of the medicinal plants and their traditional uses of herbal medicine are gradually decrease due to poor storage of data, different developmental activities and other anthropogenic factors. Therefore, there is an urgent need to formulate a good amount of data and appropriate conservation strategies for conservation of these medicinal plants on a sustainable basis. Finally, phytochemical and pharmacological investigation of these medicinal plants needs to be evaluated to discover their potentiality as drugs and medicine.

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