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INDIGENOUS KNOWLEDGE OF ETHNOMEDICINAL PLANTS BY THE ASSAMESE COMMUNITY IN DIBRUGARH DISTRICT, ASSAM, INDIA

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Indigenous knowledge of ethnomedicinal plants by the Assamese community in Dibrugarh District, Assam, India

Pranati Gogoi & Namita Nath

Abstract: The present investigation is an attempt to study the uses of ethnomedicinal plants in traditional knowledge system among the Assamese community of Dibrugarh District in Assam. All the relevant data were collected during 2017–2019 by following standard ethnobotanical methods through personal interviews as well as through focus group discussions with a total of 193 informants including 62 men and 131 women. The use value (UV) of the medicinal plants and informant consensus factors ($F_c$) values were determined. In the study 174 ethnomedicinal plant species were documented belonging to 147 genera and 78 families. Except for three species, the 171 species are Angiosperms mostly collected from the wild. Among the 174 species of medicinal plants, 12 species are listed under various categories by IUCN and CITES. All these plants are used to treat various diseases that are grouped under 13 ICPC (International Classification of Primary Care) disease categories, with the highest use value (0.54) recorded in Leucas aspera followed by Paederia scandens with (0.5) use value. This confirms that these plants are important traditional herbs with potent medicinal uses. The highest informant consensus factor with the highest number of species (93) being used for the digestive system ($F_c=0.76$), followed by oral and dentistry ($F_c=0.73$) category. The ethnic communities in the district are rich in traditional knowledge which is evident from the use records and high degree of consensus among the informants.

Keywords: Indigenous knowledge, informants consensus factor, northeastern India, use value

Assamese Abstract: Ooxomor Dibrugarh jilar axomiya xomproday luukxokolor paromporkir bidhya pronalit gosthiouxodhiyo upokarita bur bortomam onuxondhan or jorjyote ek odhoyon prosesta solua hoise. Xokolu praxonggik tothyo 2017-2019 ot xongroh kora hoi pramanik gosthibiogyanik poddhotor jorjyote, byoktigoto xakhaktyar duara logote obhikendro dologoto alosana. Muth 193 tothyodata, 62 purux aru 131 stri. Ouxodi udhbid or byowohor man (UV) aru tothyodata xorboxonmoti upadam ($F_c$) nirnoy kora hoi. Ei odhonoyot, 147 gosthiouxodiyo udhbid (147 genera aru 78 families) dostabej kora hoi. 3 ta projetar bade, 173 ta projetar hoise guptoboji udhbid jikhini xorobhag bonor pora xongroh kora hoisil. 174 ta xouxodiyo udhbid projetar majot 12 ta projetar IUCN aru CITES or bibhinno prokarot xusito kora hoise. Ei xokolubur udhbid rog sikitsat byowohor hoi. Ei rog homoh 13 ta ICPC rog bibhagot rokha hoise. Ataitkoi xorbosso byowohor mulyo (0.54) nothibhukto kora hol Leucas aspera t aru Paederia scandens (0.5). Nissito kora hoi je ei udhbid hamuh xobol ouxodi gun thoka gurutwopurno paromporkir trino udhbid. Xorboxo tothyodata xorboxonmoti hetu ($F_c$) logote xorboxo xonghia xomproday (93) byowohar kora hoi hoxomiya pronalit (0.76%) aru moukhik aru donto pronalit (0.73%). Jilakhonor jatigoto xompakali jitu byowohar dostabej aru tothyodata xokolor usso matra xorboxonmoti pora pramanik hoi.

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Author details: PRANATI GOGOI, a PhD Scholar has authored two research articles and a book chapter. Currently she is working on the floristic diversity of Dibrugarh District, Assam under Gauhati University. DK. NAMITA NATH has authored more than 43 research articles, 21 books, five book chapters and edited three books. She is involved with four research projects, the ongoing one is “Inventorization of wild edible fruits of Assam with special reference to their sustainable utilization for livelihood generation”.

Author contribution: PG carried out the whole field survey during the the year 2017-2019, data compilation, analysis and writing the whole manuscript. NN supervised the whole work from field survey upto the preparation of the report.

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INTRODUCTION

Indigenous knowledge plays a vital role in conservation of resources, particularly of indigenous plant species significant for indigenous communities (Cox 2000; Leonti 2002; Leonti 2011; Kayani et al. 2015). Since ancient times, the indigenous communities have been harvesting ethnomedicinal plants from the wild in different parts of the world (Malick & Cox 1996; Dhillion et al. 2002; Matu & Staden 2003; Mall et al. 2015; Pasquini et al. 2018; Phumthum & Balslev 2018; Tomasini et al. 2019; Dixit & Tiwari 2020; Qamariah et al. 2020) and the knowledge is carried forward generation after generation (Tabuti et al. 2003). This knowledge needs to be conserved especially in countries facing high risk of threat to biodiversity due to urban developmental activities, migrations, deforestation, and natural calamities. India is one of such nations where indigenous knowledge is decreasing day by day due to the factors mentioned above. Northeastern India, a mega bio-diversity hot spot, is rich in endemic flora (Mao et al. 2000; Sajeng et al. 2008; Barbhuiya et al. 2009; Mao et al. 2009; Panmei et al. 2019) and home to nearly 1,350 medicinal plants with high economic importance that are used in various ethnomedicinal preparations (Dutta & Dutta 2005). Besides being rich in floristic diversity, this region is also rich with a diversified and colorful culture and traditional knowledge system among 145 tribal communities (Ali & Das 2003). This region is considered one of the ecological hot spots of the world and has an abundance of medicinal plants known to the native people (Asati & Yadav 2004; Chauhan 2011; Dutta 2013; Salam 2013; Debbarma et al. 2017; Lanusunep et al. 2018; Panmei et al. 2019). Assam, a significant state of northeastern India falls in the Indo-Burma Global Biodiversity Hotspot (Mittermeier et al. 2011). “Assamese” is the largest indigenous community of Assam inhabiting throughout the valley of the Brahmaputra River. Studies on ethnomedicinal plants were carried out by different authors in different parts of Assam in the past by the ethnic communities; and comprehensive works have already been published (Borah et al. 2004; Saikia et al. 2006; Buragohain 2008; Talukdar et al. 2018). Dibrugarh is one of the diverse lands of northeastern India and is the largest tea producing zone in India. The land is occupied by the Assamese people who highly depend on medicinal plants for various traditional health-care practices. The Assamese community of Dibrugarh District of Assam, since time immemorial have been using medicinal plants to treat different ailments over many centuries through the traditional knowledge system that has been passed down from generation to generation (Dutta & Dutta 2005; Buragohain 2008; Sarma & Devi 2017; Talukdar et al. 2018). But due to certain factors like modern lifestyle and development in medical facilities, the utilization of these plants is rapidly decreasing. To overcome this issue, proper documentation and assessment of traditional knowledge of indigenous people is important (Teklehaymanot 2009). Due to the conversion of the forests and arable land into tea gardens for commercial purposes, there is every possibility of losing the useful medicinal plants from their natural habitat. Therefore, proper measures and conservation strategies of the available floristic wealth of this region is of utmost importance. Thus proper documentation and preservation of the ethnomedicinal knowledge has become the need of the hour before getting lost and supplanted by modern medical facilities. In the district of Dibrugarh, although some of the studies on ethnomedicinal plants have been carried out on Mishing tribe, Sonowal Kachari tribe and Ahom tribe (Boruah & Kalita 2007; Kalita & Phukan 2010; Sonowal 2013), no exhaustive work has been done on the traditional practices of the Assamese community. In addition, the tradition of using indigenous knowledge for the treatment of common ailments is neglected due to the availability of modern lifestyle and medical facilities. As a result, the traditional household practices are rapidly decreasing in this region. The traditional practices of various ethnic communities on the uses and management of medicinal plants is necessary in order to fill the gap of indigenous knowledge on ethnomedicinal plants. Thus the present survey was conducted with the objectives (1) to document the medicinal plants used by the Assamese community in Dibrugarh District, (2) proper assessment of traditional knowledge on the ethnomedicinal plants adopted by the people with regard to gender, age, and knowledge, and (3) to bring out the medicinal plants with highest ethnomedicinal importance for future value addition to their existence and preservation for long term purposes.

MATERIALS AND METHODS

Study area

The present study was carried out in the Dibrugarh District of Assam. The district lies at 108m and occupies an area of 3,381km². The district extends from 27.093–27.708 (latitude) & 94.562–95.485 (longitude) (Census 2011). The area stretches from the north bank of the Brahmaputra, which flows for a length of 95km through
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the northern margin of the district to the Patkai foothills on the south (Fig. 1). There is a large tract of tropical lowland rainforests in Dibrugarh often referred to as “The Amazon of the east” owing to its large area and thick forests. It is also home to Dibru-Saikhowa National Park, which has an area of 340km². It shares the park with Tinsukia District. The region lies on the bank of the Brahmaputra River and other environmental factors such as climate and topography of the region has been favorable for the growth of luxuriant vegetation. The climate of Dibrugarh is humid and sub-tropical with extremely wet summers and relatively dry winters. The climate is classified by the Koppen-Geiger system and average precipitation is 2,781mm annually (Climate data 2020). According to 2011 India census, the district has a population of 1,326,335; males constitute 51% of the population and females 49%. The sex ratio of the district is 961 per 1,000 males. The average literacy rate is 76.05%, which is higher than the national average literacy rate.

Field survey and collection of data

The study was conducted during 2017–2019 in various localities following standard ethnobotanical methods using a specially designed questionnaire (Jain 1987; Martin 1995). All the relevant data including those of traditional uses of the medicinal plants used by ethnic communities of Dibrugarh District were collected following the code of ethics (International Society of Ethnobiology 2006). Here using the specially designed questionnaire, we collected the data through personal interviews as well as through focused group discussions with a total of 193 informants. The study is significant in the sense that no such extensive work was done earlier in the district of Dibrugarh and this region has remained unexplored or under-explored in the field of floristic study also. Several visits were made to remote places namely Jokai, Madhupur, Naharkatiya, Tengakhat, Lezai, Moran, Lahowal, Borborua, Bogibeel, Khowang of the district at different time intervals for primary data collection. Based on the information obtained from the ethnic tribes (Ahom, Kachari, Mishing, Deori, Sonowal Kachari, Boro, and Chutiya) the identification of the key informants became possible. With their cooperation, the plants were collected from the forest and the local names of the given plants were recorded in a structured questionnaire, comprising of scientific name, family, local names of plants, part used, application, method of preparation and route of administration. In the present study a total of 193 informants with a strong traditional knowledge base were selected for data collection. During the process importance was given to collecting data with a detailed account of every informant including their identity, address, qualifications and tribal group. This was recorded prior to collection of traditional knowledge based information in the local language i.e.
Assamese. Before approaching the main steps of data collection, the aim and objectives of our study were explained briefly to the informants to generate their trust which was very helpful in getting accurate data. Based on the collected data it was found that out of 193 informants, 54 were above 69 years, of which 20 were males and 34 were females. In the age group of 50–59 years there were 47 informants of which 21 were males and 26 were females. In the age group of 40–49 years, there were 56 informants of which 16 were males and 40 were females. In the age group of 30–39 years, there were 36 informants of which five were males and 31 were females. Most of the informants were involved with other livelihood activities being farmers, social workers, teachers, shop keepers and house wives.

**Plant collection, identification and preservation**

The herbal practitioners of the Assamese community of the Dibrugarh District collected the plants during the mature stage for proper identification. For proper identification an effort was made to collect the voucher specimens related with ethnomedicinal information.

![Image](image1.jpg)  
*Image 1. Some medicinal plants collected from Dibrugarh District, Assam: A—Leucas aspera | B—Informant with Clerodendron colebrookianum | C—Informant with Cheilocostus speciosus | D—Informant with Impatiens tripetala | E—Informant with Paederia scandens. Inset shows the flower | F—Informant with Microsorum punctatum | G—Garcinia pedunculata | H—Curcuma zedoaria | I—Informant with Tabernaemontana divaricata. © Pranati Gogoi.*
during the flowering and fruiting periods. Collected plants were identified by the interviewers in their local language as well as correlating the plant in the field as shown by the informants (Image 1). For future record of the specimens as well as for proper taxonomic identification plant specimens were collected properly along with vivid photographs. The collected plants were made into herbarium specimens by following standard herbarium techniques (Jain & Rao 1977), and most of them were deposited at the GUBH (Gauhati University Botanical Herbarium, Assam). The specimens were identified consulting relevant literature like Flora of Assam (Kanjilal et al. 1934–1940); a checklist was made of angiosperms and gymnosperms (Barooah & Ahmed 2014); (Chowdhery et al. 2008, 2009). Online databases like The Plant Lists (www.theplantlist.org) and The International Plant Name Index (www.ipni.org) were referred.

### Statistical analysis

The collected data is represented systematically in tabular form. Information such as scientific name, family, local name, use value, parts used, applications, method of preparation and route of administration were provided for each species. The collected data on the habits of plants used in Dibrugarh District of Assam was schematically recorded in a MS-Word file.

### Determination of use value (uv)

The relative importance of each prescribed medicinal plant was calculated by determining the use value (Phillips et al. 1994; Zederland et al. 2019), in order to measure the relative importance of plants used by local healers on quantitative basis:

\[
UV = \frac{\sum Ui}{n}
\]

Where \( Ui \) is the number of use-reports cited by each informant for a given species and \( n \) refers to the total number of informants. When there are many use-reports for a plant, the UV will be high, and when there are few reports for a plant, the UV will approach zero (0).

### Determination of informants consensus factor (\( F_{IC} \))

Informants’ consensus factor, i.e., \( F_{IC} \) is usually calculated using a formula. This is done in order to find out the homogeneity in the information given by the informants of the study area. The \( F_{IC} \) was calculated by the following formula (Trotter & Logan 1986; Henrich et al. 1998; Singh et al. 2012; Bhat et al. 2013).

\[
F_{IC} = \frac{(N_{ur} - N_{i})/N_{ur} - 1}
\]

Here \( N_{ur} \) is the member of use report in a particular category of illness by informants and \( N_{i} \) is the number of taxa that is used for the treatment of a particular disease category by informants of the study. The \( F_{IC} \) values range from 0 to 1. When it is higher or close to 1, it indicates higher reports about a plant species used by the informants in a particular ailment. When the value is low or near 0, it indicates disagreement by the informants about a plant used for a certain ailment.

### RESULTS AND DISCUSSION

#### Demography

In the Dibrugarh District, Assam a total of 193 informants of the age group ranging from 30–92 years of which 62 (32.12%) were male and 131 (67.87%) were female (Table 1). From the study it was found that the average age of the informants was 59 years. The illiteracy rate was found to be 14.5% whereas the literacy rate at the primary level was 17%, middle level was 13.9%, and secondary level was 27.4% (Table 2).

#### An overview of medicinal plants

In the present research work 174 plant species were used in various traditional health care practices which belong to 78 families and 147 genera. These were found to be used to cure several human diseases which were grouped under 13 ICPC (International Classification of Primary Care) disease categories. The information on traditional knowledge carried out by the tribal people of Dibrugarh District were arranged alphabetically by generic and specific names along with their families, local names, applications (Table 3). It was found that the most reported ethnomedicinal plants were herbs followed by trees, shrubs, and climbers (Figure 2). This could be due to availability of non-conventional herbs which are easy to cultivate in home gardens in comparison to trees and shrubs which take a longer time to grow. This could be due to the fact that the herbs possess potent medicinal properties and more therapeutic effects to resist illnesses (Abbas et al. 2017; Chekole 2017; Umair et al. 2017). Most of these ethnomedicinal plants are being used by the tribes in their day to day activities for their livelihood and also to get rid of severe/chronic health issues. In the present study, among the recorded species four species, viz., *Acorus calamus* L., *Clerodendrum colebrookiaum* Walp. *Messua ferrea* Linn., *Sapindus mukorossi* Gaertn. are assessed as Vulnerable (VU) by IUCN Red List, three species—*Alstonia scholaris* R.Brown., *Terminalia chebula* (DC) W & A, and *Artocarpus lakoocha* Roxb.—are assessed as Near Threatened (NT), two species—*Cinnamomum tamala* Nees & Ebern and *Cissampelos*
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pareira Linn.—are listed under Least Concern (LC) (Sajem et al. 2008; Molur & Walker 1998). *Curcuma caesia* Roxb. is listed under Critically Endangered (CR) category of IUCN while *Garcinia pedunculata* Roxb. is an Endangered (EN) and endemic species of the region (Mao et al. 2009). *Rhyncostylis retusa* (L.) Blume which is an epiphytic herb belonging to family Orchidaceae is also placed under the Endangered category (EN) appendix II (with strictly controlled international trade) of CITES (The Convention on International Trade in Endangered species of Wild Fauna and Flora) (Saxena 2020) (Table 4).

Plant parts used and forms of medication

The tribal communities have a strong indigenous knowledge system of using various parts of a plant and the healing properties that each of the parts. The various information collected from the tribal communities helped us to establish the importance of the different uses of herbal remedies. The most commonly used plant parts were leaf, root, whole plant, fruit, bark, rhizome, flower, seed, stem, latex, bulb, twig, and tender shoots for various purposes in their day to day lives (Figure 3). In the study it was found that during the preparation of herbal recipes the healers use either a single medicinal plant or combination of several plants in the treatment of a particular disease. The most frequently used plant parts for medicinal remedies were leaves (69 species, 39.65%). The use of leaves in comparison to other plant parts causes less harm to the plant thus ensuring sustainability and its further conservation (Panmei et al. 2019). It was followed by fruit (32 species, 18.39%), whole plant (21 species, 12.06%), roots (18 species, 10.34%), stems (17 species, 9.77%), barks (13 species, 7.47 %), rhizomes (nine species, 5.17%), twigs (nine species, 5.17%), tender shoots (eight species, 4.59%), flowers (six species, 3.44%), bulbs (six species, 3.44%) (Figure 3). Out of 78 families, Euphorbiaceae represented the highest number of medicinal plants (10 species, 5.74%), which was followed by Asteraceae (eight species, 4.59%), Araceae (seven species, 4.02%), and Rutaceae (seven species, 4.02%). Other research works (Singh et al. 2000; Teklehaimanot & Giday 2007; Mesfin et al. 2009; Bhattarai et al. 2010), however, reported

Table 1. Distribution of ethnic informants based on age and sex.

| Age group | Male | Female | No. of persons | Percentage |
|-----------|------|--------|----------------|------------|
| 30–39     | 5    | 31     | 36             | 18.6       |
| 40–49     | 16   | 40     | 56             | 29         |
| 50–59     | 21   | 26     | 47             | 24.3       |
| 60–69     | 12   | 21     | 33             | 17         |
| 70–79+    | 8    | 13     | 21             | 10.8       |
| TOTAL     | 62   | 131    | 193            |            |

Table 2. Educational status of the informants.

| Education level | No. of individuals | Percentage |
|-----------------|--------------------|------------|
| Illiterate      | 28                 | 14.5       |
| Primary         | 33                 | 17.0       |
| Middle          | 27                 | 13.9       |
| Secondary       | 53                 | 27.4       |
| University      | 52                 | 26.9       |
| TOTAL           | 193                |            |

Figure 2. Diagram showing habits of documented plant species.

Figure 3. Parts wise use of various medicinal plant species used by Assamese community in Dibrugarh District.

Figure 4. Various forms of medication practiced by Assamese community in Dibrugarh District.
| Scientific name [Family] | Voucher No. | Common name | Use Value | Part Used | Application | Method of preparation | Route of administration |
|-------------------------|-------------|-------------|-----------|-----------|-------------|-----------------------|------------------------|
| Abroma augusta L. [Sterculiaceae]; PG-367 | Gorokhia korai | 0.03 | R | Breast cancer, internal wound healing, jaundice | Paste | Oral |
| Acalypha indica (Roxb.) Schott [Amaranthaceae]; PG-140 | Man kochu | 0.14 | Rh | High blood pressure, anemia, tonic | Decoction | Oral |
| Aloe vera (L.) Burm.f. [Asphodelaceae]; PG-82 | Sal kuwori | 0.28 | L | Fever, detoxification, skin problem | Paste | Oral, External |
| Alocasia macrorrhiza (L.) [Araceae]; PG-43 | Bor kochu | 0.03 | L, Rh | Anthelmintic, Toothache, Insect repellent | Paste | External |
| Aloe vera (L.) Burm.f. [Asphodelaceae]; PG-82 | Sal kuwori | 0.28 | L | Fever, detoxification, skin problem | Paste | Oral, External |
| Alocasia macrorrhiza (L.) [Araceae]; PG-43 | Bor kochu | 0.03 | L, Rh | Anthelmintic, Toothache, Insect repellent | Paste | External |
| Alternanthera sessilis(L.) R.Br. Ex DC [Amaranthaceae]; PG-170 | Masi-kunduri | 0.08 | TS | Gastritis, gastro-intestinal disease | Vegetable | Oral |
| Amarantus spinosus L. [Amaranthaceae]; PG-171 | Hati-khutra | 0.03 | R, TS | Diarrhoea, anti diabetic, galactagogue | Juice, vegetable | Oral |
| Alocasia macrorrhiza (L.) [Araceae]; PG-43 | Bor kochu | 0.03 | L, Rh | Anthelmintic, Toothache, Insect repellent | Paste | External |
| Aloe vera (L.) Burm.f. [Asphodelaceae]; PG-82 | Sal kuwori | 0.28 | L | Fever, detoxification, skin problem | Paste | Oral, External |
| Alpinia officinarum (Gaertn.) B.L.Burtt [Zingiberaceae]; PG-136 | Kothai | 0.03 | St, B | Toothache, Malaria | Paste | Oral |
| Alternanthera sessilis(L.) R.Br. Ex DC [Amaranthaceae]; PG-170 | Masi-kunduri | 0.08 | TS | Gastritis, gastro-intestinal disease | Vegetable | Oral |
| Amarantus spinosus L. [Amaranthaceae]; PG-171 | Hati-khutra | 0.03 | R, TS | Diarrhoea, anti diabetic, galactagogue | Juice, vegetable | Oral |
| Alocasia macrorrhiza (L.) [Araceae]; PG-43 | Bor kochu | 0.03 | L, Rh | Anthelmintic, Toothache, Insect repellent | Paste | External |
| Aloe vera (L.) Burm.f. [Asphodelaceae]; PG-82 | Sal kuwori | 0.28 | L | Fever, detoxification, skin problem | Paste | Oral, External |
| Alpinia officinarum (Gaertn.) B.L.Burtt [Zingiberaceae]; PG-136 | Kothai | 0.03 | St, B | Toothache, Malaria | Paste | Oral |
| Alpinia officinarum (Gaertn.) B.L.Burtt [Zingiberaceae]; PG-136 | Kothai | 0.03 | St, B | Toothache, Malaria | Paste | Oral |

Table 3. Documentation of medicinal plants used by ethnic tribes of Dibrugarh District, Assam, India.
| Scientific name [Family] | Voucher No. | Common name | Use | Part Used | Application | Method of preparation | Route of administration |
|--------------------------|-------------|-------------|-----|-----------|-------------|-----------------------|------------------------|
| Capsicum frutescens L. [Solanaceae]; PG-96 | Dhan jolokia | 0.04 | Fr | Gastritis, cough | Raw | Oral |
| Carica papaya. [Caricaceae]; PG-47 | Amita | 0.14 | Fr, La, S | Constipation, indigestion, galactagogue, pinworm | Raw | Oral |
| Cascabela thevetii(L.) Lipp. [Apoecypaceae]; PG-81 | Korobipul | 0.01 | R | Rabies | Paste | Oral |
| Cassia fistula L. [Caesalpinaceae]; PG-275 | Sonar | 0.01 | S | Constipation | Paste | Oral |
| Cothranthus roseus (L.) G.Don [Apoecypaceae]; PG-433 | Nayantora | 0.31 | L | Antibiotic, cancer, hypertension | Juice | Oral |
| Celtis tetandra Roxb. [Ulmaceae]; PG-212 | Sukuta | 0.02 | T | Stomachic, fever | Decoction | Oral |
| Centella asiatica (L.) Urban [Apiaceae]; PG-578 | Bor-manimuni | 0.19 | Wh | Blood purifier, dysentery, memory enhancer, cut | Paste | Oral |
| Chromolina odorata (L.) King et Robin [Asteraceae]; PG-546 | Jarmani bon | 0.09 | | Cut and wound | Paste | External |
| Cinnamomum tamala (Buch.-Ham.) T.Nees & C.H.Eberm. [Lauraceae]; PG-19 | Tezpat | 0.02 | L | Hypertension, anti-diabetic | Paste, decoction | Oral |
| Cissampelos pareira L. [Menispermaceae]; PG-145 | Tubuki lotta | 0.05 | L, R | Fever, bone fracture | Paste | External |
| Clitoria ternatea L. [Papilionaceae]; PG-587 | Boga aparajita | 0.02 | R | Abortive, stomachic, bleeding, pinworm, alzheimer | Raw, | External |
| Coccinia grandis (L.) Voigt. [Cucurbitaceae]; PG-397 | Akashi-lota | 0.08 | | Jaundice, tonsilitis, bone fracture, paralysis | Paste, decoction | Oral, external |
| Croton jouve Roxb. [Euphorbiaceae]; PG-227 | Gol-nemu | 0.26 | Fr, S | Diarrhea, chronic dysentery, cough, pinworm | Juice | Oral |
| Curcuma aromatica Salisb. [Zingiberaceae]; PG-133 | Bon-halodhi | 0.2 | Rh | Body pain, cough, internal healing, skin problem | Paste | Oral, external |
| Curcuma caesia Roxb. [Zingiberaceae]; PG-135 | Kola-halodhi | 0.07 | Rh | Gastritis, menstruation pain, bone fracture | Paste | Oral, external |
| Curcuma zedoaria Rosc. [Zingiberaceae]; PG-136 | Borahu | 0.02 | Rh | Piles, gastric | Pill | Oral |
| Cuscuta reflexa Roxb. [Cucurbitaceae]; PG-392 | Akashi-lota | 0.08 | St | Jaundice, tonsilitis, bone fracture, paralysis | Paste, decoction | External |
| Cynodon dactylon (L.) Pers. [Poaceae]; PG-111 | Dubori bon | 0.07 | Wh | Menstruation pain, cough, tonic, eye problem | Juice | Oral |
| Daclとなium aegyptium (L.) P. Beauv. [Poaceae]; PG-104 | Bobosa bon | 0.03 | Wh | Piles, skin infection | None | External |
| Datura metel L. [Solanaceae]; PG-530 | Kola dhatura | 0.01 | L | Arthritis | Infusion | External |
| Scientific name [Family]; Voucher No. | Common name | Use Value | Part Used | Application | Method of preparation | Route of administration |
|--------------------------------------|-------------|-----------|-----------|-------------|-----------------------|-------------------------|
| Dendrocóndr sinuoso (Bl.) Chew. [Urticaceae]; PG-326 | Bor Surat | 0.01 | Fl | Allergies, skin infection | Vegetable | Oral |
| Delonix regia (Bojer) Rat. [Caesalpinaceae]; PG-589 | Krishna chura | 0.01 | B | Cough | Decoction | Oral |
| Dillenia indica L. [Dilleniaceae]; PG-160 | Ow-tenga | 0.14 | Fr | Anti-diabetic, hypertension, pox | Decoction | Oral |
| Dracaena angustifolia Roxb. [Araiaceae]; PG-590 | Hatt-tenga | 0.09 | St | Jaundice | Juice | Oral |
| Drymeria cordata (L.) Wild.ex Roem.et Schult. [Caryophyllaceae]; PG-176 | Lai-jabori | 0.23 | Wh | Urinary infection, leucorrhoea, piles, skin irritations | Juice, paste, fragrance | External |
| Dryopteris filix-mas (L.) Schott [Dryopteridaceae]; PG-591 | Biblogoni | 0.13 | L | Pneumonia, fever, recovery (female after giving birth), anthelmintic | Decoction | Oral |
| Eclipta prostrata (L.) L. [Asteraceae]; PG-549 | Keheraj | 0.02 | Wh | Bleeding, leucorrhoea, hairfall | Paste | Oral, external |
| Elaeocarpus floribundus Bl. [Elaeocarpaceae]; PG-205 | Jolphi | 0.02 | Fr | Anti-diabetic | Raw | Oral |
| Enhydra fluctuarens. [Asteraceae]; PG-552 | Helos | 0.01 | S | Anti-diabetic, hypertension | Raw | Oral |
| Eryngium foetidum L. [Apiaceae]; PG-577 | Man dhania | 0.02 | L | Purgative, diuretic, wound healing | Juice | Oral |
| Erythrina stricto Roxb [Fabaceae]; PG-288 | Ronga modar | 0.02 | L | Jaundice | Juice | Oral |
| Euphorbia hirta L. [Euphorbiaceae]; PG-228 | Gakhriotti bon | 0.03 | TS | Galactagogue to nursing mother | Vegetable | Oral |
| Euphorbia ligularia Roxb. [Euphorbiaceae]; PG-229 | Siju | 0.03 | L, Ex | Stomachic, cough, finger swelling | Decoction | Oral, external |
| Ficus auriculata L. [Moraceae]; PG-304 | Dimoru | 0.06 | L | Diarrhea, stomachic, tonic | Decoction | Oral |
| Ficus racemosa L. [Moraceae]; PG-309 | Maudiromu | 0.06 | L | Fever, recovery (female after giving birth), detoxification | Decoction | Oral |
| Flacourtia jangomas (Lour) Rausch. [Flacourtaceae]; PG-211 | Poniyl | 0.03 | Fr | Anti-diabetic, anemia | Raw | Oral |
| Garcinia morelle Roxb.ex DC [Clusiaceae]; PG-218 | Kuji thekera | 0.38 | Fr | Chronic dysentery, diarrhea, tonic | Smoke, infusion | Oral |
| Garcinia pedunculata Roxb. [Clusiaceae]; PG-219 | Bor thekera | 0.03 | Fr | Stomachic | Smoke, infusion | Oral |
| Garcinia xanthochymus Hook.f. [Clusiaceae]; PG-220 | Tepor tenga | 0.07 | Fr | Dyentery, pinworm | Juice | Oral |
| Grewia surrula DC [Tiliaceae]; PG-371 | Kukurhuta | 0.02 | L | Cut and wound | Paste | External |
| Gomphrena celosioides Mart. [Amaranthaceae]; PG-166 | Leheti | 0.02 | TS | Anti-diabetic | Vegetable | Oral |
| Stenococaia palaustri(Burm.f.) Beedd [Blechnaceae]; PG-592 | Bonjalk | 0.04 | TS | Menstruation pain | Decoction | Oral |
| Hibiscus rosa-sinensis L. [Malvaceae]; PG-366 | Jobaphul | 0.21 | Fl, L | Fever, menstruation pain, leucorrhoea, hair problem | Paste | Oral, external |
| Hibiscus sabdariffa L. [Malvaceae]; PG-372 | Tengamora | 0.08 | L | Dysentery, Stomachic, Anemia | Vegetable | Oral |
| Houttuynia cordata Thumb. [Saururaceae]; PG-13 | Mosondori | 0.43 | YT | Dysentery, diarrhea, Anemia | Paste | Oral |
| Hydrocotyle sibthorpioides Lam. [Araliaceae]; PG-580 | Soru manimuni | 0.33 | Wh | Strengthens muscles, Dysentery, Stomachic, Hypertonic, Leucorrhoea | Paste | Oral, external |
| Ichnocauprus frutescens R.Br. [Apocynaceae]; PG-437 | Dhudhkori lota | 0.02 | Wh | Galactagogue | Vegetable | Oral |
| Impatiens tripetala L. [Balsaminaceae]; PG-414 | Damdeuka | 0.1 | R, St, L | Menstruaction, leucorrhoea, jaundice, skin burn, irritation | Paste | Oral, external |
| Ipomoea aquatica Forsk. [Convolvulaceae]; PG-520 | Pari-kolmom | 0.03 | T | Anemia | Vegetable | Oral |
| Jatropha curcas L. [Euphorbiaceae]; PG-231 | Bongali era | 0.12 | St, Ex | Toothache, skin problem | Raw | Oral, external |
| Justicia adhatoda L. [Acanthaceae]; PG-465 | Boga-bahok | 0.09 | L | Cough | Decoction | Oral |
### Indigenous knowledge of ethnomedicinal plants by Assamese community

| Scientific name [Family]; Voucher No. | Common name | Use Value | Part Used | Application | Method of preparation | Route of administration |
|---------------------------------------|-------------|-----------|-----------|-------------|-----------------------|------------------------|
| Kalanchoe pinnata (Lam.) Pers. [Crassulaceae]; PG-163 | Dipur tenga | 0.37 | L | Urethral stone, fever | Raw, paste | Oral, external |
| Lagernaria siceraia (Molina) Standl. [Cucurbitaceae]; PG-262 | Jati-lo | 0.04 | T | Piles, hypertension | Juice | Oral |
| Lasiocarpa spinosa (L.) Tsw. [Araucariaceae]; PG-49 | Chengmora | 0.04 | Bu, R | Recovery after child birth, cough, pneumonia | Vegetable | Oral |
| Lawsonia inermis L. [Lythraceae]; PG-330 | Jetuka | 0.05 | L | Skin infection | Paste | External |
| Leptanthes erecta (Thw.) Leenh. [Sapindaceae]; PG-409 | Tulutha | 0.02 | R | Urinary infection | Paste | Oral |
| Leucas aspera (Willd.) Link [Lamiaceae]; PG-491 | Durun | 0.54 | L | Sinusitis, apetizer, cough, bleeding, pox, gastritis | Juice, fragrance | Oral/Nosiril |
| Lepisanthes erecta (Thw.) Leenh. [Sapindaceae]; PG-409 | Tulutha | 0.02 | R | Urinary infection | Paste | Oral |
| Luffa acutangula (L.) Roxb. [Cucurbitaceae]; PG-260 | Jika | 0.01 | S | Sinusitis | Juice | Oral |
| Lygodium flexuosum (L.) Sw. [Lygodiaceae]; PG-594 | Kipou dhekia | 0.01 | Wh | Ear pain | Juice | External |
| Magnifera indica L. [Anarcardiaceae]; PG-385 | Aam | 0.01 | L | Antidiabetic, stomachic | Decoction | Oral |
| Manihot esculenta Crantz. [Euphorbiaceae]; PG-222 | Himolu alu | 0.04 | B, Ex | Cancer, leucorrhea, eye problem | Paste | Oral, external |
| Mentha arvensis L. [Lamiaceae]; PG-479 | Pudina | 0.07 | L | Urinary infection, stomachic, anti-germicidal, toothache | Paste, infusion | Oral |
| Mesua ferrea L. [Clusiaceae]; PG-221 | Nahor | 0.01 | B | Piles | Infusion | Oral |
| Mikania micrantha Kunth. [Asteraceae]; PG-558 | Premiota | 0.14 | L | Chronic dysentery, diarrhea, cut and wound | Juice | Oral |
| Mimosa pudica L. [Mimosaceae]; PG-292 | Lajuki lota | 0.12 | L, R | Menstruation pain, cut, cancer, dysentery | Juice | Oral |
| Mimusops elengi Roxb. [Sapotaceae]; PG-425 | Bokul | 0.01 | L | Pyrrohoea | Paste | Oral |
| Momordica charantia L. [Cucurbitaceae]; PG-260 | Tita-kelaka | 0.06 | T, Fr | Stomachic, antidiabetic | Vegetable | Oral |
| Moringa oleifera L. [Moringaceae]; PG-313 | Athia kol | 0.37 | Rh, St, L, Fr, FI | Tootache, stomachic, anemia, blood dysentery, pinworm, toxic | Raw | Oral |
| Musa sapientum L. [Musaceae]; PG-132 | Kach kol | 0.07 | Fr | Constipation, dysentery, stomachic | Vegetable | Oral |
| Myrica esculenta Buch.-Ham. Ex D. Don [Myricaceae]; PG-297 | Noga tenga | 0.01 | B | Pyrrohoea, toothache | Powder | Oral |
| Nyctanthes arbor-tristis L. [Oleaceae]; PG-527 | Sewali phul | 0.23 | Fl, L | Hypertension, detoxification, cough, fever, stonic | Raw, juice | Oral |
| Ocimum tenuiflorum L. [Lamiaceae]; PG-493 | Tulsi | 0.31 | L | Cough, stomachic, anemalastic | Raw, juice | Oral |
| Osmoxylon bicolatum L. [Oxalidaceae]; PG-208 | Tengeshi | 0.07 | Wh | Stomachic | Paste | Oral |
| Osmoxylon chrysopodus DC. [Oxalidaceae]; PG-209 | Bor tengeshi | 0.07 | Wh | Stomachic | Vegetable | Oral |
| Scientific name [Family]; Voucher No. | Common name | Use Value | Part Used | Application | Method of preparation | Route of administration |
|--------------------------------------|-------------|-----------|-----------|-------------|-----------------------|-------------------------|
| Paederia scandens (Lour) [Rubiaceae]; PG-459 | Bhedailota | 0.5 | L | Anemia, stomachic, arthritis, piles, post maternity treatment, bleeding | Vegetable | Oral |
| Peperomia pellucida L. [Peperomiacae]; PG-11 | Ponow-nowa | 0.02 | Wh | Ionic, blood purification, antioxidant | Juice | Oral |
| Phyllostachys bambusoides (Hardw.) Mabb. [Gingeraceae]; PG-469 | Tita phul | 0.02 | Fl, L | Stomachic, gastritis, detoxification, anemia, skin infection | Decoction | Oral |
| Phyllanthus emblica L. [Euphorbiaceae]; PG-228 | Amlakhi | 0.1 | Fr | Anti-diabetic, tonic, hair problem | Raw | Oral |
| Phyllanthus virgatus G. Forst. [Euphorbiaceae]; PG-230 | Pani amlakhi | 0.02 | Fr | anti-cancer, anti-oxidant | Juice | Oral |
| Physalis minima L. [Solanaceae]; PG-533 | Pokmo | 0.02 | Wh, R | Menstruation pain, Urinary infection | Paste | Oral |
| Piper betle L. [Piperaceae]; PG-7 | Pan | 0.09 | L | Cough | Infusion | Oral |
| Piper longum L. [Piperaceae]; PG-8 | Peepoli | 0.09 | S | Asthma, cough | Paste | Oral |
| Piper nigrum L. [Piperaceae]; PG-9 | Jaluk | 0.18 | Fr | Anti-cancer, Fever, Pneumonia | Paste, decoction | Oral |
| Plumbago zeylanica L. [Plumbaginaceae]; PG-182 | Agiasit | 0.02 | R | Tonsillitis, skin cancer | Milk infusion | Oral |
| Pogostemon benghalensis (Burm.f.) Kuntze [Lamiaceae]; PG-492 | Sukloli | 0.31 | L | Bleeding, hypertension, indigestion | Vegetable | Oral |
| Polygonum chinense L. [Polygonaceae]; PG-188 | Modhu-solang | 0.02 | L | Stomachic, tonic | Vegetable | Oral |
| Polygonum glabrum Wild. [Polygonaceae]; PG-190 | Modhuri am | 0.49 | L | Chronic dysentery, Diarrhoea, Pyrrohoea | Raw | Oral |
| Punica granatum L. [Punicaceae]; PG-336 | Dalim | 0.15 | Bu | Chronic dysentery, anemia, blood purifier | Raw, smoke | Oral |
| Rhus coriaria L. [Rutaceae]; PG-312 | Jutli-poka | 0.02 | R | Pneumonia, cough | Paste | Oral |
| Saccharum officinarum L. [Poaceae]; PG-120 | Kuhlia | 0.09 | St | Jaundice, tonic | Juice | Oral |
| Sapindus mukorossi Gaertn. [Sapindaceae]; PG-408 | Moni-chal | 0.03 | S | Pharyngitis, cough, hair problems | Decoction | Oral, external |
| Sarcochlamys pulcherrima ( Roxb.) Gaud [Urticaceae]; PG-330 | Mechaki | 0.05 | L | Stomachic, galactogogue, dysentery, hypolipidemic | Decoction | Oral |
| Saururus chinensis L. [Oleoaceae]; PG-249 | Bari-sundari | 0.05 | L | Anti-diabetic | Vegetable | Oral |
| Schizandra chinensis (Roxb.) Gagnep [Schisandraceae]; PG-129 | Patidoi | 0.01 | Bu | Leucorrhoea | Paste | Oral |
| Scrophularia nodosa L. [Scrophulariaceae]; PG-500 | Cheni-bon | 0.08 | L | Leucorrhoea, cough, pneumonia, piles | Juice | Oral |
| Selaginella kraussiana ( Kunze) A. Braun [Selaginellaceae]; PG-597 | Leucorrhoea, Jaundice | 0.02 | L | Leucorrhoea, Jaundice | Juice | Oral |
| Sida acuta Burm.f. [Malvaceae]; PG-376 | Sonbionial | 0.02 | L | Jaundice | Juice | Oral |
| Solanum esculentum Mill. [Solanaceae]; PG-533 | Soru bilahi | 0.03 | Wh | Burning, irritation | Juice | External |
| Solanum indicum L. [Solanaceae]; PG-534 | Tita bhekuri | 0.03 | Fr | Blood purifier, stomachic | Vegetable | Oral |
Indigenous knowledge of ethnomedicinal plants by Assamese community

Gogoi & Nath

Scientific name [Family]; Voucher No. Common name Use Value Part Used Application Method of preparation Route of administration

Spilanthes acmella (auct.nomL.) Merr. [Asteraceae]; PG-564 Bonoria malkathi 0.23 Fr Tuberculosis, tongue infection, internal wound healing Infusion Oral

Spondias pinnata (L.-E) Kurz. [Anacardiaceae]; PG-387 Amora 0.18 St, B, L, Fr Dysentery, stomachach, Anemia, Piles Paste, raw Oral

Stenocleena palustris (Burm.f) Bedd. [Blechnaceae]; PG-598 Ronga lota 0.03 L Pneumonia, bodyache Powder

Syzygium cumini (L.) Skeels [Myrtaceae]; PG-344 Kola jamuk 0.28 Fr, S, B Antidiabetic, piles Raw, paste, infusion Oral

Tabernaemontana divaricata (L.) R.Br. Ex Roem.et Schult. [Apoecynaceae]; PG-443 Kothona phul 0.08 R Fever, Cough, Pneumonia Paste Oral

Tamarindus indica L. [Caesalpinaceae]; PG-599 Teteli 0.08 Fr, L Hypertension, fever, bone fracture Water infusion, paste Oral, external

Tinospora cordifolia (Willd.) Hook.f. & Th. [Menispermaceae]; PG-149 Amarlota 0.12 St Antidiabetic, bone fracture Water infusion Oral, external

Trachypleum ommi (L.) Sprague [Apiaceae]; PG-581 Ajwain 0.01 S Indigestion, gastritis Infusion Oral

Trigonella foenum-graecum L. [Fabaceae]; PG-266 Methi 0.07 L, S Antidiabetic Vegetable Oral

Vitex negundo L. [Verbenaceae]; PG-495 Pochotia 0.16 L Cough, insect repellant, stomachach, bone fracture, internal healing Decoction, paste Oral

Xanthium strumarium L. [Asteraceae]; PG-570 Agoru 0.05 S, R Internal wound healing Juice Oral

Zanthoxylum nitidum (Roxb.) DC [Rutaceae]; PG-403 Tezmuri 0.35 R, St, B Pneumonia, Fever, Cough, Toothache Paste, decoction Oral

Zizyphus mauritiana Lamk. [Rhamnaceae]; PG-316 Bogori 0.05 Fr Pneumonia, fever, cough, Toohache, piles Raw Oral

L—Leaf | Wh—Whole plant | Sh—Shoot | Ex—Exudate | St—Stem | B—Bark | Fr—Fruit | Fl—Flower | R—Root | Bu—Bulb | S—Seed | Rh—Rhizome | La—Latex

Table 4. List of threatened species used by ethnic tribes in Dibrugarh District.

| Taxon | Red List |
|-------|----------|
| 1. Acorus calamus L. | VU |
| 2. Clerodendrum colebrookiianum Walp. | VU |
| 3. Messua ferrea Linn. | VU |
| 4. Sapindus mukorossi Gaertn. | VU |
| 5. Alstonia scholaris R.Brown. | NT |
| 6. Terminalia chebula (DC) W & A | NT |
| 7. Artocarpus lakoocha Roxb. | NT |
| 8. Cinnamomum tamala Nees & Ebern | LC |
| 9. Cissampelos pareira Linn. | LC |
| 10. Curcuma caesia Roxb. | CR |
| 11. Garcinia pedunculata Roxb. | EN |
| 12. Rhynchosia retusa (L.) | EN |

Asteraceae to be the leading family with the highest number of medicinal plants. Similarly, family Lamiaceae, Apocynaceae, Cucurbitaceae, Acanthaceae, Zingiberaceae, Moraceae were represented by five species each, family Apiceae, Poaceae by four species each and family Acanthaceae, Urticaceae, Rubiaceae, Scrophulariaceae, Piperaceae were represented by three species each. The remaining 59 families contributing (82 species, 48.94%) have one or two species (Table 5). The medicinal plants that were used in various forms to cure different human ailments were plant paste (55 species, 31.6%) which was the most commonly used followed by juice (38 species, 21.83%), vegetable (30 species, 17.24%), decoction (26 species, 14.94%), eaten raw (24 species, 13.79%), infusion (17 species, 9.77%), smoke (3 species, 1.72%), pill (three species, 1.72%) and powder...
Table 5. Category wise distribution of various medicinal plant taxa in Dibrugarh District.

| Family         | Number of genera | Percentage of genera | Number of species | Percentage of species |
|----------------|------------------|----------------------|-------------------|-----------------------|
| Euphorbiaceae  | 7                | 4.02                 | 10                | 5.74                  |
| Asteraceae     | 8                | 4.59                 | 8                 | 4.59                  |
| Araceae        | 6                | 3.44                 | 7                 | 4.02                  |
| Rutaceae       | 4                | 2.29                 | 7                 | 4.02                  |
| Lamiaceae      | 5                | 2.87                 | 5                 | 2.87                  |
| Apocynaceae    | 5                | 2.87                 | 5                 | 2.87                  |
| Cucurbitaceae  | 5                | 2.87                 | 5                 | 2.87                  |
| Amaranthaceae  | 4                | 2.29                 | 5                 | 2.87                  |
| Zingiberaceae  | 3                | 1.72                 | 5                 | 2.87                  |
| Moraceae       | 3                | 1.72                 | 5                 | 2.87                  |
| Apiaceae       | 4                | 2.29                 | 4                 | 2.29                  |
| Pooaceae       | 4                | 2.29                 | 4                 | 2.29                  |
| Solanaceae     | 3                | 1.72                 | 4                 | 2.29                  |
| Acanthaceae    | 3                | 1.72                 | 3                 | 1.72                  |
| Urticaceae     | 3                | 1.72                 | 3                 | 1.72                  |
| Rubiaceae      | 3                | 1.72                 | 3                 | 1.72                  |
| Scrophulariaceae| 3                | 1.72                 | 3                 | 1.72                  |
| Piperaceae     | 1                | 0.57                 | 3                 | 1.72                  |
| Other 59 families | 71          | 57.57               | 82                | 48.94                 |

and fragrance (two species, 1.14%) each (Figure 4). For improving the palatability, honey is used as an additive by the healer which is also used for enhancing the taste of local medicines (Debbarma et al. 2017). It was found that most of the herbal preparations were given orally to cure human ailments except dermatological problems. No standardized measure for dosage consumption of medicines was prescribed by the healers in the study area. They were recommended with specific guidelines and care so that the medicine worked effectively without causing any internal problems. Examples were also cited by the healers where excessive dosage of *Cheilocostus speciosus* may lead to deafness and excessive consumption of *Clerodendrum colebrookianum* may cause low blood pressure in patients.

**Use value (uv)**

The most commonly used species were *Leucas aspera* (Roth) Spr with 0.54 use value and *Paederia scandens* (Lour) with 0.5 use value; they were followed by *Psidium guaiava* L. with 0.49 use value, *Hottuynia cordata* Thunb. and *Clerodendron colebrookianum* Walp. with a use value of 0.43 each, *Garcinia Morella* Roxb. ex. DC with 0.38 use value, *Kalanchoe pinnatum* (Lam.) Pers. with 0.37 use value, *Zanthoxylum nitidum* (Roxb.) DC with 0.35 use value and *Hydrocotyl sibthorpioides* Lam. with 0.33 use value. The most rarely used medicinal plants were *Phyllanthus fraternus* Webst, *Phlogacanthus thyrsiformis* (Hardw.) Mabb., *Scoparia dulcis* L., and *Lepisanthes erecta* (Thw.) Leenh., which had use values from 0.09 to 0.02. Some medicinal plants used by the ethnic communities for treating basic ailments have received many reports about their medicinal uses. The relative importance is reflected in the use values of these medicinal plants. *Leucas aspera* (Roth.) Spr. is a useful tropical plant which is harvested from the wild for local use, primarily as a medicine, but also as a food and insect repellent. It is sometimes cultivated in home gardens for local uses and as a pot herb. The plant is used traditionally as an antipyretic and insecticide (Prajapati et al. 2010). The root decoction of *Paederia scandens* (Lour.) is used to cure diarrhea and dysentery (Sen & Behera 2008). All parts of the plant have been used for different purposes: hepatoprotection, antioxidiant, anti-inflammatory, anti-spasmodic, anti-cancer, antimicrobial, anti-hyperglycemic, analgesic, endothelial progenitor cells, anti-stomachic, and anti-diarrhea (Barbalho et al. 2012). The extract of *Hottuynia cordata*...
Thunb. is given for stomach ache (Kagung et al. 2009). Most of the medicinal plants used by the Assamese community in Dibrugarh District were also reported in the previous studies on ethnobotany of medicinal plants used by Assamese people for various skin ailments and cosmetics (Saikia et al. 2006), ethnomedicine used by Mishing tribes of Dibrugarh District (Baruah & Kalita 2007), and some ethnomedicine used by the Tai Ahom of Dibrugarh District (Kalita & Baruah 2010). The application of each medicinal plant which was presented in our study, however, was found to be much more than what was presented in the earlier literatures. This may be due to the different number of informants interviewed during the survey. There is no report of some plants in the previous studies (Saikia et al. 2006; Talukdar et al. 2017) but have high use value such as Leucas aspera (Roth) Spr, Paederia scandens (Lour.), Houttuynia cordata Thunb., Clerodendron colebrookianum Walp. This may be due to different traditional knowledge practices that have been passed from generation to generation within the family circle.

Informants consensus factor (F<sub>IC</sub>)

Informants consensus analysis provides a measure of availability for the given evidence of data collection in the ethnomedicinal studies (Malla & Chhetri 2012). In this present investigation, the medicinal plants used to treat different ailments in the Dibrugarh District of Assam were classified into 13 ICPC (International Classification of Primary Care) disease categories (https://www.who.int/classifications/icd/adaptations/icpc2/en/) and the F<sub>IC</sub> value of each and every disease category was calculated and depicted (Table 6). In the study, the digestive system disorder category showed the greatest agreement with an F<sub>IC</sub> of 0.76%. It was followed by oral and dentistry category (0.73%), heart and vascular system (0.72%), external injuries (0.72%), hematology (0.71%), respiratory system (0.68%), infection and Immunization (0.68%), pulmonary disease (0.67%), dermatological (0.65%), musculoskeletal & nervous system (0.63%), and urinogenital & venereal (0.57%). The least agreement between the informants was recorded in the responses related to endocrinology and others (fever, cold, cough) both representing 0.56%. Previously various authors followed this F<sub>IC</sub> value as a significant tool to carry out respective ethnobotanical work (Inta et al. 2013; Singh et al. 2014; Mall et al. 2015; Hosseini et al. 2017). These works show a high level of agreement among the various ethnic communities of the state of Assam having a rich traditional knowledge with diversified flora as well as fauna along with colourful culture and tradition.

CONCLUSIONS

The present investigation represents an array of information about the rich indigenous knowledge of traditional medicine and ethnobotanical potential of the various plants used by the tribal people of Dibrugarh District. A contribution of total 174 plants against 13 different disease categories has been listed. Most of these plant species belong to different families of angiosperms except three from Pteridophyta. The traditional healers and elderly villagers had given high indication scores (use value) for the plants, viz., Leucas aspera, Paederia foetida, Psidium guajava, Houttuynia cordata, Clerodendron colebrookianum, Garcinia morella, Zanthoxylum nitidum, Kalanchoe pinnatum, Musa balibiana, and Pogostemon benghalensis have been accepted by the people as highly useful in traditional health-care practices in Dibrugarh District. Further, statistical analysis of the ethnomedicinal plants carried out by calculating their use value and informant consensus factor, have confirmed their relative importance and efficiency towards curing various ailments in Dibrugarh District. So, the plants with ethnomedicinal properties must be chemically tested for correct identification of bioactive compounds which can be further used for drug designing. This will be a great contribution to pharmaceutical and herbal industries for betterment of mankind. From the conservation
point of view, the present work will be a new insight in creating awareness and setting management strategies for the ethnomedicinal plants and the floristic diversity of Dibrugarh District.

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