Quantitative documentation of traditionally used medicinal plants and their significance to healthcare among the Mishing community of Northeast India

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Abstract. Mishing community is one of the major tribal communities residing in Northeastern India. They have adapted their lifestyle with one of the adverse conditions and their reliance on plants for food and medicine is widely prevalent. This article presents an explorative ethnobotanical survey on documentation of plants used by the Mishing community of Assam in treating the common ailments as well as their mode of preparation and administration. Research was conducted in eight villages from four districts of Assam. Various participatory interaction methods, group discussions and semi-structured questionnaires were conducted with a total of 80 respondents. Plant importance analysis was done using four quantitative indices (Use value, Use report, Informant consensus factor and Fidelty level). In total, 153 plants under 126 genera and 62 families are recorded. Fabaceae (11 spp.) was the most dominant family and *Clerodendrum* and *Solanum* (5 spp. each) were the most dominant genera. The highest use values were recorded for *Musa balbisiana* (0.087) followed by *Paederia foetida* (0.075). Kidney stone has the highest Informant Consensus Factor value of 0.97 with 74 use reports for 3 species. A total of 7 species were found to have ≥ 90% Fidelty Level and *Cissus quadrangularis* recorded the highest value, i.e. 93.7% FL for treating bone fracture with 75 use reports. In addition, a review of ethnomedicinal plants published in earlier literature for the community is presented, and 77 plants are reported as new ethnomedicinal records for the community. A list of bioactive compounds found in the presently reported plants is also listed. Though modern health facilities have gained pace in the developing countries like India, traditional medicine still co-exists with tribal communities as these are the nearest and reliable forms of treatment in Assam, exemplified by the high degree of reliance on it.

Keywords: Traditional medicine, Ethnobotany, Assam, Mishing, Quantitative analysis.

1. Introduction

1.1. Traditional medicine

Traditional medicine (TM), also known as complementary or alternative medicine, comprises the knowledge, skill, belief, theories and practices of an indigenous community that are used to diagnose, treat and cure any ailment as well as to maintain a healthy life. It has been used for centuries and recently it has gained a lot of attention in the developed countries as well (Mahomooally, 2013). Herbal medicine is also a form of TM and addresses plants as active ingredients. It may be leaves, barks, fruits, seeds, roots, latex, and even complete plants (Pan et

al., 2014). In India more than 50% of the tribal population relies on different forms of traditional medicine, thus adding a substantial cultural significance and value for various ethnic groups. And, 90% of the plants supplied to the international market for various uses are from the wild stock (Mishra et al., 2009). It is therefore essential to develop a systematic data collection system in all the developing countries, especially in India for better utilization of those plant products. With the pace in industrialization, pressure on lands and natural resources has been drastically increased (Pandey & Saini, 2007). As a result, large scale deforestation and degradation of the natural habitats are posing a significant hazard, leading to loss of bioresources which to the core elements of traditional medicine (Mipun et al., 2019).

1.2. Socio-religious status of Mishing

Assam, a part of Northeastern India, hosts approximately 15.64% of tribal people among the total population (3.09 crores) of the state (Dhar, 2014). It inhabits a multi-ethnic, multi-linguistic and multi-religious society with eighteen major communities (Ahom, Chutiya, Koch, Moran, Muttock, Bodo, Karbi, Mishing, Dimasa, Hmar, etc.). Mishing is the second major ethnic community of the state in terms of population. They are a group of greater Mongoloid horde and is presently distributed in Biswanath, Dhemaji, Dibrugarh, Golaghat, Jorhat, Lakhimpur, Sibasagar and Sonitpur districts of Assam (Pegu, 2013). The traditional religious beliefs of the Mishing are animistic. Mishing people consider themselves to be descendants of the sun and moon. They believe *donyi* (sun) as their mother and *polo* (moon) as their father. The beliefs hold major importance in their lives, that they always honour them first before taking any medicine or holding any ceremony and before any kind of major decisions in their lives.

They mostly inhabit the riparian grounds of the river Brahmaputra and practice settled agriculture and hence they are the most affected by floods (Fig. 2A). Every district or development block has a hospital or health center with a few doctors and rural health workers. But the local people visit these health centers in the cases of major emergencies only. They rely mostly on the medicinal plants for medication due to their easy availability and also because people have poor access to modern health facilities. They have adapted their lifestyle to those adverse conditions and therefore the reliance on plants for food and medicine is still dominantly prevalent among the people of this community (Doley, 2014).

1.3. Quantitative approach

Studies on traditional medicine using a quantitative approach have a significant potential to enhance the indicative value of the results and can improve the factual information available for the conservation and development of the existing resources (Mipun et al., 2019). Quantitative studies expand the understanding of how important these resources are to ethnic and indigenous cultures. These indices have so far been able to measure the various uses of plants whether as food, veterinary medicine, remedies for human disease, or economic value (Pieroni, 2001; Reyes-García et al., 2006; Upadhyay et al., 2011; Kim & Song, 2013). Despite the importance of quantitative methods, only a few relevant ethnobotanical studies among the Mishing tribe have been conducted (cited below), and none of them have used quantitative analysis so far.

1.4. Objectives

Earlier studies conducted on the ethnomedicinal knowledge of the Mishing tribe reported a total of 113 plants that are used in treating various ailments. These data are scattered in several publications. However, we here aim to extend the current knowledge on the subject by conducting repeated surveys. This study is intended to bring out a comprehensive list of the traditional medicinal plants used by the Mishing community in Assam, Northeast India, with their use in traditional therapies, to analyze the information using several quantitative indices.

2. Materials and methods

2.1. Study area

The fieldwork was conducted in the state of Assam (26.2006° N, 92.9376° E), bordered from the north by Bhutan and Arunachal Pradesh; south by Meghalaya, Tripura, Mizoram and Bangladesh; Nagaland and Manipur to the east and West Bengal to the west. It is a vast expanse of plains bounded by several hill ranges (Himalaya, Patkai, Indo-Myanmar, etc.) and crisscrossed by two major rivers (Brahmaputra and Barak) along with its tributaries. It is a part of Northeastern India, known for its rich culture, ethnic identity and heritage, it hosts 15.64% of tribals of the total population (3.09 crores) of the state. This study purposively covered four administrative districts (Biswanath, Dhemaji, Golaghat and Sonitpur) of Assam (Fig. 2), based on the major inhabiting areas of the Mishing community.

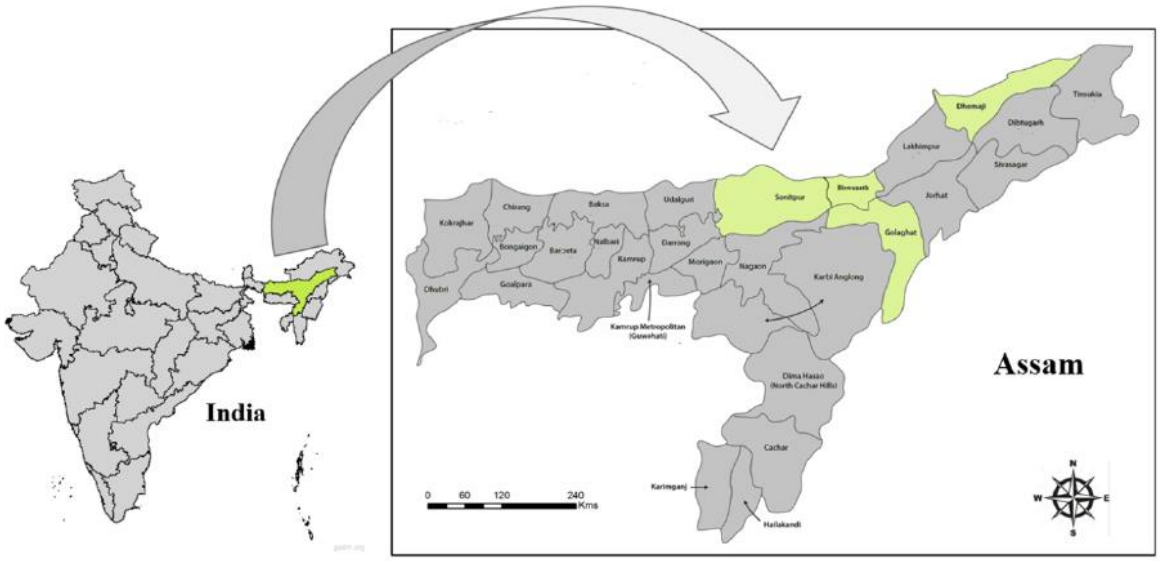

Figure 1. Map of India showing the state of Assam with Biswanath, Dhemaji, Golaghat and Sonitpur districts

2.2. Sampling and interview

Fieldwork was undertaken from January 2018 to November 2019. Eight villages from four districts (Golaghat, Biswanath, Dhemaji and Sonitpur) were selected for the study, as the Mishing holds the majority of the population in these villages (Table 1). A total of 80 respondents (58 males and 22 females) with an age range of 20–80 years were involved. The respondents selected represent different social roles and positions, this was done to measure the medicinal plant knowledge of the Mishing community as a whole. A total of 80 respondents (58 males and 22 females) with an age range of 20–80 years were involved. The number of respondents was selected equally i.e. ten respondents from each selected village from all the four different districts randomly from those villagers, who accepted the request voluntarily (Fig. 2B–E). Thus the study includes eight villages, two villages with 20 respondents from each district. Interviews were conducted using various participatory interaction methods along with group discussions and semi-structured questionnaires (Martin, 1995; Alexiades & Sheldon, 1996).

Table 1. Investigated sites in the study area

District	Village	Coordinates
Golaghat	Borgaon	26°17'25.4"N 93°54'02.3"E
Golaghat	Digholi Mising gaon	26°17'21.2"N 93°53'39.0"E

Sonitpur	Dharikati	26°54'20.6"N 93°50'18.3"E
Sonitpur	Khanamukh	26°40'34.6"N 92°49'49.3"E
Biswanath	Bihmari Forest Village, Behali RF	26°53'38.7"N 93°22'20.3"E
Biswanath	Baligaon	26°48'20.1"N 93°42'24.5"E
Dhemaji	Belong	27°29'23.1"N 94°44'24.6"E
Dhemaji	Sisiborgaon	27°32'11.7"N 94°40'42.2"E

2.3. Collection and identification

The collection of the plant materials was done by conducting repeated trips to the nearest forest as well as to home-gardens accompanied by the respondents. The collected materials were then press dried and mounted into herbarium sheets following the methods of Jain and Rao (1977). And were later identified using "Flora of Assam" (Kanjilal et al., 1939); also in consultation with experts and scrutiny of specimens housed at the regional herbaria, Botanical Survey of India, Eastern Regional Circle, Shillong (ASSAM), Herbarium of the Department of Botany, Gauhati University (GUBH) and Herbaria of the Department of Botany, North-Eastern Hill University (NEHU). The collected specimens were finally deposited in Rajiv Gandhi University Herbaria, Arunachal Pradesh. Moreover, literature related to the earlier conducted studies on ethnomedicinal plants and the presence of bioactive compounds was surveyed for each plant of the resulted data is cited in the Annex III. The names were finally validated using Plants of the World Online (POWO, 2019).

2.4. Data analysis

The data collected was analyzed using the following quantitative value indices.

2.4.1. Use value (UV)

The use value (UV) demonstrates the relative importance of plants known locally. It was calculated using the following formula Phillips and Gentry (1993):

$$UV=\sum U/n$$

where, UV is the use value of a species, 'U' is the number of use reports cited by each respondent for a given plant species and 'n' is the total number of respondents interviewed for a given plant.

2.4.2. Informant consensus factor (ICF)

Informant consensus factor (ICF) was obtained from Trotter and Logan (1986) using the following formula:

$$ICF=(Nur-Ns)/(Nur-1)$$

where 'Nur' is the number of use reports for a particular use category and 'Ns' is the number of species used, for each category mentioned by all respondents. ICF gives information about the consensus of respondents regarding the utilization of a certain use category.

2.4.3. Fidelity level (FL)

Fidelity level (FL) index was calculated by using the following formula as described by Friedman et al. (1986) as:

$$FL\ \%=Np/Nx100$$

where 'Np' is the number of respondents that claim to use a plant species for treating a particular disease and N is the number of respondents that use the plants as medicine to treat any given disease.

3. Results

3.1. Medicinal plant knowledge

A total of 153 plants were recorded belonging to 126 genera and 62 families (Annex I, Fig. 2F–J). Fabaceae with 11 species was the most dominant family, followed by Lamiaceae (10 spp.), Solanaceae (8 spp.) and Asteraceae, Rutaceae, Apocynaceae with 7 spp. each. *Clerodendrum* and *Solanum* with 5 species each were the most dominant genera, followed by *Ficus*, *Piper* and *Citrus* with 4 spp. each. Several genera and families were represented in the results by only a single species, indicating high taxonomic diversity of the region (Table 2).

Figure 2 A. Traditional house affected by flood; B – E .Respondents; F – J. Some plants used by the mishing community for traditional healthcare practices (F. *Dillenia indica*, G. *Ficus recemosa*, H. *Averrhoa carambola*, I. *Alpinia nigra*, J. *Syzigium cuminii*)

Table 2. Statistics of medicinal plants used by the Mising community at the family level

Number of species within a family	**Number of families**	**Ratio (%)**	**Number of species**	**Ratio (%)**
1 species	31	50	31	20.26
2-5 species	25	40.32	66	43.13
6-9 species	5	8.06	35	22.87
10-over	2	3.22	21	13.72
Total	62		153	

3.2. Life form and habitat analysis

Life form analysis revealed that herbs constituted the highest number of medicinal plants (41%), followed by trees (24%), shrubs (22%) and climbers (13%) (Fig. 3). A total of 55 species (35.9%) reported in the study are procured from the wild, whereas 84 (54.9%) are cultivated, and 14 (9.1%) are found in the wild and are also semi-domesticated.

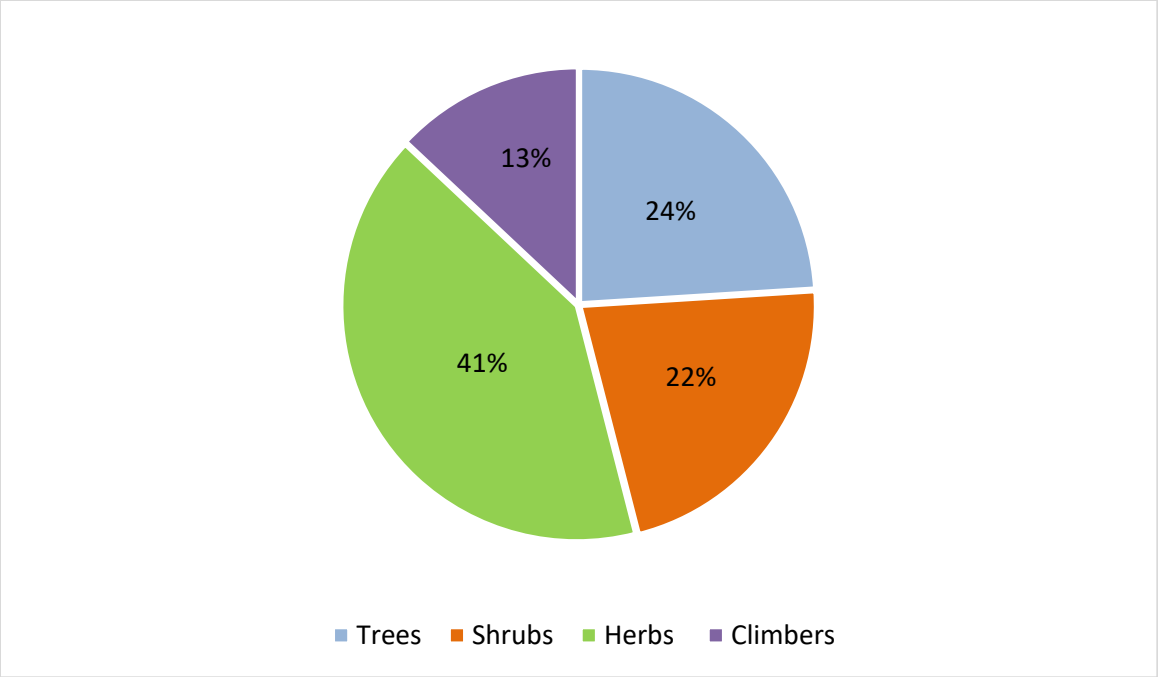

Figure 3. Life form of plants in the study area

3.3. Plant parts used, mode of preparation, application and ailments recorded

The respondents are seen to harvest different plant parts however, majority wise, leaves were the highest (40%), followed by fruits (18%), stem (9%) and so on (Fig. 4). These plant parts are used to cure 51 different ailments that fall under 15 broad categories according to Hossain and Rahman (2018). Gastrointestinal diseases treatment includes the highest number of used species (53), followed by treatment for dermatological infections (22 spp.), cough and cold (19 spp.) as well as muscle, bones, and nerve problems (19 spp.) (Fig. 5). Juice (30%), as well as paste (21%), were some of the most preferred modes of administration. The reported modes of preparation and their percent of use are shown in Fig. 6. Morever analyzing the mode of application, Oral treatment (69%) records the most preferred use, followed by Topical (27%), and so on (Fig. 7).

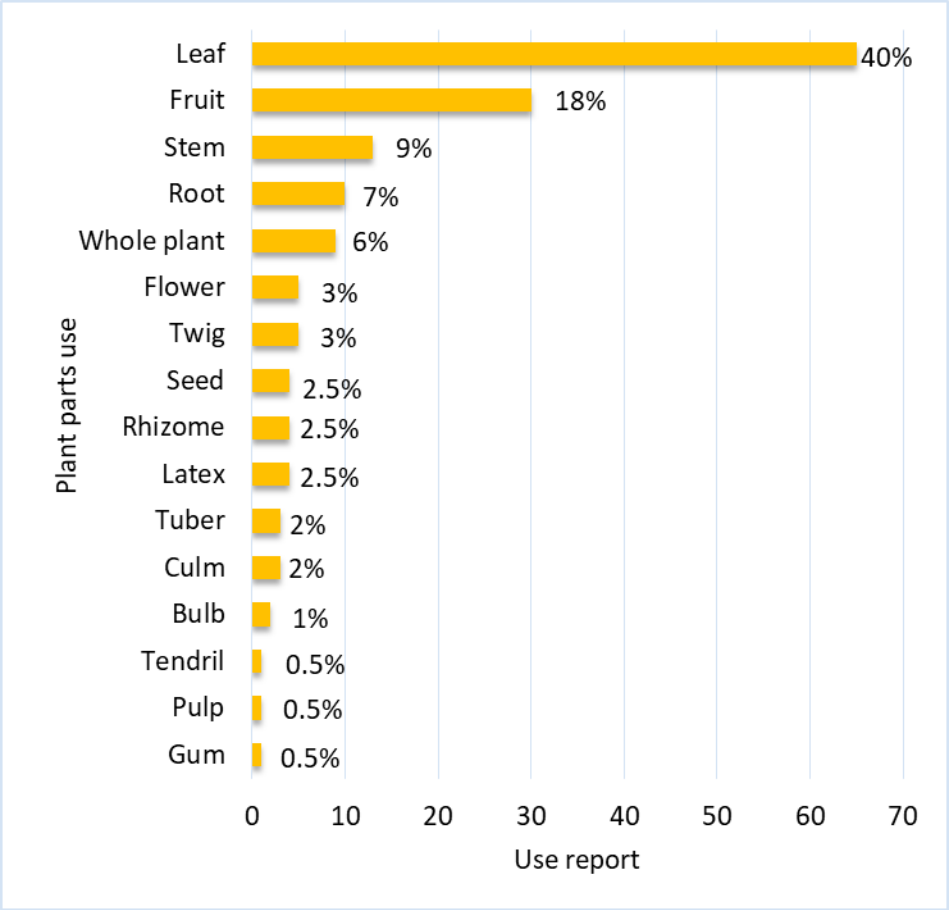

Figure 4. Utilized plant parts and their percentage of use based on the number of use-reports

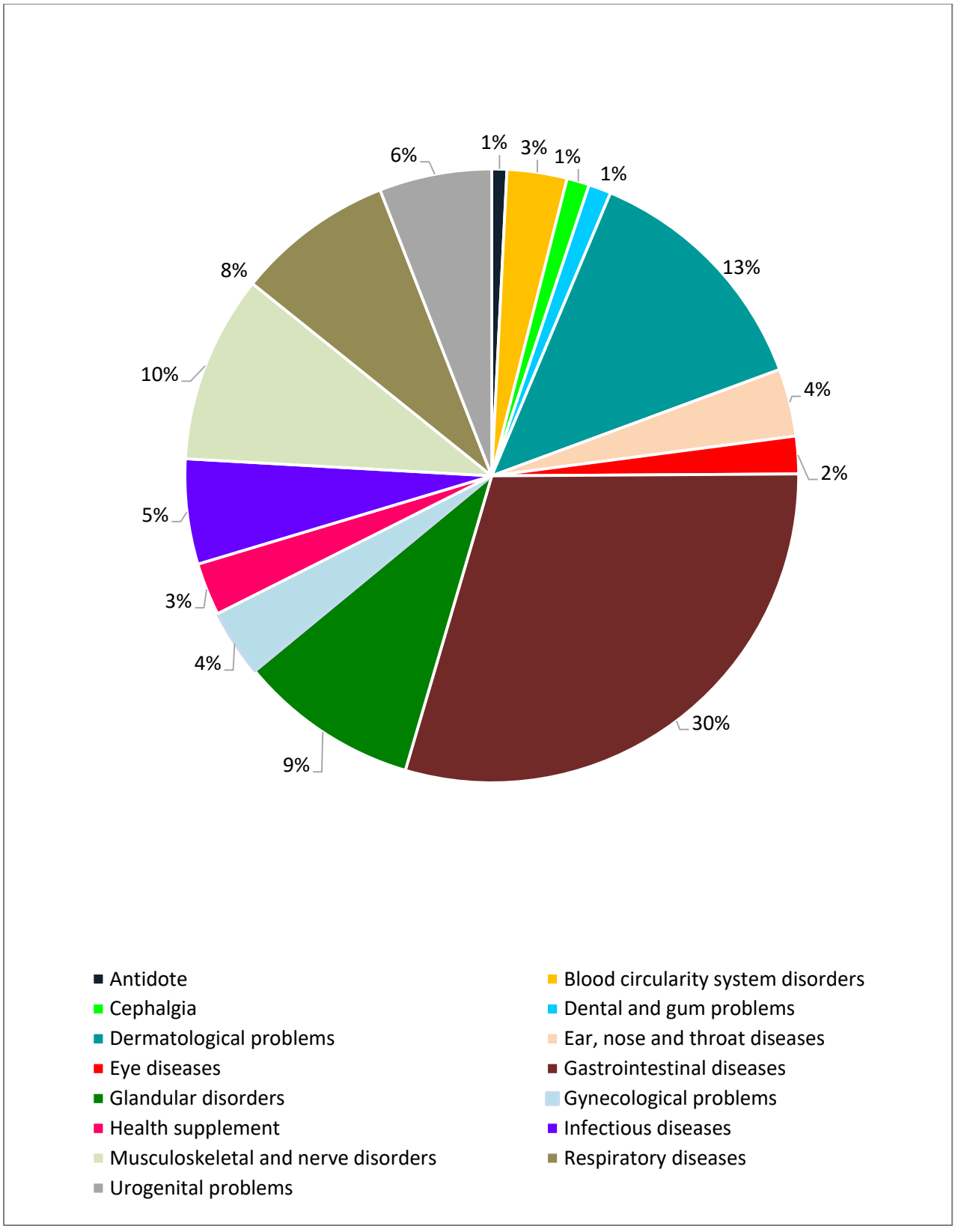

Figure 5. Statistics of therapeutic effects from the study area

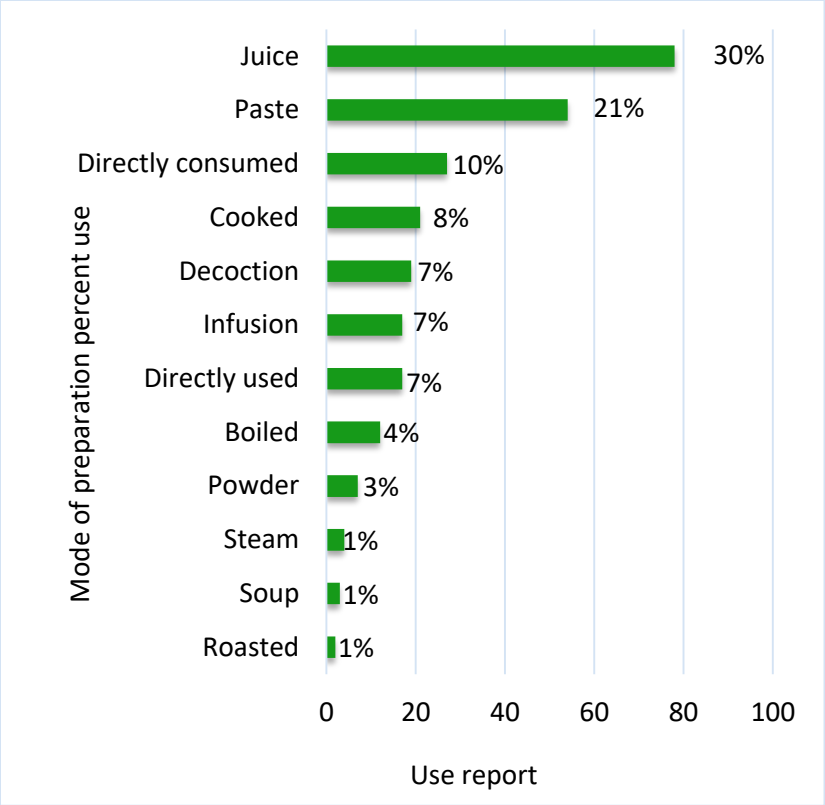

Figure 6. Modes of preparation and their percentage of use based on the number of use-reports

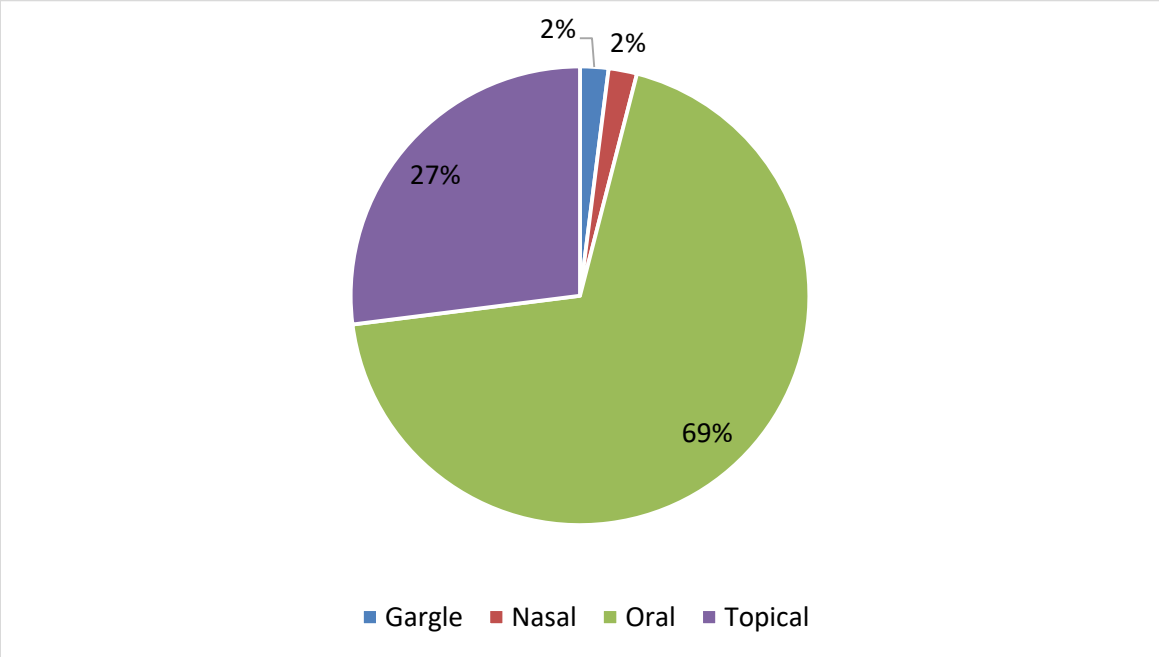

Figure 7. Modes of application and their percentage of use based on the number of use-reports

3.4. Bioactive compounds

Plants produce a wide range of bioactive chemical compounds through their secondary metabolism. Available published literature is extensively surveyed for the bioactive chemical compounds present in the reported plants that are used to cure various diseases in the current study. Almost all the taxa used for the treatment of various diseases contain a wide range of valuable chemical compounds (Annex III). These compounds are reported to have beneficial effects in the prevention of various diseases, depending on the used species and quantity being taken. The secondary data of bioactive compounds when compared to a survey of medicinal flora can illustrate the availability of such bioactive compounds without going through experimental analysis of each species. The present study with a high diversity of medicinal plants also shows high availability of various bioactive compounds such as alkaloids, flavonoids, phenolics, saponins, polyphenols, tannins, arecoline, quinones, coumarin, glycosides and various other compounds from all the studied 153 plant species. Moreover, such data table will exclusively help a large section of workers involved in the field of drug discovery.

3.5. Quantitative analysis

3.5.1. Use Value (UV) and Use Report (UR)

The use value (UV) of all the 153 reported species ranges from 0.0125 to 0.0875 (Annex I). The highest use values were reported for *Musa balbisiana* (0.0875), *Paederia foetida* (0.075), *Andrographis paniculata, Asparagus racemosus, Eclipta prostrata and Murraya koenigii* with (0.0625) each. The use report (UR) is the use recorded for every species for a particular ailment. Used report of all the 15 disease categories is added and it ranges from 20 to 80. Among the categories, dermatological problems with 75 species have the highest UR of 80 whereas, eye diseases with 5 species have the lowest UR of 20 (Table 3).

Table 3. Use Report (UR) with ICF in each medicinal use category

Disease category	**No. of use reports**	**No. of species**	**Informant consensus factor (ICF)**
Antidote (Insects bite, leech bite)	26	2	0.96
Blood circularity system disorders (High blood pressure, hypertension)	48	8	0.85
Cephalgia (Headache, migraine)	29	3	0.92
Dental and gum problems (Mouth infection, scurvy)	24	3	0.91
Dermatological problems (Cuts & wound, skin infection,	77	34	0.56

inflammation, dandruff, boils, eczema, pimples, skin allergy)			
Ear, nose and throat diseases (Ear problem, throat pain, sinusitis)	42	9	0.80
Eye diseases (Eye infection, eye injury)	20	5	0.78
Gastrointestinal diseases (Dysentery, constipation, indigestion, diarrhoea, gastric, haemorrhoids, stomach ache, Intestinal worm, vomiting)	80	75	0.06
Glandular disorders (Jaundice, liver problem, diabetes, tonsils, lungs problem, pneumonia)	78	24	0.70
Gynaecological problems (Menstrual problem, post labour)	70	9	0.88
Health supplement (Lactation, health tonic)	30	7	0.79
Infectious diseases (Malaria, small pox, fever)	53	14	0.75
Musculoskeletal and nerve disorders (Bones fracture, body ache, paralysis, epilepsy, foot crack, toothache)	76	25	0.68
Respiratory diseases (Bronchitis, cold, cough)	55	21	0.62
Urogenital problems (Kidney stone, urinary problem, urethritis)	79	15	0.82

3.5.2. Informant Consensus Factor (ICF)

The ICF value for each of the 15 disease categories was computed using use reports, and it ranged from 0.06 to 0.96 as shown in Table 6. Antidote category had the highest ICF value and the least agreement between the respondents was observed for plants used for gastrointestinal diseases. But when the ICF value was calculated for individual use category i.e. 50 different ailments, the value ranged from 0.69 to 1.00 as shown in Annex IV. Diseases reported with only a single species such as bronchitis, dandruff, epilepsy, foot crack, inflammation, insect bite, leech bite, paralysis, scurvy and smallpox have 1.00 as ICF value irrespective of the used report. Whereas, diseases reported with more than one species with ICF values of ≥ 0.90 are kidney stone, having the highest ICF value of 0.97 with 74 use reports for 3 species, followed by bone fracture (ICF = 0.95; 74 use reports, 4 species), haemorrhoids (ICF = 0.95; 72 use reports, 4 species), intestinal worm (ICF = 0.92; 77 use reports, 7 species), and jaundice (ICF = 0.90; 76 use reports, 8 species). The least agreement between the respondents was observed for dysentery with an ICF value of 0.69 for 21 species and 66 use reports. The species that are responsible for the high consensus for kidney stone are *Musa balbisiana*, *Viola pilosa*, *Citrus assamensis* and *Ficus racemosa*. Similarly, species responsible for the high consensus for bone fracture are *Ricinus communis*, *Cissus quadrangularis*, *Curcuma longa* and *Cryptolepis sinensis*, etc.

3.5.3. Fidelity Level (FL)

Fidelity level (FL) of 50 plant species was found against a given ailment that is responsible for the high consensus for the mentioned disease (Annex IV). Among all the 50 plant species, 7 species are found to have ≥90% FL. The outcomes also revealed that out of the 4 species for bone fracture, *Cissus quadrangularis* is the most commonly used species in the study area (ICF = 0.95) with 75 use reports and FL value of 93.7%. Similarly, *Kalanchoe pinnata* is also a widely used species for treating kidney stone with 74 use reports and FL value of 92.5 %, followed by *Terminalia arjuna* (FL value 91.2%) for Jaundice, *Lawsonia inermis* (FL value 90%) for epilepsy, *Musa balbisiana* (FL value 90%) for haemorrhoids, *Terminalia bellirica* (FL value 90%) for intestinal worm and *Azadirachta indica* (FL value 90%) for skin infection (Table 3).

4. Discussion

The data generated from the respondents interviewed were from four administrative districts, covering the entire spatial variation in the study area has therefore been adequately represented in our samples. The present study shows that medicinal plants play a pivotal role in healthcare maintenance among the Mishing community as they are used frequently. The plants reported in the study are also documented in literature concerned with ethnomedicine of the other tribes in the state. Of all the 153 species recorded in the present study, 26 were also recorded by Mipun et al. (2019) for the Karbi people, 19 by Sarma and Devi (2017) for the Garo community and 6 by Saikia et al. (2010) for the Bodo community of the same region. Almost all of the species, except *Citrus assamensis*, are present in MPNS (Medicinal Plants Names Service). However, the present study reports 77 plants as new records for the ethnomedicinal wealth of the Mishing tribe compared to the present literature on the tribe (Annex II) (Tayung & Saikia, 2003; Baruah & Kalita, 2007; Borah et al., 2009; Hazarika & Pandey, 2010; Kutum et al., 2011; Sharma & Pegu, 2011; Gam & Gam, 2012; Gam, 2013; Shankar et al., 2013; Bhuyan, 2015; Das & Hazarika, 2015; Pandey et al., 2015; Soren et al., 2015; Dutta et al., 2016; Sarma & Devi, 2016; Panging & Sharma, 2017). A fusion of knowledge between the co-existing communities is seen in the study as the use of different vernacular names by the same community settled in different locations as well as the same medicinal plant knowledge and vernacular names by different communities residing in the same location coincide. This is also supported by the studies conducted in fringe villages of protected areas, where different communities co-exist (Borah et al., 2020). The percentage of life form and habitat analysis in the study is similar to the results obtained in the

study on medicinal plant wealth of oak dominated forests of Uttarakhand (Shah et al., 2014), and the apparent resemblance is due to the ease of collection of herbaceous plants and their higher abundance. It is also correlated to the fact that apart from the many native and common plants, many exotic herbaceous plants that are invasive in Northeast India (*Ageratum conyzoides*, *Amaranthus spinosus*, etc.) which find their use as traditional medicine amongst the communities of the region. Moreover, 50% of the medicinal plants used by the Mishing tribe as ethnomedicine are grown in their traditional home-gardens. According to IUCN Red List 2020, a total of two plants are assessed and fall under the least concern category and others are not yet evaluated. So far, there are no proper reports and criteria for assessing the threat status of the medicinal plants of the region as well as no valid data on traded plants.

Data obtained using quantitative ethnobotanical studies have shown the significance of these plants among the Mishing community. It suggests that the traditional knowledge of the locals of this area is significantly diverse and useful and inputs on such knowledge should be given priority in bioassay and toxicity studies. From this study, we recommend *Cissus quadrangularis, Kalanchoe pinnata, Terminalia arjuna, Lawsonia inermis, Musa balbisiana, Terminalia bellirica* and *Azadirachta indica* for further ethnopharmacological studies since these species have high ICF and FL values. The present study on the medicinal plants used by the Mishing community also provides information about the uses in treating 51 different types of ailments, which are prevalent in the areas they resides. The plants with the highest UV indicate species that are considered most important by the Mishing people for their repeated use in the treatments. And those species are conserved locally by following cultivation practices in their respective home gardens and community lands due to their high harvesting pressure (Albuquerque et al., 2006). The calculation of ICF for an individual disease can emphasis more significant result than as a disease category due to the variations in use reports and number of species in the category. The plants with higher ICF values are significantly used by the Mishing community at a large scale for treating different ailments. Moreover, the variation in ICF value might have occurred due to the accessibility of medicinal plants within the particular locality and limit in exchange of ethnobotanical information through generations (Hossain & Rahman, 2018). The high value of fidelity level (%) is taken for selecting the most preferred plant species for each ailment category (Uddin & Hassan, 2014). Comparative study of such quantitative data in the Mishing community is impossible because it being the first quantitative ethnobotanical report for the community.

However, few quantitative works have been done for other communities from the region (Gogoi & Gogoi, 2010; Hansepi & Teron, 2018; Mipun & Kumar, 2020; Mipun et al., 2019; Borah et al., 2020), but there is a clear difference regarding most cited species and their quantitative values. More work needs to be done on those particular plants which have high ICF and FL values to validate their uses as traditional medicines and to check their bioactive constituents for further drug development (Bibi et al., 2014). This type of study could open new paths for future pharmacological research, which can serve as a reference, especially for quantitative ethnobotanical investigations among diverse ethnolinguistic indigenous groups (Ong & Kim, 2014). The study reveals that traditional knowledge of the studied area is mostly concerned with medical practices for conservation as ritual and cultural values. Restrictions in relating to forest resources as "taboo" are also thought to be important for the long-term management of existing resources and their optimum use, which is adequately prevalent in all the study areas. Thus such taboos need to be highlighted for conservation and better utilization of the forest resources. However, efficient and environmentally friendly extraction of these forest products can not only increase the value of the forest product but also provide a strong incentive for conservation and long-term forest management. The present study also revealed various types of anthropogenic threats faced by the medicinal fora of the studied area. Among them, overgrazing due to livestock, overexploitation of plant resources, the introduction of invasive alien species were found to be more prevalent in those areas.

5. Conclusion

The present investigation shows a high degree of reliance of Mishing community in the traditional forms of medicine. Though modern health facilities have gained pace in the developing countries like India in the present era, traditional medicine still co-exists with tribal communities as these are the nearest and reliable forms of treatment in such areas. In the meantime, the inheritance of this treasured culture has received threats to its continuity and the danger of its drying out persists as the new generations migrate to the cities for better opportunities and possible changes in their lifestyle. Apart from the few studies conducted on the pharmacological potential of some plants, the underutilized and less explored number of plants has soared in this region. There lies an immediate need for extended documentation and sharing

of the resources to global databases, to bring the attention of various scientists working on other aspects of these medicinal plants before the treasured knowledge vanishes forever.

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Annex

Annex 1. Medicinal plants used by the Mising indigenous group in Assam, India

Taxon	Voucher number	Family	Vernacular Name	Ailment	Parts used	Mode of Preparation	Mode of application and Dosage	Use Value
Acacia auriculiformis A.Cunn. ex Benth.*	RGU-12288	Fabaceae	Babul	1. Dry cough	L	1. Decoction	1. O	0.0125
Acmella paniculata (Wall. ex DC.) R.K.Jansen	RGU-12313	Asteraceae	Marsang	1. Cough 2. Stomach ache	Fl, L	1. Decoction of flowers 2. Juice of leaves	1. G 2. O	0.025
Acorus calamus L.	RGU-12298	Acoraceae	Alokoni, Bos	1. Stomach ache 2. Cough 3. Pneumonia	Rh	1. Juice 2. Juice 3. Decoction	1. O 2. O 3. O	0.0375
Aegle marmelos (L.) Corrêa	RGU-12211	Rutaceae	Bel	1. Small pox 2. Menstrual problem (dysmenorrhea) 3. Constipation	L, Fr	1. Paste of leaves is rubbed in the entire body 2. Paste of fruits + black salt 3. Juice of the leaves	1. T 2. O 3. O	0.0375
Ageratum conyzoides L.	RGU-12359	Asteraceae	Gundhua bon, Notkoli	1. Cut and wound	L	1. Paste	1. T	0.0125
Allium cepa L.*	RGU-12330	Amaryllidaceae	Piyaj	1. Throat infection	Bb	1. Paste	1. T	0.0125
Allium sativum L.*	RGU-12250	Amaryllidaceae	Naharu, Kampon Talap	1. Hypertension 2. Fever 3. Wrist pain	Bb	1. Directly consumed 2. Paste apply on forehead	1. O 2. T 3. T	0.0375

						3. Paste heated with mustard oil for massage		
Alpinia nigra (Gaertn.) Burtt	RGU-12325	Zingiberaceae	Tora	1. Cough	Rh	1. Juice	1. O	0.0125
Alstonia scholaris (L.) R.Br.	RGU-12242	Apocynaceae	Chotiona, Sotiana	1. Boils 2. Skin infection 3. Liver problem 4. Malaria	Ba	1. Paste 2. Paste 3. Infusion 4. Infusion	1. T 2. T 3. O 4. O	0.05
Alternanthera bettzickiana (Regel) G.Nicholson*	RGU-12243	Amaranthaceae	Bridabon	1. Cut and wounds	L	1. Paste	1. T	0.0125
Amaranthus spinosus L.	RGU-12279	Amaranthaceae	Geang	1. Health tonic	Wp	1. Cooked with pork	1. O	0.0125
Ananas comosus (L.) Merr.	RGU-12329	Bromeliaceae	Matikothal	1. Indigestion with vomiting	L	1. Juice	1. O	0.0125
Andrographis paniculata (Burm.f.) Nees	RGU-12241	Acanthaceae	Sirata, Chirata, Kalmegh	1. Malaria 2. Intestine worm 3. Menstrual problem (dysmenorrhea) 4. Liver problem 5. Bronchitis	Wp, St, L	1. Decoction of leaves 2. Infusion of stems 3. Paste of whole plant mixed with black salt 4. Juice of leaves 5. Juice of leaves	1. O 2. O (empty stomach) 3. O 4. O 5. O	0.0625
Arachis hypogaea L. *	RGU-12271	Fabaceae	Badam	1. Menstrual problem (dysmenorrhea)	Fr	1. Paste	1. O	0.0125
Areca catechu L. *	RGU-12247	Arecaceae	Guye, Tamul	1. Vomiting	Fr	1. Directly consumed	1. O	0.0125

Artocarpus heterophyllus Lam.	RGU-12246	Moraceae	Balang, Kothal	1. Fever	L	1. Decoction	1. O	0.0125
Asparagus racemosus Willd.	RGU-12204	Asparagaceae	Satmul	1. Kidney stone 2. Fever 3. Dysentery 4. Indigestion 5. Constipation	R	1. Juice 2. Juice 3. Juice 4. Decoction 5. Infusion	1. O 2. O 3. O 4. O 5. O	0.0625
Averrhoa carambola L.	RGU-12216	Oxalidaceae	Kordoi	1. Cough 2. Skin infection	Fr	1. Roasted 2. Juice	1. O 2. T	0.025
Azadirachta indica A.Juss.	RGU-12364	Meliaceae	Moha neem, Neem	1. Skin infection 2. Intestinal worm	L	1. Decoction 2. Paste	1. T 2. O (empty stomach)	0.025
Bacopa monnieri (L.) Wettst.	RGU-12222	Plantaginaceae	Brahmi	1. Brain tonic	Wp	1. Juice	1. O	0.0125
Bambusa balcooa Roxb. *	RGU-12315	Poaceae	Bholuka banh	1. Insect bites	Cu	1. Peel of the culms directly used	1. T	0.0125
Bambusa sp.	RGU-12255	Poaceae	Eya	1. Cut & Wounds	Cu	1. Peel of the culms directly used	1. T	0.0125
Bambusa tulda R oxb. *	RGU-12208	Poaceae	Dibang	1. Blood clotting	Cu	1. Peel of the culms directly used	1. T	0.0125
Bassella alba L. *	RGU-12349	Basellaceae	Kampon puroi	1. Allergy	L	1. Paste	1. T	0.0125
Bischofia javanica Blume*	RGU-12307	Phyllanthaceae	Uriam goss	1. Dysentery	La	1. Latex mixed with water directly used	1. O	0.0125
Blainvillea acmella (L.) Philipson*	RGU-12304	Asteraceae	Marsang	1. Post labour 2. Throat infection	Wp	1. Soup 2. Directly consumed	1. O 2. O	0.025
Brassica rapa L. *	RGU-12203	Brassicaceae	Pattu	1. Fever with cough and body ache	S	1. Oil extract (juice) is used for massage	1. T	0.0125
Butea	RGU-	Fabacea	Palas	1. Diarrhoea	Gu	1. Directly	1. O	0.0125

monosperma (Lam.) Kuntze	12262	e				consumed		
Caesalpinia crista L.*	RGU-12209	Fabaceae	Letaguti	1. Fever	Fr	1. Decoction	1. O	0.0125
Calotropis gigantea (L.) W.T.Aiton*	RGU-12215	Apocynaceae	Aah, Kam	1. Body ache	L	1. Slightly warmed leaves along with mustard oil is directly consumed in the affected area	1. T	0.0125
Calotropis procera (Aiton) W.T.Aiton*	RGU-12336	Apocynaceae	Akon pat	1. Body ache	L	1. Slightly warmed leaves along with mustard oil is directly consumed in the affected area	1. T	0.0125
Cannabis sativa L.	RGU-12207	Cannabinaceae	Bhang	1. Sinusitis	L	1. Dried leaves are boiled and the steam is inhaled	1. N	0.0125
Capsicum annuum L. *	RGU-12248	Solanaceae	Surging mirsi	1. Stomach ache	Fr	1. Directly consumed	1. O	0.0125
Carica papaya L.	RGU-12361	Caricaceae	Omita	1. Lactation 2. Skin infection 3. Post labour 4. Dysentery	Fr, Fl, La	1. Soup is prepared from raw fruits with chicken 2. Latex is directly used on the infected area 3. Soup is prepared from raw fruits with chicken 4. Male flowers and fruits are directly consumed	1. O 2. T 3. O 4. O	0.05
Cassia fistula L. *	RGU-12366	Fabaceae	Sunaru, Conari, Hunaru goss	1. Constipation 2. Mouth infection 3. Tonsil	L, P, Ba	1. Paste of leaves 2. Paste of pulp applied on infected area 3. Juice of the bark	1. O 2. T 3. G	0.0375

						+ *Piper beetle* (leaves)		
Catharanthus roseus (L.) G.Don. *	RGU-12292	Apocynaceae	Nayantara	1. Diabetes	Fl	1. Boiled	1. O	0.0125
Centella asiatica (L.) Urb.	RGU-12259	Apiaceae	Manimuni, Bormanimuni	1. Cough 2. Gastritis 3. Bee sting 4. Stomach ache	L	1. Paste + *Ocimum basilicum* (leaves) 2. Directly consumed 3. Juice 4. Juice	1. O 2. O 3. O 4. O	0.05
Cinnamomum verum J.Presl	RGU-12305	Lauraceae	Dalchini	1. Menstrual problem (dysmenorrhea)	Ba	1. Paste +black salt	1. O	0.0125
Cissus quadrangularis L.	RGU-12286	Vitaceae	Harjora	1. Bone fracture	Wp	1. Directly used around the fractured portion	1. T	0.0125
Citrus aurantiifolia (Christm.) Swingle*	RGU-12258	Rutaceae	Gol nemu	1. Dysentery	Fr	1. Juice	1. O	0.0125
Citrus limon (L.) Osbeck*	RGU-12348	Rutaceae	Nemu	1. Dysentery 2. Vomiting 3. Antiseptic 4. Scurvy	Fr	1. Juice 2. Juice 3. Paste 4. Direct consumed	1. O 2. O 3. T 4. O	0.05
Citrus maxima (Burm.) Merr. *	RGU-12341	Rutaceae	Singliang	1. Indigestion	Fr	1. Direct consumed	1. O	0.0125
Citrus assamensis R.M.Dutta & Bhattacharya*	RGU-12239	Rutaceae	Singkin	1. Haemorrhoids	Fr, L	1. Juice	1. O	0.0125
Clerodendrum chinense (Osbeck) Mabb. *	RGU-12365	Lamiaceae	Dapai tita	1. Leech bite 2. Malaria	L	1. Paste 2. Decoction	1. T 2. O	0.025
Clerodendrum colebrookeanum	RGU-12268	Lamiaceae	Nefafu, Pakom	1. High blood pressure	L	1. Boiled 2. Boiled	1. O 2. O	0.025

Walp.				2. Hypertension				
Clerodendrum infortunatum L. *	RGU-12368	Lamiaceae	Bhatai tita, Pakkom, Lomba domba	1. Dysentery 2. Skin infection 3. Diarrhoea 4. Malaria	R, L	1. Infusion of roots 2. Paste of leaves 3. Boiled 4. Boiled	1. O 2. T 3. O 4. O	0.05
Cocos nucifera L. *	RGU-12218	Arecaceae	Narikool	1. Jaundice	Fr	1. Direct consumed	1. O	0.0125
Colocasia esculenta (L.) Schott*	RGU-12299	Araceae	Babing	1. Cuts and Wounds 2. Headache	Sa, L	1. Directly used 2. Leaves slightly warmed are directly used on forehead	1. T 2. T	0.025
Colocasia sp.	RGU-12206	Araceae	Kosu	1. Cuts and wounds	Sa	1. Directly used	1. T	0.0125
Commelina benghalensis L.	RGU-12320	Commelinaceae	Kona himolu	1. Eye infection	St	1. Juice	1. T	0.0125
Corchorus capsularis L.	RGU-12339	Malvaceae	Mura	1. Fever	L	1. Smoke dried leaves are boiled	1. O	0.0125
Coriandrum sativum L. *	RGU-12296	Apiaceae	Dhania	1. Health tonic	St, L	1. Powder used in *Apong* (Ethnic alcoholic beverage)	1. O	0.0125
Cryptolepis sinensis (Lour.) Merr. *	RGU-12309	Apocynaceae	Harjora	1. Bone fracture	St	1. Paste	1. T	0.0125
Cucumis sativus L. *	RGU-12360	Cucurbitaceae	Tiyoh	1. Kidney stone	Fr	1. Direct consumed	1. O	0.0125
Curcuma longa L.	RGU-12300	Zingiberaceae	Haladhi	1. Cut and wound 2. Body ache 3. Bone fracture 4. Skin infection	Rh	1. Paste 2. Juice 3. Paste 4. Paste	1. T 2. O 3. T 4. T	0.05
Cuscuta reflexa Roxb. *	RGU-12225	Convolvulaceae	Akashilota	1. Stomach ache	St	1. Juice	1. O	0.0125

Cynodon dactylon (L.) Pers. *	RGU-12229	Poaceae	Dhuboriboon	1. Urethritis 2. Ear infection	Wp	1. Paste 2. Juice	1. O 2. T	0.025
Datura metel L. *	RGU-12230	Solanaceae	Dhotura	1. Body ache	St	1. Paste	1. T	0.0125
Datura stramonium L.	RGU-12321	Solanaceae	Dhatura	1. Body ache	L	1. Leaves warmed are directly used with mustard oil	1. T	0.0125
Dillenia indica L.	RGU-12295	Dilleniaceae	Champa, Sompa	1. Dandruff 2. Diabetes 3. Urethritis	Fr, R	1. Pulp is directly used used to wash hair 2. Juice of the pulp 3. Root sap is directly consumed	1. T 2. O 3. O	0.0375
Dioscorea alata L.	RGU-12285	Dioscoreaceae	Alé	1. Health tonic	Tu	1. Cooked	1. O	0.0125
Drymaria cordata (L.) Willd. ex Schult.	RGU-12310	Caryophyllaceae	Laijabori, Porak tapan	1. Sinusitis 2. Headache	Tw	1. Juice 2. Boiled and the steam is inhaled	1. N 2. N	0.025
Eclipta prostrata (L.) L.	RGU-12324	Asteraceae	Keyaras, Bhangra, Kehraj	1. Diarrhoea 2. Stomach ache 3. Ear infection 4. Toothache 5. Jaundice	L	1. Juice 2. Juice 3. Juice + mustard oil 4. Paste 5. Juice	1. O (2-3 times daily in empty stomach) 2. O 3. T 4. T 5. O	0.0625
Euphorbia hirta L. *	RGU-12221	Euphorbiaceae		1. Lactation	L	1. Cooked	1. O	0.0125
Ficus racemosa L.	RGU-12281	Moraceae	Dimoru, Tajjig, Tejing, Taksek, Takug	1. Haemorrhoids 2. Diabetes 3. Cuts and wounds	La, L	1. Latex + water is directly consumed 2. Juice of leaves + hot water 3. Paste of leaves	1. O 2. O 3. T	0.0375
Ficus religiosa L.*	RGU-12200	Moraceae	Ahot gos	1. Paralysis	La	1. Directly used to massaged	1. T	0.0125
Ficus	RGU-	Moracea	Taksek	1. High blood	Fr	1. Directly	1. O	0.0125

simplicissima Lour.	12198	e		pressure		consumed		
Flemingia strobilifera (L.) W.T.Aiton	RGU-12234	Fabaceae	Makhioti	1. Health tonic	L	1. Powder is used in Apong	1. O	0.0125
Garcinia cowa Roxb. ex Choisy	RGU-12260	Clusiaceae	Kuji Thekera	1. Urine problem	Fr	1. Infusion of dried fruits	1. O	0.0125
Garcinia pedunculata Roxb. ex Buch.-Ham. *	RGU-12342	Clusiaceae	Tekera	1. Dysentery	Fr	1. Dried fruits are direct consumed	1. O	0.0125
Garcinia xanthochymus Hook.f. ex T.Anderson*	RGU-12210	Clusiaceae	Tepor Tenga	1. Urine problem 2. Diabetes	Fr, L	1. Infusion of dried fruits 2. Leaf juice	1. O 2. O	0.025
Glebionis coronaria (L.) Cass. ex Spach *	RGU-12333	Asteraceae	Guuldaudi	1. Menstrual problem (dysmenorrhea)	Wp	1. Decoction	1. O	0.0125
Gloriosa superba L. *	RGU-12236	Colchicaceae	Agnilata	1. Intestine worm	Te	1. Juice	1. O	0.0125
Gomphostemma parviflorum Wall. ex Benth.	RGU-12326	Lamiaceae	Paduri-tita	1. Malaria	L	1. Decoction	1. O	0.0125
Hedyotis fruticosa L. *	RGU-12358	Rubiaceae	Sarpajiva	1. Health tonic	L	1. Powder used in Apong	1. O	0.0125
Hellenia speciosa (J.Koenig) S.R.Dutta	RGU-12238	Costaceae	Peki jik-jik, Jom lakhuti/ Peki jik-jik, Pakhajugjug	1. Urinary problems 2. Stomach ache 3. Vomiting 4. Toothache	St, L, R	1. Stem is directly consumed 2. Leaves and stem juice 3. Leaves juice 4. Chewing the stem (directly consumed)	1. O 2. O 3. O 4. T	0.05
Hibiscus rosa-sinensis L. *	RGU-12237	Malvaceae	Leunaapum, Jobaphool	1. Indigestion 2. Urethritis	L, Fl	1. Leaves juice 2. Flower juice	1. O 2. O	0.025

Houttuynia cordata Thunb.	RGU-12306	Saururaceae	Mosundori	1. Dysentery 2. Gastritis 3. Stomach ache	Tw	1. Directly consumed 2. Juice 3. Juice	1. O 2. O 3. O	0.0375
Hydrocotyle rotundifolia Roxb. *	RGU-12254	Araliaceae	Horu manimuni	1. Diarrhoea 2. Dysentery 3. Gastritis	Wp	1. Juice 2. Juice 3. Juice	1. O 2. O 3. O	0.0375
Jatropha curcas L.	RGU-12261	Euphorbiaceae	Bonoria Era, Votera	1. Toothache 2. Stomach ache 3. Nerve tonic	St, Sa	1. Directly used as toothbrush 2. Sap + milk directly consumed 3. Sap + milk directly consumed	1. T 2. O 3. O	0.0375
Justicia adhatoda L.	RGU-12337	Acanthaceae	Bahaka	1. Dry cough	L	1. Juice	1. O	0.0125
Kalanchoe pinnata (Lam.) Pers.	RGU-12302	Crassulaceae	Dupor tagha, Duportenga	1. Stomach ache 2. Kidney stone 3. Urinary problems	L	1. Juice 2. Directly consumed 3. Directly consumed	1. O 2. O 3. O	0.0375
*Lasia spinosa (*L.) Thwaites *	RGU-12253	Araceae	Asi ange	1. Menstrual disorder (dysmenorrhea)	Tu	1. Cooked	1. O	0.0125
Lawsonia inermis L. *	RGU-12276	Lythraceae	Jetuka	1. Skin infection 2. Epilepsy	L	1. Paste 2. Juice	1. T 2. O	0.025
Leucas aspera (Willd.) Link	RGU-12301	Lamiaceae		1. Sinusitis 2. Headache 3. Stomach ache 4. Tonsil	L	1. Leaves are steamed and the vapor is inhaled. 2. Leaves are steamed and the vapor is inhaled 3. Juice 4. Juice + hot water	1. N 2. N 3. O 4. G	0.05

Litsea salicifolia (Roxb. ex Nees) Hook.f. *	RGU-12227	Lauraceae	Digloti	1. Boils	L	1. Paste + *Scoparia dulcis* (roots)	1. T	0.0125
Lygodium microphyllum (Cav.) R.Br.	RGU-12363	Schizaeaceae	Kishor-kosak	1. Skin infection	L	1. Paste	1. T	0.0125
Magnolia champaca (L.) Baill. ex Pierre	RGU-12332	Magnoliaceae	Titasopa	1. Cold and cough	Ba	1. Decoction	1. O	0.0125
Mallotus nudiflorus (L.) Kulju & Welzen*	RGU-12214	Euphorbiaceae	Bhelo gos	1. Foot crack	Fr	1. Paste	1. T	0.0125
Mangifera indica L.	RGU-12334	Anacardiaceae	Ke-di milong	1. Sinusitis	Ba	1. Decoction	1. O	0.0125
Manihot esculenta Crantz*	RGU-12257	Euphorbiaceae	Singiali	1. Diarrhoea	Tu	1. Boiled	1. O	0.0125
Melia azadirachta L.*	RGU-12249	Meliaceae	Neem	1. Skin infection	L	1. Paste	1. T	0.0125
Mentha arvensis L. *	RGU-12291	Lamiaceae	Pudina	1. Skin infection 2. Diarrhoea	L	1. Paste 2. Juice	1. T 2. O	0.025
Microsorum punctatum Copel. *	RGU-12270	Polypodiaceae	Ising Okang	1. Cuts and wounds	L	1. Paste	1. T	0.0125
Mikania micrantha Kunth	RGU-12362	Asteraceae	Lota	1. Dysentery 2. Gastritis	L	1. Juice 2. Juice	1. O (3 times daily in empty stomach) 2. O (2 times daily in empty stomach)	0.025
Mimosa pudica L.	RGU-12303	Fabaceae	Nilaji bon, Lajuki bon	1. Urinary problem 2. Toothache 3. Boils	R	1. Juice 2. Chewed (directly consumed) 3. Paste	1. O 2. T 3. T	0.0375
Momordica	RGU-	Cucurbit	Kerela	1. Intestinal	L	4. Juice	1. O	0.0125

charantia L. *	12217	aceae		worm				
Moringa oleifera Lam. *	RGU-12267	Moringaceae	Munga, Sojina	1. Dysentery 2. High blood pressure	Fr, L	1. Cooked 2. Cooked	1. O 2. O	0.025
Morus alba L. *	RGU-12244	Moraceae	Nuni gos	1. Jaundice	Ba	1. Juice + milk + *Musa balbisiana* (dried fruit peels) + sugar	1. O	0.0125
Murraya koenigii (L.) Spreng.	RGU-12263	Rutaceae	Norohingho, Norhing	1. Stomach ache 2. Blood deficiency 3. Indigestion 4. Skin infection 5. Diarrhoea	L	1. Cooked 2. Cooked 3. Juice 4. Cooked 5. Chutney (paste)	1. O 2. O 3. O 4. O 5. O	0.0625
Musa balbisiana Colla	RGU-12196	Musaceae	Athia kol, Bhim kol, Kopak	1. Stomach ache 2. Intestinal worm 3. Dysentery 4. Diabetes 5. Eye infection 6. Haemorrhoids 7. Cough	R, St, Fr	1. Juice 2. Raw fruits cooked as curry 3. Juice 4. Raw fruits cooked as curry 5. Infusion made of ash of fruit peel 6. Juice of roots, Infusion made of ash of fruit peel + *Murraya koengii* (leaves) + *Terminalia arjuna* (Bark) 7. Infusion made of ash of fruit peel	1. O 2. O 3. O 4. O 5. O 6. T 7. O (Taken in empty stomach)	0.0875
Musa paradasica L. *	RGU-12322	Musaceae	Bhim kol	1. Stomach ache 2. Pneumonia	Fr	1. Directly consumed 2. Infusion of dried	1. O 2. T	0.025

						peel and applied on forehead		
Nyctanthes arbor-tristis L.	RGU-12220	Oleaceae	Sewali	1. Cuts & wound 2. Diabetes 3. Stomach ache	L, Fl	1. Paste of leaves 2. Flowers boiled 3. Paste of leaves	1. T 2. O 3. O	0.0375
Ocimum basilicum L. *	RGU-12251	Lamiaceae	Tulsi, Tolokhi	1. Dysentery 2. Cough	L	1. Juice 2. Juice + honey	1. O 2. O	0.025
Ocimum tenuiflorum L.	RGU-12367	Lamiaceae	Tuloki	1. Cough	L	1. Juice	1. O	0.0125
Oroxylun indicum (L.) Kurz	RGU-12256	Bignoniaceae	Bhat ghila	1.Dysentery	S	1. Boiled	1. O	0.0125
Oxalis corniculata L.	RGU-12275	Oxalidaceae	Tengesi tenga	1. Eye injury 2. Mouth infection	L	1. Juice 2. Paste	1. T 2. T	0.025
Paederia foetida L.	RGU-12308	Rubiaceae	Bhungki rupuk, Bhedailota	1. Dysentery 2. Diarrhoea 3. Intestinal worm 4. Stomach ache 5. Gastritis 6. Body ache	L	1. Juice 2. Cooked 3. Juice + dried fish cooked 4. Juice 5. Juice 6. Cooked	1. O (Taken in empty stomach for 3 times daily) 2. O 3. O 4. O 5. O 6. O	0.075
Perilla frutescens (L.) Britton	RGU-12287	Lamiaceae	Hugloti	1. Cough	L	1. Boiled	1. O	0.0125
Persicaria glabra (Willd.) M.Gómez*	RGU-12344	Polygonaceae	Bihlongoni	1. Lactation	L	1. Cooked with *Piper nigrum* (fruits)	1. O	0.0125
Persicaria hydropiper (L.) Delarbre*	RGU-12351	Polygonaceae	Leubo	1. Boils/cut & wound	L, St	1. Paste	1. T	0.0125
Phlogacanthus thyrsiformis (Roxb. ex Hardw.) Mabb.	RGU-12224	Acanthaceae	Titaphool	1. Skin infection	Fl	1. Cooked	1. O	0.0125

Phyla nodiflora (L.) Greene*	RGU-12319	Verbenaceae	Oyang	1. Skin infection	L, Fl	1. Powder	1. T	0.0125
Phyllanthus acidus (L.) Skeels	RGU-12327	Phyllanthaceae	Pora amlokhi	1. Cough	L	1. Juice	1. O (Taken in empty stomach, daily for 15 consecutive days)	0.0125
Phyllanthus emblica L.	RGU-12355	Phyllanthaceae	Amlakhi	1. Menstrual problem (amenorrhea) 2. Skin infection 3. Inflammation 4. Hypertension	Fr, Ba	1. Paste prepared of its fruits + fruits of *Terminalia chebula* (fruits) + *Andrographis paniculata* (leaves) + *Cinnamomum verum* (bark) + *Aegele marmelos* (fruits) + *Arachis hypogea* (fruits) + *black salt* + picric 2. Fruit directly consumed 3. Infusion of bark 4. Fruit directly consumed	1. O 2. O 3. O 4. O	0.05
Phyrnium pubinerve Blume*	RGU-12356	Marantaceae	Taling	1. Eye injury	L	1. Slightly warmed leaves with mustard oil is directly used over closed lid of the eye	1. T	0.0125
Piper betle L. *	RGU-12357	Piperaceae	Betel leaf	1. Cough	L	1. Paste prepared of its leaves + fruits of *Piper longum* + rhizome of Zingiber officinale + rhizome of	1. O	0.0125

						Curcuma sp.+ leaves of Ocimum basilicum		
Piper betleoides C.DC. *	RGU-12273	Piperaceae	Jangali jaluk	1. Jaundice 2. Fever	R	1. Tied as a bracelet in wrist (directly used) 2. Juice	1. T 2. O	0.025
Piper longum L.	RGU-12201	Piperaceae	Pipoli	1. Body ache	Fr	1. Decoction	1. O	0.0125
Piper nigrum L.	RGU-12195	Piperaceae	Jaluk	1. Indigestion, with fever and cough	Fr	1. Decoction	1. O	0.0125
Polygonum sp.	RGU-12331	Polygonaceae	Dikne-kone	1. Boils	L	1. Paste	1. T	0.0125
Psidium guajava L.	RGU-12284	Myrtaceae	Madhuri aam	1. Dysentery	L	1.Paste + *Centella asiatica* (whole Plants) + *Citrus sp.* (leaves)	1. O	0.0125
Ricinus communis L.	RGU-12219	Euphorbiaceae	Erapat, Anera	1. Bone fracture	Ba, L	1. Paste	1. T	0.0125
Saccharum officinarum L. *	RGU-12272	Poaceae	Tabad	1. Urinary problems	St	1. Juice	1. O	0.0125
Scleromitrion diffusum (Wild.) R. J. Wang*	RGU-12266	Rubiaceae	Bonjaluk	1. Jaundice	Fr	1. Juice	1. O	0.0125
Scoparia dulcis L.	RGU-12199	Plantaginaceae	Tishor koshak/ senibon, Jalukban	1. Urinal problem 2. Urethritis 3. Cough	R, L	1. Paste of leaves + misiri + *Murraya koengii* (leaves) + *Asparagus racemosus* (tubers)+ *Musa* sp. (corm) + *Hellenia speciosa* (rhizome) 2. Paste of leaves + misiri + *Murraya koengii* (leaves) +	1. O (Two times in empty stomach) 2. O (Two times in empty stomach) 3. O	0.0375

						Asparagus racemosus (tubers)+ *Musa* sp. (corm) + *Hellenia speciosa* (rhizome) 3. Decoction of roots		
Senna alata (L.) Roxb.	RGU-12231	Fabaceae	Khor paat	1. Intestinal worm	L	1. Juice	1. O	0.0125
Sesamum indicum L. *	RGU-12290	Pedaliaceae	Tanam, Teel	1. Stomach ache 2. Constipation	S	1. Cooked 2. Powder + sugar molasses	1. O 2. O	0.025
Smilax ovalifolia Roxb. ex D.Don*	RGU-12240	Smilaceae	Yorit	1. Urinary problems	Tw	1. Cooked	1. O	0.0125
*Sohmaea laxiflora (*DC.) H.Ohashi & K. Ohashi*	RGU-12354	Fabaceae	Bionisapota	1. Urinary infection	L	1. Infusion	1. O	0.0125
Solanum anguivi Lam. *	RGU-12245	Solanaceae	Banko	1. Diarrhoea	L	1. Juice	1. O	0.0125
Solanum melongena L. *	RGU-12317	Solanaceae	Bangko	1. Dysentery	Fr	1. Cooked	1. O	0.0125
Solanum nigrum L. *	RGU-12226	Solanaceae	Okomang	1. Jaundice	Tw	1. Cooked	1. O	0.0125
Solanum torvum Sw. *	RGU-12340	Solanaceae	Sitabanko	1. Diabetes	Fr	1. Cooked	1. O	0.0125
Solanum violaceum Ortega	RGU-12346	Solanaceae	Bangko	1. Intestinal worm	R	1. Juice	1. O (Taken in empty stomach)	0.0125
Spondias pinnata (L.f.) Kurz*	RGU-12323	Anacardiaceae	Amora	1. Dysentery	Fr, Tw	1. Directly consumed	1. O	0.0125
Streblus asper Lour.	RGU-12278	Moraceae	Namhoi, Trakgos	1. Toothache 2. Dysentery	St, L	1. Stem directly used as tooth brush. 2. Juice of leaves	1. T 2. O	0.025
Syzigium cuminii (L.) Skeels	RGU-12213	Myrtaceae	Kola jamu	1. Blood dysentery	Fr, Ba	1. Infusion of bark + *Terminalia*	1. O 2. O	0.025

				2. Diabetes		*chebula*(bark)+ *Phyllanthus emblica* (fruits) 2. Fruit directly consumed		
Tabernaemontana divaricata (L.) R.Br. ex Roem. & Schult.	RGU-12335	Apocynaceae	Kathona phul	1. Eye infection	Fl	1. Petals are warmed directly used to covered over the eye lid	1. T	0.0125
Tagetes erecta L. *	RGU-12280	Asteraceae	Nargee	1. Ear infection	L	1. Juice	1. T	0.0125
Tamarindus indica L. *	RGU-12352	Fabaceae	Teteli	1. High blood pressure	Fr	1. Infusion	1. O	0.0125
Terminalia arjuna (Roxb. ex DC.) Wight & Arn.	RGU-12232	Combretaceae	Arjun	1. Tooth ache 2. Jaundice	Ba	1. Decoction 2. Infusion	1. G 2. O (One time daily in empty stomach)	0.025
Terminalia bellirica (Gaertn.) Roxb.	RGU-12338	Combretaceae	Bhomora	1. Intestinal worm 2. Allergy	Fr	1. Powder 2. Paste	1. O 2. T	0.025
Terminalia chebula Retz.	RGU-12228	Combretaceae	Silikha	1. Intestine worm 2. Menstrual problem (dysmenorrhea) 3. Dysentery	Fr	1. Powder, Decoction 2. Paste + black salt + picric 3. Directly consumed	1. O (One time daily in empty stomach) 2. O 3. O	0.0375
Thunbergia grandiflora (Roxb.ex Rottl.) Roxb.*	RGU-12274	Acanthaceae	Khakaloti	1. Ear infection	R	1. Juice	1. T	0.0125
Tinospora cordifolia (Willd.) Hook.f. & Thomson	RGU-12277	Menispermaceae	Amrita, Shaguni lota	1. Health tonic	St	1. Infusion	1. O	0.0125
Urena lobata L. *	RGU-	Malvace	*Samthai*	1. Jaundice	R	1. Juice	1. O	0.0125

	12345	ae						
Vigna mungo (L.) Hepper*	RGU-12293	Fabaceae	Paret	1. Body ache	S	1. Paste + Mustard oil	1. T	0.0125
Vincetoxicum indicum (Burm.f.) Mabb.	RGU-12328	Apocynaceae	Anantamul	1. Constipation	R	1. Directly consumed	1. O	0.0125
Viola pilosa Blume*	RGU-12353	Violaceae	Banafsha	1. Haemorrhoids	Wp	1 .Juice	1. O	0.0125
Vitex negundo L.	RGU-12343	Lamiaceae	Posotia	1. Wound 2. Body ache 3. Skin infection	L	1. Paste is applied 2. Paste wrapped in a cotton cloth and soaked in water vapour is applied on the affected portion 3. Decoction is applied on the affected portion	1. T 2. T 3. T	0.0375
Zanthoxylum nitidum (Roxb.) DC. *	RGU-12233	Rutaceae	Rikom, Tezmoi	1. Tooth ache	St, R	1. Paste	1. T	0.0125
Zingiber officinale Roscoe	RGU-12212	Zingiberaceae	Takke	1. Cough	Rh	1. Roasted	1. O	0.0125

List of Abbreviations: Ba, Bark; Bb, Bulb; Cu, Culm; Fl, Flower; Fr, Fruit; Gu, Gum; I, Inflorescence; L, Leaf; La, Latex; P, Pulp; R, Root; Rh, Rhizome; S, Seed; Sa, Sap; St, Stem; Te, Tendril; Tu, Tuber; Tw, Twig; Wp, Whole Plant; O, Oral; T, Topical; N, Nasal; G, Gurgle.

Annex II. List of reviewed medicinal plant of the Mising tribe till date

Taxon	Family	Vernacular Name	Ailment	Parts used	Source
Acmella paniculata (Wall. ex DC.) R.K.Jansen	Asteraceae	Marsang	Toothache, Bronchial trouble, Ulcers inside the mouth, Dysentery	Wp, Fl	Sharma and Pegu, 2011
Acorus calamus L.	Acoraceae	Alokoni	Bronchitis, Rheumatic pain, Diarrhoea, Flatulence, Pneumonia, Cough, Abdominal pain (during menstruation)	Rh	Sharma and Pegu, 2011; Pandey et al., 2015; Panging and Sharma 2017
Aegle marmelos (L.) Correa	Rutaceae	Bel	Stomach trouble, Small pox	Fr, L	Kutum et al., 2011; Sarma and Devi, 2016
Ageratum conyzoides L.	Asteraceae	Gendela-bon	Appetizer, Ophthalmic, Cuts and Wounds	Fl, L, R	Sharma and Pegu, 2011; Panging and Sharma, 2017
Aloe vera (L.) Burm.f.	Asphodelaceae	Shalkuandi	Jaundice	P	Shankar et al., 2013
Alpinia malaccensis (Burm.f.) Roscoe	Zingiberaceae	Lisin	Sores	L, Rh	Sharma and Pegu, 2011
Alpinia nigra (Gaertn.) Burtt	Zingiberaceae	Tora	Gout	L, Rh	Sharma and Pegu, 2011
Alstonia scholaris (L.) R.Br.	Apocynaceae	Satiyana	Malaria, Fever	St, Ba	Shankar et al., 2013
Amaranthus spinosus L.	Amaranthaceae	Tanduliya, Kataili-chaulai	Stomach ache	R	Shankar et al., 2013
Ananas comosus (L.) Merr.	Bromeliaceae	Anaras	Amoebic dysentery, Intestinal worms	L	Sharma and Pegu, 2011; Gam, 2013; Panging and Sharma, 2017
Andrographis paniculata (Burm.f.) Nees	Acanthaceae	Kalmegh	Liver tonic	L	Sarma and Devi, 2016
Artocarpus heterophyllus Lam.	Moraceae	Kathal	Diarrhoea	R, S	Sharma and Pegu, 2011
Arundo donax L.	Poaceae	Nol	Skin disease	Is	Gam, 2013
Asparagus racemosus Willd.	Asparagaceae	Satmul	Dyspepsia, Constipation	R	Sarma and Devi, 2016

Averrhoa carambola L.	Oxalidaceae	Kordoi	Cough	Fr	Sarma and Devi, 2016	
Azadirachta indica A.Juss.	Meliaceae	Moha-neem	Skin diseases, Small pox	Tw, L	Kutum et al., 2011; Sarma and Devi, 2016; Panging and Sharma, 2017	
Bacopa monnieri (L.) Wettst.	Plantaginaceae	Brahmi	Brain tonic, Nerves, Mental diseases, Brain tonic, Bronchitis	Wp	Kutum et al., 2011; Sarma and Devi, 2016	
Butea monosperma (Lam.) Kuntze	Fabaceae	Palas	Diarrhoea	Gu	Gam, 2013; Sarma and Devi, 2016	
Calamus rotang L.	Arecaceae	Jeying	Worms	Tw	Kutum et al., 2011	
Cannabis sativa L.	Cannabaceae	Bhang	Diarrhoea	L	Shankar et al., 2013	
Carica papaya L.	Caricaceae	Amita	Hook worm	S	Hazarika and Pandey, 2010	
Cascabela thevetia (L.) Lippold	Apocynaceae	Pila-Kaner	Abortion	La	Shankar et al., 2013	
Celosia argentea L.	Amaranthaceae	Lasor	Diarrhoea	S	Kutum et al., 2011	
Centella asiatica (L.) Urb.	Apiaceae	Mani-muni	Amoebic dysentery	Wp	Sharma and Pegu, 2011; Panging and Sharma, 2017	
Chromolaena odorata (L.) R.M.King & H.Rob.	Asteraceae	Assam-lota	Bleeding, Cuts	L	Shankar et al., 2012	
Cinnamomum tamala (Buch.-Ham.) T.Nees & C.H.Eberm.	Lauraceae	Tezpat	Gonorrhoea, Rheumatism, Diarrhoea, Enlargement of spleen, Diabetes.	L	Sharma and Pegu, 2011	
Cinnamomum verum J.Presl	Lauraceae	Dalchini	Diarrhoea, Vomiting	Ba	Kutum et al., 2011	
Cissus quadrangularis L.	Vitaceae	Harjura lata	Bone fracture	St, L	Kutum et al., 2011; Sarma and Devi, 2016	
Clematis zeylanica (L.) Poir.	Ranunculaceae	Goropchoi	Wounds, Ulcers	L	Sharma and Pegu, 2011	

Clerodendrum colebrookeanum Walp.	Lamiaceae	Pakkam	Blood pressure, Fever, Intestinal worms, Malaria, Weightloss	L	Sharma and Pegu, 2011; Kutum et al., 2011; Gam, 2013; Sarma and Devi, 2016; Panging and Sharma, 2017	
Clerodendrum indicum (L.) Kuntze	Lamiaceae	Akal-bih	Skin diseases.	L	Kutum et al., 2011	
Coix lacryma-jobi L.	Poaceae	Tapi	High pressure	S	Sankar et al., 2012	
Commelina benghalensis L.	Commelinaceae	Kanasimalu	Diabetes	Wp	Borah et al., 2009	
Corchorus capsularis L.	Malvaceae	Mura	Stomach problem, Vomiting	L	Sarma and Devi, 2016	
Cryptolepis dubia (Burm.f.) M.R.Almeida	Apocynaceae		Bone fracture	R, St, L	Tayung and Saikia, 2003	
Curcuma longa L.	Zingiberaceae	Haladhi	Bone fracture	Rh	Panging and Sharma, 2017	
Datura stramonium L.	Solanaceae	Dhatura	Dog bite	R	Kutum et al., 2011	
Digitaria compacta (Roth) Veldkamp	Poaceae	Dabasaban	Diabetes	L	Borah et al., 2009	
Dillenia indica L.	Dilleniaceae	Sampa	Stomach diseases, Dandruff, Hair loss	Fr	Sharma and Pegu, 2011; Kutum et al., 2011; Sarma and Devi, 2016	
Eclipta prostrata (L.) L.	Asteraceae	Keyaras	Jaundice	Wp	Shankar et al., 2013	
Euphorbia neriifolia L.	Euphorbiaceae		Finger-tippain, Boil	St	Shankar et al., 2013	
Euphorbia tithymaloides L.	Euphorbiaceae	Atobulo	Piles	La	Shankar et al., 2013	
Ferula assa-foetida L.	Apiaceae	Hing	Diabetes	Wp	Borah et al., 2009	
Ficus racemosa L.	Moraceae	Tajig	Piles, Diarrhoea, Dysentery, Bilious affections	L, La, St	Sharma and Pegu, 2011; Panging and Sharma, 2017	
Ficus simplicissima Lour.	Moraceae	Taksek	Urinary diseases	Fr	Sarma and Devi, 2016	

Flemingia strobilifera (L.) W.T.Aiton	Fabaceae	Makhiyati	Ringworm	L	Baruah and Kalita, 2007	
Garcinia cowa Roxb. ex Choisy	Clusiaceae	Kuji thekera	Dysentery	Fr	Kutum et al., 2011	
Gomphostemma parviflorum Wall. ex Benth.	Lamiaceae	Kase	Piles, Diarrhoea, Dysentery, Malaria	L, R	Sharma and Pegu, 2011; Soren et al., 2015	
Guilandina bonduc L.	Fabaceae	Leta guti	Pneumonia, Liver trouble	L, S	Panging and Sharma, 2017	
Hellenia speciosa (J.Koenig) S.R.Dutta	Zingiberaceae	Kushtha/Kebuk	Jaundice, White discharge of women	Rh	Sankar et.al., 2012; Gam, 2013; Panging and Sharma, 2017	
Hibiscus sabdariffa L.	Malvaceae	Tenga-mora	Dysentery	L	Kutum et al., 2011	
Houttuynia cordata Thunb.	Saururaceae	Mosundari	Dysentery, Skin diseases	L	Kutum et al., 2011; Shankar et al., 2013	
Impatiens tripetala Roxb. ex DC.	Balsaminaceae	Koriabijol	Jaundice	R, St	Panging and Sharma, 2017	
Iris domestica (L.) Goldblatt & Mabb.	Iridaceae	Ujakanti	Menstrual diseases	Wp	Shankar et al., 2013	
Jatropha curcas L.	Euphorbiaceae	Votera	Abortion	Re	Sarma and Devi, 2016	
Justicia adhatoda L.	Acanthaceae	Bahek-phul	Cough	L	Sarma and Devi, 2016	
Justicia adhatoda L.	Malvaceae	Vahak	Cough, Intestinal worms	L	Sharma and Pegu, 2011; Shankar et al., 2012	
Kaempferia rotunda L.	Zingiberaceae		Wounds, Ulcers, Tumors, Swellings, Gastroenteritis	Tu	Sharma and Pegu, 2011	
Kalanchoe pinnata (Lam.) Pers.	Crassulaceae	Dupor-tenga	Urinary problem, Kidney stone	L	Gam, 2013; Sarma and Devi, 2016; Panging and Sharma, 2017	
Leucas aspera (Willd.) Link	Lamiaceae	Boga-doron	Sinusitis	L	Sharma and Pegu, 2011; Panging and	

					Sharma, 2017	
Lygodium microphyllum (Cav.) R.Br.	Schizaeaceae	Tishor-koshak	Pimples, Pigmentation, Allergy, Eczema	L	Soren et al., 2015	
Macaranga indica Wight	Euphorbiaceae	Erapat	Stomach ache	Rh	Shankar et al., 2013	
Magnolia champaca (L.) Baill. ex Pierre	Magnoliaceae	Tita champa	Malaria, Menstrual problem	Ba, R	Shankar et al., 2013; Gam, 2013	
Mangifera indica L.	Anacardiaceae	Kedi	Dysentery	Ba	Gam, 2013; Sarma and Devi, 2016	
Mesua ferrea L.	Calophyllaceae	Nahor	Piles	Ba	Panging and Sharma, 2017	
Mikania micrantha Kunth.	Asteraceae	Gahori-lota	Diabetes	Wp	Borah et al., 2009	
Millettia pinnata (L.) Panigrahi	Fabaceae	Karanj	Urinary diseases	L	Shankar et al., 2012	
Mimosa pudica L.	Fabaceae	Nijalibon	Toothworm	R	Shankar et al., 2013	
Murraya koenigii (L.) Spreng.	Rutaceae	Narasingh	Acidity, Liver diseases, Dysentery	L	Shankar et al., 2013; Gam, 2013	
Musa × *paradisiaca* L.	Musaceae	Kopak	Piles	Fr, Rh	Pandey et al., 2015	
Musa balbisiana Colla	Musaceae	Bhim kol	Cold, Influenza, Diabetes	Fr	Borah et al., 2009; Kutum et al., 2011	
Nyctanthes arbor-tristis L.	Oleaceae	Evahgachh	Malaria, Fever	L	Shankar et al., 2013	
Ocimum tenuiflorum L.	Lamiaceae	Tulosi	Coughs, Eye disease, Ear disease	S, L	Kutum et al., 2011; Gam, 2013; Panging and Sharma, 2017	
Oldenlandia corymbosa L.	Rubiaceae	Bon-jaluk	Liver problem, Jaundice	Wp	Sharma and Pegu, 2011	
Oroxylum indicum (L.) Kurz	Bignoniaceae	Bhatgila	Malaria	St	Shankar et al., 2013	
Oxalis corniculata L.	Oxalidaceae	Horu tengesi	Diabetes	L	Panging and Sharma, 2017	
Paederia foetida L.	Rubiaceae	Bungkirupug	Stomach problem, Diarrhoea	L	Kutum et al., 2011; Panging and Sharma,	

					2017	
Persicaria perfoliata (L.) H.Gross	Polygonaceae	Dongkal Tabad	White discharge of women	Wp	Gam, 2013	
Persicaria strigosa (R.Br.) Nakai	Polygonaceae	Mousarali	Diabetes	Wp	Borah et al., 2009	
Phlogacanthus thyrsiformis (Roxb. ex Hardw.) Mabb.	Acanthaceae	Tita-vasak, Lal-vasak	Loose motion, Bronchitis	L, Ba	Shankar et al., 2013; Sarma and Devi, 2016	
Phragmites karka (Retz.) Trin. ex Steud.	Poaceae	Piro	Diabetes	Wp, R	Sharma and Pegu, 2011	
Phyllanthus acidus (L.) Skeels	Phyllanthaceae	Pora amlokhi	White discharge of women	L	Gam, 2013; Sarma and Devi, 2016	
Phyllanthus amarus Schumach. & Thonn.	Phyllanthaceae	Bhuiamlaki	Jaundice	Wp	Shankar et al., 2013	
Phyllanthus emblica L.	Phyllanthaceae	Amlakhi	Diarrhoea, Dysentery, Bronchitis, Hair loss	Fr	Kutum et al., 2011	
Piper longum L.	Piperaceae	Pipoli	Asthma	S	Pandey et al., 2015	
Piper nigrum L.	Piperaceae	Jaluk	Pneumonia	S	Panging and Sharma, 2017	
Plumbago zeylanica L.	Plumbaginaceae	Chitrok	Jaundice	R	Shankar et al., 2013	
Psidium guajava L.	Myrtaceae	Madhuriam	Amoebic dysentery, Diarrhoea	L	Sharma and Pegu, 2011; Panging and Sharma, 2017	
Pueraria tuberosa (Roxb. ex Willd.) DC.	Fabaceae	Bhuin komora	Fever	Tu	Sharma and Pegu, 2011	
Punica granatum L.	Lythraceae	Anar	Diarrhoea	L, Fl, Fr	Sarma and Devi, 2016	
Ricinus communis L.	Euphorbiaceae	Erapat	Stomach ache, Ear diseases	L, S	Shankar et al., 2013; Gam, 2013	
Rubus moluccanus L.	Rosaceae	Jetuli poka	Blood dysentery	Wp	Pandey et al., 2015	
Saccharum spontaneum L.	Poaceae	Tabad	Jaundice	St	Panging and Sharma, 2017	
Sarcochlamys pulcherrima (Roxb.)	Urticaceae	Ombe	Diarrhoea, Dysentery	L	Sharma and Pegu, 2011	

Gaudich.						
Scoparia dulcis L.	Plantaginaceae	Senibon	Fever, Cough, Diabetes.	L, Wp	Borah et al., 2009; Sharma and Pegu, 2011	
Sida acuta Burm.f.	Malvaceae	Boriar	Bleeding	L	Shankar et al., 2012	
Solanum viarum Dunal	Solanaceae	Katibijwan	Tooth worm	S	Shankar et al., 2013	
Solanum violaceum Ortega	Solanaceae	Bangko	Thread worm	Fr	Gam, 2013; Panging and Sharma, 2017	
Sonchus oleraceus L.	Asteraceae	Manishal	Liver diseases, Kidney stones	L	Shankar et al., 2013	
Streblus asper Lour.	Moraceae	Saura, Namhoi	Diabetes, Teeth problem	Tw	Borah et al., 2009; Sarma and Devi, 2016	
Swertia chirayita (Roxb.) H.Karst.	Gentianaceae	Sirata	Worm, Allergy	St, L	Sarma and Devi, 2016	
Syzygium cumini (L.) Skeels	Myrtaceae	Jamu	Dysentery	Ba, Fr	Kutum et al., 2011; Panging and Sharma, 2017	
Tabernaemontana divaricata (L.) R.Br. ex Roem. & Schult.	Apocynaceae	Neel-kantha	Pneumonia, Cough	L	Shankar et al., 2013	
Terminalia arjuna (Roxb. ex DC.) Wight & Arn.	Combretaceae	Arjun	Heart diseases, Liver diseases	Ba, R	Sarma and Devi, 2016	
Terminalia bellirica (Gaertn.) Roxb.	Combretaceae	Bhomora	Hair growth, Constipation	Fr	Sarma and Devi, 2016	
Terminalia chebula Retz.	Combretaceae	Hilikha	Diarrhoea, Dysentery	Fr	Kutum et al., 2011	
Tinospora cordifolia (Willd.) Hook.f. & Thomson	Menispermaceae	Amoilota	Diarrhoea, Dysentery	R, St	Kutum et al., 2011	
Vachellia nilotica (L.) P.J.H.Hurter & Mabb.	Fabaceae	Babul	Dry cough, Kidney trouble	L, Ba	Sarma and Devi, 2016	
Vincetoxicum indicum (Burm.f.) Mabb.	Apocynaceae	Ananta-mul	Jaundice	R	Sarma and Devi, 2016	
Vitex negundo L.	Lamiaceae	Pochotiya	Diabetes	L	Panging and Sharma, 2017	
Zanthoxylum oxyphyllum Edgew.	Rutaceae	Onger	Tap worm	Tw	Kutum et al., 2011	

Zingiber officinale Roscoe	Zingiberaceae	Taake	Allergy	Rh	Baruah and Kalita, 2007	

Annex III. List of bioactive compounds

Botanical Name	**Bioactive Components**	**Source**
Acacia auriculiformis	flavonoids, saponins, carbohydrates, tanins, anthocyanidins	Rangra et al., 2019
Acmella paniculata	phenolics, flavonoids, antioxidants	Abeysinghe et al., 2014
Acorus calamus	terpenoids, steroids, flavonoids, tannins.	Asha and Kumar, 2015
Aegle marmelos	skimmianine, aegelin, lupeol, cineol, citral, marmin, tannin	Maity et al., 2009
Ageratum conyzoides	stigmasterol, β-sitosterol	Kamboj and Saluja, 2011
Allium cepa	flavonoids, polyphenols, organic sulfur	Sohail et al., 2011
Allium sativum	alkaloids, flavonoids, phenols, tannins	Gulfraz et al., 2014
Alpinia nigra	alkaloids, carbohydrate, flavonoids, glycosides, phenols and saponins	Swargiary and Roy, 2015
Alstonia scholaris	alkaloids, triterpenoids, triterpenes, glucosides, essential oils	Khyade et al., 2014
Alternanthera bettzickiana	quinones, coumarin, glycosides, tanins, alkaloids, phenols	Pamila and Karpagam, 2018
Amaranthus spinosus	amaranthine, isoamaranthine, hydroxycinnamates, quercetin, kaempferol glycosides	Stintzing et al., 2004
Ananas comosus	*α*-carotene, *β*-carotene, *β*-cryptoxanthin, lutein, lycopene, neoxanthin, violaxanthin, zeaxanthin	Freitas et al., 2014
Andrographis paniculata	andrographolide, flavones, lactones	Chen and Jiang, 1980
Arachis hypogaea	flavonoids, chlorogenic, coumaric, caffeic and ferulic acids, linoleic acid	Sebei et al., 2013
Areca catechu	polyphenols, tannins, arecoline	Chavan and Singhal, 2013
Artocarpus heterophyllus	alkaloids, flavanoids, phenolics, saponins	Gupta et al., 2011
Asparagus racemosus	phenols (flavonoids and hydroxycinnamic acids), saponins	Fuentes-Alventosa et al., 2013
Averrhoa carambola	ascorbic acid, β-carotene, flavonoids, γ- and δ-tocopherol	Zainudin et al., 2014
Azadirachta indica	isoprenoids, gedunin, vilasinin and csecomeliacins such as nimbin, salanin, azadirachtin	Kraus, 1995
Bacopa monnieri	bacoside-a, triterpenoid, saponin, glycosides	Sharath et al., 2010; Watcharatanon et al., 2019
Bambusa balcooa	flavanoids, saponins, phytosterols	Wani et al., 2019
Bambusa tulda	phenols, phytosterols	Nirmala et al., 2014
Bassella alba	saponins, diterpenes, phenols, tannins, and	Tongco et al., 2015

	flavonoids	
Bischofia javanica	`	Rajbongshi et al., 2014
Blainvillea acmella	alkylamides, spilanthol and undeca-2e-ene-8,10-diynoic acid isobutylamide	Spelman et al., 2011
Brassica campestris	glucosinolates, total phenolics, ascorbic and dehydroascorbic acids	Borowski et al., 2008
Butea monosperma	cajanin, butin, flavonoids, medicarpin	Sharma and Deshwal, 2011
Caesalpina crista	flavonoids, alkaloids, tannins, triterpenoids, coumarin glycosides	Gill et al., 2012
Calotropis gigantea	1-[(t-butyl) dimethyl silyl thin] butane, 1-hexadecyne, hexadecane, l-glutamic acid, phenol-3-isoproxy5-methyl, trocosane and z-1,6-tridecadiene, compounds identified only from the leaves were azulene, benalaxyl, cisvaccenic acid, levomenol, profenofos, β-tocopherol, β-sitosterol	Sharma et al., 2016
Calotropis procera	5-hydroxy-3,7-dimethoxyflavone-40-o-b-glucopyranoside, 2b,19-epoxy3b,14b-dihydroxy-19-methoxy-5a-card-20(22)-enolide, b-anhydroepidigitoxigenin-3b-oglucopyranoside, uzarigenine, b-anhydroepidigitoxigenin	Shaker et al., 2010
Cannabis sativa	alkaloids, cardiac glycosides, flavonoids, resins, steroids, terpins	Audu et al., 2014
Capsicum annuum	β-carotene, β-cryptoxanthin, zeaxanthin	Hervert-Hernándes et al., 2010
Carica papaya	phenolics, vitamin e, c arotenoids	Maisarah et al., 2014
Cassia fistula	phenolic antioxidants such as anthraquinones, flavonoids, flavan-3-ol derivatives	Bahorun et al., 2005
Centella asiatica	asiatic acid, asiaticoside, madecassic acid, madecassoside	Hausen, 1993
Cinnamomum verum	hydroquinone, 1,4-cyclohexanedione, cinnamaldehyde	Kankeaw and Masong, 2015
Cissus quadrangularis	alkaloids, resveratrol, piceatannol, pallidol, parthenocissin , quadrangularins, ascorbic acid, carotene, phytosterol substances, calcium, flavinoids, vitamins, enzymes, nicotinic acid, tyrosin, triterpenoids	Raj, 2011
Citrus aurantiifolia	flavonoids, limonin,trans-bergamotene, limonexic acid, isolimonexic	Patil, 2009
Citrus limon	phenolic compounds as well as vitamins, minerals, dietary fiber, essential oils, carotenoids	González-Molina et al., 2010
Citrus maxima	naringin, phenols, carotenoids	Reshmi et al., 2017
Clerodendrum infortunatum	limonene, phytol, catechol, hexadecanoic acid, squalene, dodecanoic acid, vitamin E, hydroxymethylfurfural, stigmasterol	Dey et al., 2015

Clerodendrum chinense	iridoid glucosides, cyclohexylethanoids	Kanchanapoom et al., 2005
Clerodendrum colebrookeanum	tannic acid, quercetin, catechin, reserpine, ascorbic acid, gallic acid	Das et al., 2013
Cocos nucifera	phenols, tannins, leucoanthocyanidins, flavonoids, triterpenes, vitamins, steroids,catechins, epicatechins, alkaloids	Lima et al., 2015
Colocasia esculenta	carbohydrates, protein, thiamine, riboflavin, niacin, oxalic acid, calcium oxalate, minerals, lipids, unsaturated fatty acids, anthocyanins	Subhash et al., 2012
Commelina bengalensis	nonanoic acid, oxiraneethanol, propanoic acid, phytol, heptasiloxane	Mahadkar et al., 2013
Corchorus capsularis	fatty acids, tocopherols, phenols,	Petropoulos et al., 2017
Coriandrum sativum	polyphenols, alkaloids, flavonoids	Ganesan et al., 2013
Cryptolepis sinensis	alkaloids, saponins, cardiac glycosides, phenols, tannins, flavonoids, anthocyanins, phlobatannins, lignin, steroids	Narzary et al., 2017
Cucumis sativus	glycoside, steroid, flavonoid, saponin, tanin	Tuama and Mohammed, 2019
Curcuma longa	alkaloids, glycosides, steroids, flavonoids, saponins, phenol, resins	Behar et al., 2013
Cuscuta reflexa	phenolics (kaempferol, quercitin), coumarins, and flavonoid glycosides.	Ramya et al., 2010
Datura metel	alkaloids, flavonoids, phenols, saponins, sterols, tannins	Chopra et al., 1986
Datura stramonium	alkaloids	Berkov et al., 2005
Dillenia indica	tannin, dillenetin, betunaldehyde, betulinic acid, rhamnetin, dihydro-isorhamnetin, lupeol, myricetin, naringenin, quercetin derivatives, kaempferol glucoside	Gandhi and Mehta, 2013
Dioscorea alata	phenols, flavonoids	Sakthidevi and Mohan, 2013
Drymaria cordata	glycolipid	Nono et al., 2014
Eclipta prostrate	triterpenoids, 3-acetylaleuritolic acid, stigmasterol, fatty esters, aromatic components	Cherdtrakulkiat et al., 2015
Euphorbia hirta	steroids, terpenoids, saponnins, tannins, quinone	Gopinath et al., 2012
Ficus racemosa	tannin, wax, saponin gluanol acetate, β-sitosterol, lupeol, ceryl behenate, lupeol acetate,α-amyrin acetate, leuoanthocyanidin, and leucoanthocyanin from trunk bark,lupeol, β-sitosterol, stigmasterol	Joseph and Raj, 2010
Ficus religiosa	tannins, saponins, flavonoids, steroids, terpenoids, cardiac glycosides	Makhija et al., 2010

Flemingia strobilifera	steroids, terpenoids, polyphenols	Nemkul et al., 2019
Garcinia cowa	decahydro-1*H*-xanthene derivative, garciniacowone K	Phukhatmuen et al., 2020
Garcinia pedunculata	alkaloids, carbohydrates, saponin, phenolic compounds, proteins along with fixed oils and fats, glycosides, amino acid	Gogoi and Das, 2016
Garcinia xanthochymus	xanthones, benzophenones, flavonoids, isocoumarin	Joseph et al., 2016
Glebionis coronaria	essential oil	Haouas et al., 2016
Gloriosa superba	alkaloid, flavonoids, glycosides, phenols, saponins, steroids, tannin, terpenoids	Senthilkumar, 2013
Hellenia speciosa	Alkaloids, flavonoids, phenols, sterol, quinines	Roy et al., 2019
Hibiscus rosa-sinensis	flavonoids, tannins, alkaloids, triterpenoids	Ruban and Gajalakshmi, 2012
Houttuynia cordata	chlorogenic acid, rutin, hyperin, quercitrin, piperolactam, aristolactam B, cepharadione B	Meng et al., 2009
Hydrocotyle rotundifolia	phenolics, flavonoids and tannins	Sood and Yadav, 2014
Jatropha curcas	gallic acid, pyrogallol, rutin, myricetin, daidzein, β-sitosterol, β-carotene	Oskoueian et al., 2011
Justicia adhatoda	carbohydrate, protein, total phenolics, flavonoids, alkaloid.	Chanu and Sarangthem, 2014
Kalanchoe pinnata	alkaloids, flavoniods, saponins, tannins	Nwali et al., 2012
Kalanchoe pinnata	gallic, caffeic, coumaric acids, flavonoids	Abdellaoui et al., 2010
Lasia spinosa	alkaloids, carbohydrates, proteins, flavonoids, terpenoids, phenolic compounds, steroids, saponins, glycosides, ascorbic acid, tannins	Kankanamge and Amarathunga, 2017
Lawsonia inermis	lawsone, limonene, 3-carene, nonanoic acid, p-hydroxybiphenyl	Zohourian et al., 2012
Leucus aspera	long chain aliphatic compound, triterpenes, sterols, novel phenolic compounds	Chew et al., 2012
Litsea salicifolia	limonene, linalool, terpinen-4-ol and α-terpineol,(Z) – citra,(E)- citral	Ko et al., 2010
Lygodium microphyllum	flavonoids, alkaloids, tannins, saponins, terpens, steroids, essential oils	Silva and Hettiarachchi, 2016
Magnolia champaca	parthenolide, costunolide diepoxide	Mehrotra et al., 2017
Mangifera indica	polyphenols, anthocyanins, carotenoids.	Ajila et al., 2007
Manihot esculenta	flavonoids, anthocyanins, phenolic compounds.	Suresh et al., 2011; Tao et al., 2015
Melia azadirachta	flavonoid, phytosterols, diterpene, alkane hydrocabon, n-alkanoic acid, vitamin-e and tri-terpene, terpene alcohol	Sen and Batra, 2012
Mentha arvensis	flavonoids, monoterpenes, tannins	Verma et al., 2010
Mikania micrantha	phenolic compounds, flavonoids, antioxidants, hydrocarbon compounds,	Ishak et al., 2018

	sesquiterpenes	
Mimosa pudica	alkaloids, tannins	Tamilarasi and Ananthi, 2012
Momordica charantia	saponins, peptides, alkaloids	Tan et al., 2015
Moringa oleifera	tocopherols (γ and α), phenolic compounds, β-carotene, vitamin C, phytates,tannins, quercetin-3-*O*-glucoside, kaempferol-3-O-glucoside, vicenin-2	Ferreira et al., 2008; Muhammad et al., 2013
Morus alba	flavanones or flavanonols, phenolic acids, chalcones,	Wang et al., 2013
Murraya koenigii	lutein, tocopheral, carotene, koenimbine, isomahanimbine.	Jain et al., 2012
Musa balbisiana	Flavonoids, polyphenols, crude fibres.	Kalita et al., 2016
Musa paradasica	flavonoids, alkaloids, phenolics, tannins, ascorbic acid, saponins, β-carotene, lycopene	Apriasari and Iskandar, 2014
Nyctanthes arbor-tristis	carbohydrates, tanins, alkaloids, triterpenoids, saponins,flavonods	Vyas and Sarin, 2013
Ocimum basilicum	phenols, flavonoids, terpenes	Tahira et al., 2013
Ocimum tenuiflorum	eugenol, methyl cinnamate, camphor, thymol	Palla et al., 2012
Oroxylum indicum	flavonoids, alkaloids, tannins, sterols, saponins, glycosides, phenols and quinones	Samatha et al., 2012
Oxalis corniculata	flavonoids, alkaloids, tannins, phenols	Aruna et al., 2014
Paederia foetida	saponin, tannin, phenol, flavonoid, terpenoid, cardiac glycoside, alkaloid	Upadhyaya, 2013
Perillia fructescens	β-tocopherol, γ-tocopherol, β-sitosterol, and stigmasterol, triterpene acids	Banno et al., 2004
Persicaria hydropiper	flavonoids, phenylpropanoid derivatives, sesquiterpenoids	Ayaz et al., 2019
Phogacanthus thysiflorus	tannins, phenolic compounds, flavonoids, coumarins, saponins, fixed oils and fats	Sharma et al., 2016
Phyla nodiflora	sugar, triterpenoids, flavonoids, phenol, steroids, essential oils, resins, tannins	Suky et al., 2019
Phyllanthus acidus	alkaloids, tannins, flavonoids, lignans, phenolics, terpenes	Chakraborty et al., 2012
Phyllanthus emblica	alkaloids, caridac glycosides, saponins	Sukanya et al., 2013
Phyrnium pubinerve	antioxidants, aliphatic alcohols, aromatics, oxygenated monoterpenes, diterpenes	Li et al., 2014
Piper betle	hydroxychavicol, eugenol, tannins, saponins, alkaloids, flavonoids, steroids, terpenoids, phenolic compounds	Syahidah et al., 2017
Piper betleoides	pedicellamide	Tamuly et al., 2013
Piper longum	piperine, pellitorine, guineensine, pipnoohine, trichostachine, piperonal	Rao et al., 2011
Piper nigrum	propanedioic acid, phenol, eugenol, alfa,copaene, phytol, piperidine, nalorphine, piperine, ursodeoxycholic acid, stigmasterol, retinal, fenretinide	Mohammed et al., 2016

Psidium guajava	gallic acid, flavonoids, ascorbic acid	Thuaytong and Anprung, 2011
Ricinus communis	tannin, phenol, alkaloid, phytate, oxalate, saponin, cyanogenic glycoside, flavonoid	Momoh et al., 2012
Saccharum officinarum	flavonoids such as apigenin, luteolin and tricin derivatives and among phenolics, hydroxycinnamic, caffeic acid, sinapic acid	Joaquim et al., 2006
Scoparia dulcis	terpenes, alkaloids, Scoparic acid A, scoparic acid D, scutellarein, apigenin, luteolin, coixol, glutinol	Latha et al., 2006; Pamunuwa et al., 2016
Senna alata	phenolic compounds, alkaloids, anthraquinone, tannins, steroids, flavonoids	Adelowo and Oladeji, 2017
Sesamum indicum	Flavanoids, flavanols, Lignans, phenolic compounds	Bodoira et al., 2017
Solanum anguivi	gallic acid, caffeic acid, chlorogenic acid, quercetin	Elekofehinti et al., 2013
Solanum melongena	phenolics, flavonoid, antioxidants	Kaur et al., 2014
Solanum nigrum	alkaloids, carbohydrates, flavonoids, glycosides, phenolic compounds, phytosterols, proteins, saponins, tannis	Jeyasree et al., 2014
Solanum torvum	alkaloid, flavonoid, phenol, tannins, saponins, phytosterol, glycosides	Nithyadevi and Sivakumar, 2015
Solanum violaceum	alkaloids, carbohydrate, glycoside, flavonoid, saponin, gum, diterpenes, phenol, protein, tannin	Raju et al., 2013
Spondias pinnata	flavonoids, tannins, alkaloids, triterpenoids	Jain et al., 2013
Streblus asper	asperoside, Strebloside,Mansonin, β-sitosterol, a-amyrin	Rastogi et al., 2006
Syzigium cuminii	malieic acid, oxalic acid, gallic acid, tannins, cynidin glycoside, oleanolic acid, flavonoids, essential oils, betulinic acid, friedelin	Ramya et al., 2012
Tabernaemontana divertica	alkaloids, lupeol acetate, a–amyrin acetate, b-sitosterol, Campesterol, Ascorbate peroxidase	Pratchayasaku et al., 2008
Tagetes erecta	alkalonoids, flavanoids compounds, terpenes	Regaswamy and Koilpillai, 2014
Tamarindus indica	phenolics, flavonoids, antioxidants, organic acids, sugar	Tril et al., 2014
Terminalia arjuna	tannins, triterpenoid saponins (arjunic acid, arjunolic acid, arjungenin, and arjunglycosides, flavonoids (arjunone, arjunolone, luteolin), gallic acid, ellagic acid, Oligomeric Proanthocyanidines (OPCs), phytosterols	Chatha et al., 2014
Terminalia bellirica	flavonoids, tannins, phlobotanins, saponins,steroids, cardiac glycosides	Ram et al., 2015
Terminalia chebula	flavonoids, tannins, phlobotanins, saponins, steroids, cardiac glycosides	Ram et al., 2015

Thunbergia grandiflora	isounedoside, grandifloric acid	Ismail et al., 1996
Tinospora cordifolia	alkaloids, glycosides, steroids, aliphatic compounds, essential oils, mixture of fatty acid, calcium, phosphorous, polysaccharides	Tiwari et al., 2018
Urena lobata	alkaloids, glycosides, saponins, tannins, steroids, reducing sugars,	Islam et al., 2012
Vigna mungo	ferulic acid, protocatechuic acid, ferulic acid, gentisic acid and gallic acid	Girish et al., 2012
Viola pilosa	alkaloids, proteins, tannins, carbohydrates, sterols, flavonoids, saponins, fats and oils	Bakht et al., 2017
Vitex negundo	protocatechuic acid; oleanolic acid; flavonoids,β-sitosterol, β-selinene; α-cedrene; germacrene D; hexadecanoic acid; p-cymene and valencene	Vishwanathan and Basavaraju, 2010
Zanthoxylum nitidum	rhoifoline A, alkaloids	Liang et al., 2006; Hu et al., 2013;
Zingiber officinale	alkaloids, ascorbic acid, beta-carotene, polyphenols (flavonoids, flavones glycosides, rutin, etc.), terpenoids	Aruoma et al., 1997

Annex IV. Consensus of agreement on the uses of medicinal plants for each ailment

Disease	**Number of species (Ns)**	**Number of used report (Nur)**	**Informant consensus factor (ICF)**	**Species with max. citation for the particular disease**	**Fidelity level (%)**
Allergy	2	10	0.88	*Bassella alba* (10)	12.5
Body ache	11	43	0.76	*Calotropis procera* (32)	40
Boils	5	23	0.81	*Litsea salicifolia* (18)	22.5
Bone fracture	4	75	0.95	*Cissus quadrangularis* (75)	93.7
Bronchitis	1	9	1	*Andrographis paniculata* (9)	11.2
Cold and cough	18	64	0.73	*Zingiber officinale* (60)	75
Constipation	5	37	0.88	*Aegle marmelos* (35)	43.7
Cuts and wound	10	67	0.86	*Alternanthera bettzickiana* (53)	66.2
Dandruff	1	11	1	*Dillenia indica* (11)	13.7
Diabetes	8	44	0.83	*Garcinia xanthochymus* (33)	41.2
Diarrhoea	9	52	0.84	*Paederia foetida* (41)	51.2
Dysentery	21	66	0.69	*Houttuynia cordata* (65)	81.2
Ear infection	4	22	0.85	*Tagetes erecta* (20)	25
Epilepsy	1	72	1	*Lawsonia inermis* (72)	90
Eye infection	3	18	0.88	*Commelina benghalensis* (15)	18.7
Eye injury	2	10	0.88	*Phyrnium pubinerve* (7)	8.7
Fever	8	60	0.88	*Piper nigrum* (57)	71.2
Foot crack	1	14	1	*Mallotus nudiflorus* (14)	17.5
Gastritis	5	64	0.93	*Paederia foetida* (64)	80
Haemorrhoids	4	72	0.95	*Musa balbisiana* (72)	90
Headache	3	10	0.77	*Leucas aspera* (10)	12.5
Health tonic	5	50	0.91	*Dioscorea alata* (55)	68.7
High blood pressure	4	28	0.88	*Tamarindus indica* (28)	35
Hypertension	4	20	0.84	*Clerodendrum colebrookeanum* (20)	25
Indigestion	6	27	0.80	*Murraya koenigii* (25)	31.2
Inflammation	1	10	1	*Phyllanthus emblica* (10)	12.5
Insect bite	1	15	1	*Bambusa balcooa* (15)	18.7
Intestinal worm	7	77	0.92	*Terminalia bellirica* (72)	90
Jaundice	8	76	0.90	*Terminalia arjuna* (73)	91.2
Kidney stone	3	74	0.97	*Kalanchoe pinnata* (74)	92.5
Lactation	3	20	0.89	*Persicaria glabra* (10)	12.5
Leech bite	1	10	1	*Clerodendrum chinense* (10)	12.5
Liver problem	2	20	0.94	*Alstonia scholaris* (16)	20
Malaria	5	35	0.88	*Clerodendrum chinense* (25)	31.2
Menstrual problem	7	40	0.84	*Cinnamomum verum* (35)	43.7
Mouth infection	2	8	0.85	*Cassia fistula* (7)	8.7
Paralysis	1	11	1	*Ficus religiosa* (11)	13.7
Pneumonia	2	7	0.83	*Acorus calamus* (5)	6.2
Post labour	2	9	0.87	*Blainvillea acmella* (9)	11.2
Scurvy	1	16	1	*Citrus limon* (16)	20
Sinusitis	4	30	0.89	*Drymaria cordata* (26)	32.4
Skin infection	15	72	0.80	*Azadirachta indica* (72)	90

Small pox	1	15	1	*Aegle marmelos* (15)	18.7
Stomach ache	17	66	0.75	*Paederia foetida* (60)	75
Throat pain	2	11	0.90	*Blainvillea acmella* (10)	12.5
Tonsil	2	8	0.85	*Leucas aspera* (8)	10
Toothache	7	41	0.85	*Mimosa pudica* (29)	36.2
Urethritis	4	60	0.94	*Scoparia dulcis* (50)	62.5
Urinary problem	5	43	0.90	*Hellenia speciosa* (37)	46.2
Vomiting	4	36	0.91	*Citrus limon* (30)	37.5