A quantitative ethnobotanical study of traditional medicinal plant use among the Bodo community of Bajali district, Assam, India

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Research

Abstract

Background: People of Bodo community, the early settlers of Assam have been using traditional knowledge as basic primary healthcare source since the time immemorial. Such knowledge not only guides rational investigations into herbal remedies but also supports conservation of important bio-resources. This study records ethnomedicinal plants use of the Bodo people.

Methods: Primary data were collected through semi-structured and open-ended discussions with local healers in seven Bodo dominated villages of the district. Information on botanical names, families, vernacular names, applications, plant parts used, method of preparation and routes of administration was recorded. Quantitative ethnobotanical indices including Informant Agreement Ratio (IAR), Informant Consensus Factor (F_{ic}), Relative Frequency of Citation (RFC), Use Value (UV), were applied. Informants were also categorized by gender, age group and education qualification.

Results: Altogether, 131 plant species belonging to 116 genera and 63 families were recorded for ethnomedicinal utilization in 18ailment categories. The Asteraceae family was the most extensively utilized and the top used plant parts were leaves (46.34%). Among recorded species *Musa balbisiana* showed the highest UV (0.43) and RFC (0.37). Analysis of F_{ic} revealed that urological disorder had the highest consensus value (1.0).

Conclusions: Present study highlights the rich ethnomedicinal knowledge of the Bodo community and its relevance in modern healthcare research. In this context, the scope of ethnobotanical studies is vast, and if traditional knowledge is properly documented, it could pave the way for noble drug discovery, thereby serving as a major contributor to the betterment of mankind.

Keywords:Ethnobotany, Traditional knowledge, Bajali district, Bodo community, Quantitative analysis

Background

Ethnomedicinal plants are crucial in developing countries, serving as an alternative and complementary health care resources for basic therapeutic needs (Rai *et al*. 2000). The World Health Organization estimates that about 80% of people in developing countries rely on traditional treatments and herbal medicines as their primary healthcare (Akerele 1984, Nath 2016a, Shil *et al*. 2014).In India traditional herbal medicine comes from two main sources: one is written and taught in formal systems, and the other is shared by villagers through oral traditions known as Local Health Traditions (LHT) which remain widely practiced in rural communities (Nath *et al*. 2013). Many communities living in relative isolation have developed their own indigenous traditional knowledge for health care practices due to limited access to modern facilities (Das *et al*. 2019).Such traditional and cultural health care practices offer valuable opportunities for potential research.Information obtained from ethnobotanical studies help validate important medicinal plants used by different communities and forms the basis for research on bioactive compounds and drug discovery. These studies also support the sustainable use and conservation of plant resources (Bolson *et al*. 2015, Choudhary *et al*. 2017, Dutra *et al*. 2016, Yasir *et al*. 2010). Today, rapid deforestation and habitat loss threaten the rich but unexplored reservoir of traditional knowledge hidden within nature (Buragohain2011). Preserving this knowledge is crucial, especially for developing countries like India where indigenous wisdom is rapidly declining (Gogoi & Nath 2021).

India alone has an estimated 2500 medicinal plant species of high ethnobotanical value (Rout & Thatoi 2011). The northeastern region, recognized as a mega biodiversity hotspot, supports rich endemic flora (Barbhuiya *et al.* 2009, Mao *et al*. 2009, Panmei *et al*. 2019, Sajem *et al*. 2008) and serves as a home to nearly 1350 medicinal plant species with huge economic importance (Dutta & Dutta 2005). This region forms a major part of the Floristic Zone of India that is one of the world's twelve 'Genetic Epicenters', contributing to the evolution of world flora (Hazarika *et al*. 2012). The eight northeastern states of India i.e. Arunachal Pradesh, Assam, Manipur, Mizoram, Meghalaya, Sikkim, Nagaland, and Tripura are largely inhabited by diverse tribal communities, offering substantial scope for ethnobotanical research (Baruah *et al*. 2013).

The state of Assam, located between altitude $24^0 2'$ – $27^0 6'$ N and longitude $89^0 8'$- 96^0E, covers an area of 78438 km^2 (https://assam.gov.in/about-us/393) of which 23688km^2 is covered by forests (Hazarika *et al*. 2012). The state comprises 35 districts (https://www.bodopedia.com/assam/list-of-assam-districts/) and had a population of 31169272 according the2011 census (https://assam.gov.in/about-us/393).Assam experiences heavy rainfall and has a humid tropical and subtropical climate (Buragohain 2011). The state is botanically rich and home to diverse Indo Mongolian ethnic groups including the Bodo, Mishing, Chutia, Moran, Karbi, Sonowal Kachari, Rabha, Motok, Tai Turung, Tai Khamayang, Tiwa, Dimasa and Koch communities (Buragohain *et al*. 2007).Despite their rich cultural heritage, many rural communities face challenges such as poverty, inadequate living standards, and poor health conditions (Kataki 2023). The traditional knowledge held by these tribal communities represents a valuable resource for pharmaceutical research, drug development and a boon to mankind and poor health conditions ((Ghosh & Parida 2015, Kataki 2023).

Bajali district, the present study area, was formerly a part of the erstwhile Barpeta district, and thus earlier ethnobotanical reports from Barpeta (Bhattacharjya *et al*. 2023, Das *et al*. 2016, Deka & Nath 2014, Kalita *et al*. 2015) are considered relevant. However, specific documentation from Bajali district remains scarce, highlighting the need for the present investigation to record and analyze the indigenous plant-use practices of the district. Although several ethnobotanical studies have been conducted among the Bodo community in other districts of Assam (Baro *et al*. 2023, Basumatary *et al*. 2024a, Basumatary *et al*. 2024, Basumatary *et al*. 2025, Boro *et al*. 2023, Brahma *et al*. 2022, Daimari *et al*. 2019, Deka *et al*. 2015, Naga *et al*. 2024, Saikia *et al*. 2020, Basumatary *et al*. 2024) none have specifically focused on the Bodo community of the erstwhile Barpeta and present Bajali district. This study therefore addresses this gap with the following objectives: 1)Documentation of the medicinal plants used by the Bodo community of Bajali District; 2) Assessment of traditional knowledge in relation to demographic factors such as gender, age range and education qualification of the informants; and 3) To analyze the relative importance of the reported plants through quantitative indices.

Materials and Methods

Study area

The district of Bajali which is located on the north bank of the river Brahmaputra in the state of Assam, North-East India, is a newly created district established through Government of Assam notification no. GAG (B) 491/2019/107 dated 12thJanuary 2021. It is bordered by Nalbari district in the East, Baksa district in the North, and Barpeta district in the South and West (Figure 1). This district lies between 26˚44'N to 26˚50'N latitude and 91˚04'E to 91˚24'E longitude in the western part of Assam comprising 212 revenue villages encompassing a total area of 422.95 sq.km. Bajali districts predominantly composed

of alluvial deposits and exhibit a flat topography. The area is highly flood-prone due to the tributaries of the Brahmaputra River such as the Kaladiya, Deojara, Pahumara and Palla river flowing from north to south (https://bajali.assam.gov.in/sites/default/files/public_utility/Bajali_DSR.pdf). The district experiences three distinct seasons comprising summer (March to May), monsoon (June to September) and winter (October to February). The district receives an average annual rainfall of 385-410 cm. The soil of the district is primarily sandy, sandy loam and forest soil. Agriculture is the mainstay of the local economy, with about 70% of its population depending on it for their livelihood and paddy rice constitute the major crop (https://bajali.assam.gov.in/about-district/district-glance). The district is home to a heterogeneous population, primarily comprising diverse Assamese, Bodo, Minority and Bengali communities. The study area is characterized by a lush green rural landscape with abundant vegetation and agricultural fields.

Figure 1.Geographical location of the study area. Map showing A) India, B) Assam and C) Bajali district, where ethnomedicinal data from Bodo community were collected.

Field survey and collection of data

The present ethnobotanical data was collected over a period of two years from March 2022 to March 2024 through a door-to-door survey conducted in seven Bodo tribe dominated villages of Bajali district, namely Chenglimari, Duramari, Mwithabari, Jamguri, Bharegaon, Sonapur and Kathalmurighat. Prior to initiating the data collection, the aim and objectives of the study were explained in brief to the community leaders, who then provided verbal approval to conduct the survey. Personal interviews on herbal medicinal practices were carried out using semi-structured and open-ended discussions involving a total of 64 informants (Figure 2a). Prior to interviewing verbal consent was obtained from every participant. A combination of purposive, snowball and random sampling methods were employed to select the informants. The key knowledgeable individuals were purposively selected with help of village elderly people, and several other participants were chosen randomly to obtain an unbiased and more representative sample of the community. With their cooperation, the

vernacular names of the collected plants were compiled in a table along with the plant parts used, therapeutic applications, preparation methods and routes of administration. Demographic details of the informants including age, gender and educational qualification were also recorded (Table 1).

Figure 2a. Photographs of informants of Bajali district, Assam and one of the authors during field survey.

Plant collection, identification and preservation

With the assistance of the local people, the plants in the study site were collected during their mature stages for proper identification of the specimens. These collected specimens were identified in their local language by the interviewers. Digital photographs of the specimens were taken (Figure 2b) for future record and proper taxonomic verification. The collected specimens were identified by consulting deposited specimens at the Gauhati University Botanical Herbarium (GUBH). Identification was also carried out using relevant literature such as 'A Checklist of Angiosperms and Gymnosperms' (Barooah & Ahmed 2014), Flora of BTAD (Borthakur *et a*l. 2018), Flora of Assam (Kanjilal *et al*.1934-1940) and Flora of China (http://www.efloras.org/flora).The correct nomenclature of each specimen was checked with the help of online databases like the International Plant Name Index (https://www.ipni.org) and Plants Of The World Online (https://powo.science.kew.org).

Statistical data analysis

After the completion of field work, all the collected data were recorded systematically in MS excel file based on the information provided by the informants.

Determination of use value (UV)

To characterize the relative importance of each prescribed medicinal plant, use values were utilized (Philips *et al*. 1994, Zenderland *et al*. 2019). A higher use value indicates that a plant is frequently reported for use whereas lower use value reflects limited usage reports (Vitalini *et al*. 2013). The calculation of use value was carried out using the following formula

$$UV = \sum U/N$$

Where

U= Reported number of usage for a plant taxon by the informants

N= The sum of informants that were interviewed in the survey.

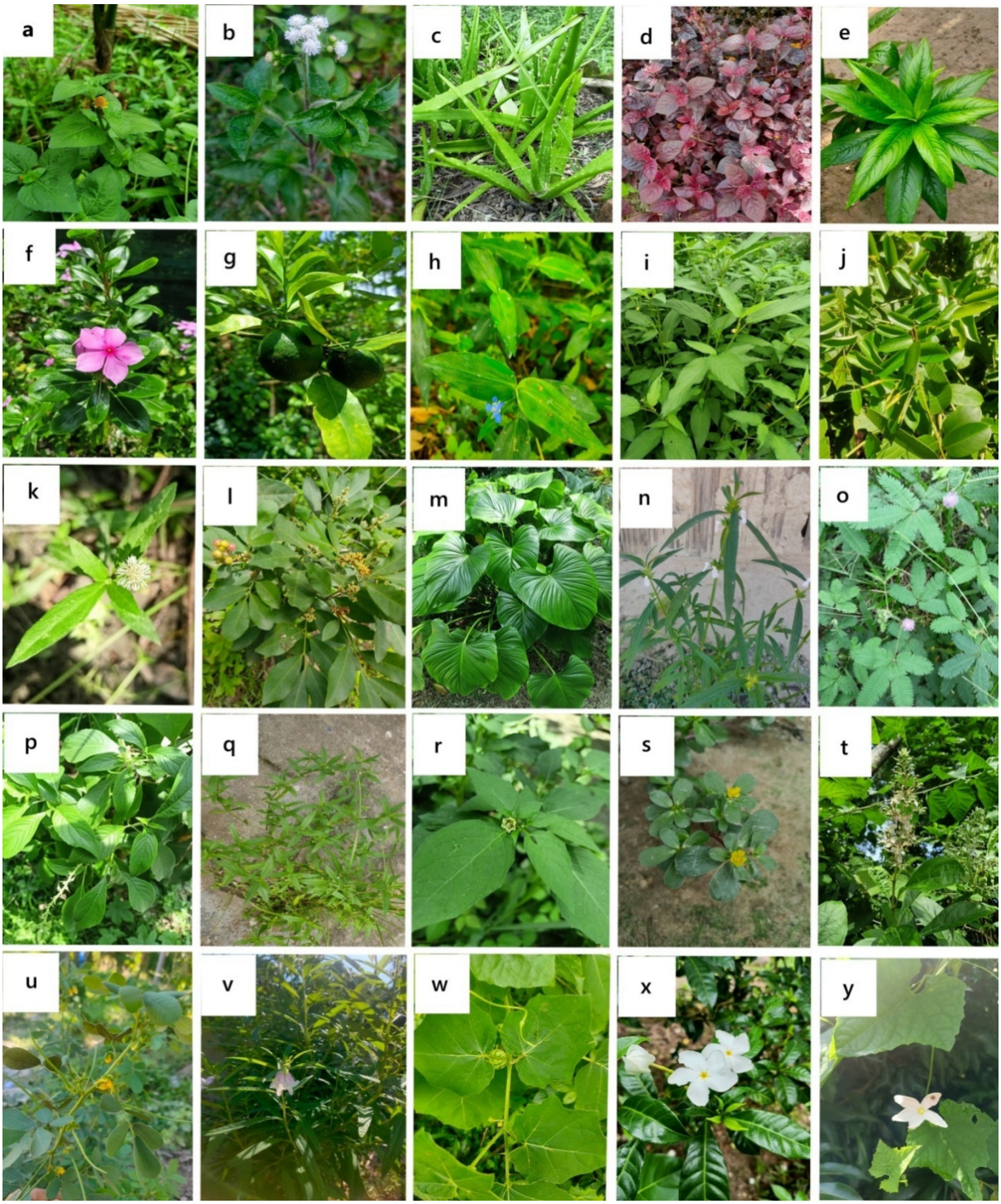

Figure 2b. Medicinal plants used by the local healers of Bajali, Assam: a. *Acmella ciliata*, b. *Ageratum conyzoides*, c. *Aloe vera*, d. *Alternanthera brasiliana*, e. *Blumea lanceolaria*, f. *Catharanthus roseus*, g. *Citrus aurantifolia*, h. *Commelina benghalensis*, i. *Corchorus capsularis*, j. *Cryptolepis sinensis*, k. *Eclipta prostrata*, l. *Glycosmis pentaphylla*, m. *Homalomena aromatica*, n. *Leucas aspera*, o. *Mimosa pudica*, p. *Ocimum grattisimum*, q. *Oldenlandia corymbosa*, r. *Physalis angulata*, s. *Portulaca oleracea*, t. *Rotheca serrata*, u. *Senna tora*, v. *Sesamum indicum*, w. *Solanum viarum*, x. *Tabernaemontana divaricata*, y. *Trichosanthes costata*

Determination of Relative Frequency of Citation (RFC)

This statistical analysis gives information about the relative importance of each species within the study region, and the RFC value range is 0 to 1. The formula for calculating this index is as following

$$RFC=FC/N$$

FC= The sum of informants who cited the usage of a plant taxon.
N= The sum of informants that were interviewed in the survey.

Determination of Informants Consensus Factor (F_{ic})

The Informant Consensus Factor (F_{ic}) is applied to measure the degree of agreement among informants regarding the use of plant taxa for specific ailment categories in the study area and the value ranges between 0 and 1. A F_{ic} value close to 1 suggests a high level of consensus, meaning that relatively few plant taxa are widely recognized by informants as effective for treating a particular ailment category. In contrast, a lower F_{ic} value (near 0) reflects greater variability or disagreement among informants concerning the selection of plant taxa for that ailment. The F_{ic} is calculated using the following formula:

$$F_{ic} = (N_{ur} - N_t)/(N_{ur} - 1)$$

Here, N_{ur} represents the number of use reports for a specific ailment category, and
N_t denotes the number of taxa cited for that category.

Determination of Informants Agreement Ratio (IAR)

The Informant's Agreement Ratio (IAR) is employed to evaluate the relative importance of individual plant taxon and the value ranges from 0 to 1. A value of 0 indicates that the number of ailment categories equals the number of citations for a plant species (i.e., each informant cited a different disease), whereas a value of 1 means every informant cited the same plant for the *same* disease (Thomas *et al*. 2009). The following formula is used for the calculation of IAR

$$IAR = N_r - N_a / N_r - 1$$

Where,
N_r = The sum of citations of a plant taxon by informants
N_a = The sum of illness category(s) treated with this plant taxon

Results

Demographic data of the participants

Within this study, 64 informants were interviewed, of whom 23 were male and 41 were female. The largest proportion of the informants (31.25%) belonged to the age group of 50-60 years. The overall illiteracy rate was 50%. Among the literate participants (50 %), 7.81% had primary education, 21.87% had middle-level education, 10.93% had secondary education, and 9.37% had attained university-level education. With respect to age distribution, eight informants were in the 20-30 years group, six were in the 30-40 years group, ten belonged to the 40-50 years group, twenty informants in the 50-60 years group, ten were in the 60-70 years group, five were in the 70-80 years group, three were in 80-90 years group and two informants were above 90 years (Table 1). Participants were engaged in diverse livelihood activities including farming, housework, and other occupations.

Richness of reported medicinal plants

In the present work that was carried out, 131 plant species (Table 2) traditionally used for various herbal remedies by the Bodo community were identified. These species belonged to 63 families and 116 genera (Table 3, Figure 3). Among the 63 recorded plant families, 48 belonged to dicots, 12 to monocots, and 3 to pteridophytes (Table 4). The identified plants were used as remedies for a variety of ailments grouped under 18 categories (Table 5, Figure 4). It was observed that among all the reported plant specimens with ethnomedicinal value, herbs contributed the highest proportion, followed by shrubs, trees and climbers (Table 6, Figure 5).In this study, out of 63 families, the most common families in medicinal use were Asteraceae (10 reported species), Lamiaceae (9 reported species), Araceae, Fabaceae (6 reported species for each),Malvaceae, Solanaceae, Rutaceae (5 reported species for each), while the remaining families included 4 or fewer reported species (Table 3, Fig 3).

Plant parts used

The most commonly used plant parts in their day-to-day traditional practices for various diseases were leaf, fruit, twig, flower, stem, rhizome, petiole, latex, bark, root, bulb and sap. In our study, leaves (46.34 %), were found to be the most commonly used plant part (Figure 6) for the preparation of remedies, followed by fruit (16.46 %), twig (8.53 %), flower (6.70 %), stem and rhizome (4.87 % each), latex, bark, root and bulb (1.82 % each) petiole, tender shoot and sap (1.21 % each).

Table 1. Socio-demographic profile of the informants interviewed in the study presenting their distribution according to gender, age group and educational qualification.

Factor	Category	Total No. Of Informants	Percentage (%)
Gender	Male	23	35.93
	Female	41	64.06
Age range	20-30	8	12.5
	30-40	6	9.37
	40-50	10	15.62
	50-60	20	31.25
	60-70	10	15.62
	70-80	5	7.81
	80-90	3	4.68
	90+	2	3.12
Education	Illiterate	32	50
	Primary	5	7.81
	Middle	14	21.87
	Secondary	7	10.93
	University	6	9.37

Mode of preparation

The most common mode of preparation for administration was in the form of paste (33.89 %), followed by vegetable form (26.55 %), juice (20.90 %), boiled extract of the plant material, also known as decoction (10.16 %).Plants were also consumed raw or eaten directly (5.64 %), applied topically (1.12 %), used for inhalation or fumigation (0.56 %) and prepared as pickle (0.56 %) as shown in Figure 7. Honey was used as an additive in some preparations by the healers to improve palatability and taste (Debbarma *et al*. 2017).

Use value (UV)

In the present study, the most common species used by the informants were *Musa balbisiana* (UV=0.43), followed by *Azadiracta indica* (UV= 0.37), *Ocimum tenuiflorum* (UV=0.35) and *Tabernaemontana divaricata* (UV=0.34). The high use value of these species indicate that they have broad therapeutic applications and are considered reliable, effective and easily available to the local healers of Bajali district. The medicinal plants that were used rarely were *Acmella oleracea*, *A. paniculata, Allium cepa, Alocasia indica, Amaranthus tricolor, Amorphophalus sylvaticus, Areca catechu, Capsicum frutescens, Cassia fistula* and others, each of which showed use value of 0.01 as shown in Table 2.

Relative Frequency of Citation (RFC)

In this study the plant species *Musa balbisiana* was the most frequently cited by the informants (RFC=0.37), followed by *Ocimum tenuiflorum* (RFC=0.32), *Tabernaemontana divaricata* (RFC=0.29), *Azadirachta indica* (RFC=0.26), *Centella asiatica* (RFC=0.23), *Kalanchoe pinnata* (RFC=0.17), *Psidium guajava* (RFC=0.15).Other species recorded RFC values below 0.15 as presented in Table 2.

Informants Consensus Factor (F_{ic})

The F_{ic} value was analyzed for each reported medicinal plant used by the local healers as a form of herbal remedy across eighteen ailment categories as shown in Table 5. According to the finding, the highest agreement among informants was observed for urological disorders (F_{ic}=1.00), followed by ophthalmological disorders (0.90), respiratory disorders (0.64), allergic/hypersensitivity skin disorders (0.75), Musculoskeletal symptoms (0.75) and inflammatory disorders (0.66). The least F_{ic} values and therefore the least agreement were recorded for diseases such as supportive therapy (0.25), reproductive supportive therapy (0.28), infectious or non-infectious dermatological disorders (0.32), Neurological disorders (0.33) as shown in Table 5. In the present study, the only urological disorder reported was kidney stone, for which the informants mentioned *Kalanchoe pinnata* as the sole plant species used for treatment. This resulted in a high F_{ic} value for this ailment category. The greatest variation in medicinal plant use (67 species) was recorded for the treatment of diseases under the infectious ailment category (Figure 4). In ethnobotanical research calculating the F_{ic} value is an important tool (Inta *et al*. 2013, Singh *et al*. 2014) as it helps to establish the degree of agreement among ethnic healers that possess rich traditional knowledge preserved across generations.

Table 2.List of medicinal plants utilized by the Bodo tribe in Bajali district, Assam with associated ethnobotanical information including scientific name, family, local name, part used, preparation methods, ailment treated, rout of administration alongside quantitative indices namely Use Value (UV), Relative Frequency of Citation (RFC), and Informants Agreement Ratio (IAR).

Scientific Name	**Family**	**Vernacular Name (Bodo name)**	**Use value**	**Part used**	**RFC**	**Application**	**Mode of preparation**	**Route of administration**	**IAR**
Acmella ciliate (Kunth) Cass.	Asteraceae	**jari geder**	0.04	Flower, leaf	0.04	Fever, Canker sore	Paste, vegetable	Oral, external	0.5
Acmella oleracea (L.) R.K. Jansen	Asteraceae	**jari**	0.01	Twig	0.01	Cold and fever	vegetable	Oral	0
Acmella paniculata (Wall. ex DC.) R.K. Jansen	Asteraceae	**jari**	0.01	Leaf	0.01	Fever	vegetable	Oral	0
Acmella uliginosa (Sw.) Cass.	Asteraceae	**jari fisa**	0.06	Leaf, flower	0.06	Canker sore	Paste	External	1
Acorus calamus L.	Acoraceae	**bos bifang**	0.06	Rhizome	0.06	Itchy allergic skin, Cold & fever	Decoction	External	0.7
Aegle marmelos (L.) Correa	Rutaceae	**bel**	0.07	Fruit	0.07	Dizziness, body pain, stomach ache, diabetes, memory booster	Decoction, Directconsume	Oral	0.5
Ageratum conyzoides L.	Asteraceae	**barikhura**	0.03	Leaf	0.03	Migraine, Bullous impetigo	Paste	External	0
Allium cepa L.	Amaryllidaceae	**pyaj, sambram gwja**	0.01	Bulb	0.01	Hair-fall	Juice	External	0
Allium sativum L.	Amaryllidaceae	**sambram gufur**	0.09	Bulb	0.07	High Blood Pressure, Cold & fever, Scabies	Direct consume, spices, Paste	Oral, external	0.6
Alocasia indica (Lour.) Spach	Araceae	**maan thaso**	0.01	Cough	0.01	Cough	Decoction	Oral	0
Aloe vera (L.) Burm.f.	Asphodelaceae	**bigur rani**	0.09	Leaf, sap	0.04	Dizziness, fever, skin care, skin problem, diabetes	Paste, Juice	Oral, external	0.2
Alternanthera brasiliana(L.) Kuntze	Amaranthaceae	**bisohori bilai**	0.09	Leaf	0.09	Cut and wound to stop bleeding,	Paste	External	1
Amaranthus tricolor L.	Amaranthaceae	**biholongi**	0.01	Leaf	0.01	Cut and wound to stop bleeding,	Paste	External	0
Amorphophallus sylvaticus (Roxb.) Kunth	Araceae	**olodor**	0.01	Rhizome	0.01	Enhance iron level	Vegetable	Oral	0

Ananas comosus (L.) Merr.	Bromeliaceae	**anaroj**	0.06	Young leaf	0.06	Intestinal worm in baby	Juice	Oral	1
Andrographis paniculata (Burm.f.) Wall. ex Nees	Acanthaceae	**srhota gwkha**	0.09	Twig	0.07	Diabetes, stomach ache, intestinal worm, diarrhea, malaria	Juice, vegetable	Oral	0.2
Areca catechu L.	Arecaceae	**goi**	0.01	Seed	0.01	Gastritis	Paste	Oral	0
Artocarpus heterophyllus Lam.	Moraceae	**khanthal**	0.03	Tender shoot	0.01	Tonsilitis	Direct consume	Oral	1
Averrhoa carambola L.	Oxalidaceae	**khwrdwi, kamrenga**	0.03	Fruit	0.03	Jaundice, cough	Paste, vegetable	Oral	0
Azadirachta indica A. Juss.	Meliaceae	**neem**	0.37	Leaf	0.26	Itchy allergic skin, Gastritis, Diabetes, Bullous impetigo, Scabies, Itchy scalp, Miliaria rubra, intestinal worm,	Decoction, juice, paste, vegetable	Oral, external	0.7
Bacopa monnieri (L.) Wettst.	Plantaginaceae	**bramhi megong**	0.06	Twig	0.06	Memory booster, intestinal worm	Vegetable, juice	Oral	0.7
Bambusa tulda Roxb.	Poaceae	**woaa**	0.06	Bark	0.06	Cut and wound to stop bleeding,	Paste	External	1
Basella alba L.	Basellaceae	**mefri**	0.03	Leaf	0.04	Bullous impetigo	Paste	External	1
Bergera koenigii L.	Rutaceae	**nwrsing**	0.03	Leaf	0.03	Fever	Vegetable	Oral	1
Blumea lanceolaria (Roxb.) Druce	Asteraceae	**jwglaori**	0.04	Leaf	0.04	Cold and fever	Vegetable	Oral	1
x Brassica juncea (L.) Su Liu & Z.H. Feng	Brassicaceae	**lai megong**	0.03	Leaf	0.03	Dry cough	Juice	Oral	1
Cajanus cajan (L.) Huth	Fabaceae	**ohor**	0.09	Leaf	0.07	Jaundice	Juice	Oral	1
Calotropis gigantea (L.) W.T. Aiton	Apocynaceae	**agwnatha**	0.04	Leaf	0.04	Bone fracture	Direct use	External	1
Capsicum frutescens L.	Solanaceae	**firing banlu**	0.01	Fruit	0.01	Dizziness, fever	Spices	Oral	0
Carica papaya L.	Caricaceae	**mwithru, mudumful**	0.04	Young fruit, flower	0.04	Gastritis, Galactogogue	Vegetable, consume raw	Oral	0.5
Cassia fistula L.	Fabaceae	**sonalu dongfang**	0.01	Ripened fruit	0.01	Diarrhea	Consume raw	Oral	0
Catharanthus roseus (L.) G. Don	Apocynaceae	**nayantora**	0.03	Leaf	0.03	Diabetes	Juice	Oral	1

Centella asiatica (L.) Urb.	Apiaceae	**geder mani muni**	0.28	Leaf	0.23	Pancreas pain due to over latrine, Diarrhea, Gastritis, Cold and cough, Intestinal worm, Scabies, Stomachache	Juice, paste, vegetable	Oral	0.6
Centipeda minima (L.) A. Braun & Asch.	Asteraceae	**haswo bifang**	0.03	Leaf	0.04	Common cold, rhinitis	Paste fragrance	Inhalation	0
Chromolaena odorata (L.) R.M. King & H. Rob.	Asteraceae	**jarmon hagra**	0.03	Leaf	0.01	Cut and wound to stop bleeding, external wounds	Paste	External	0
Cinnamomum tamala (Buch.-Ham.) T.Nees & C.H.Eberm.	Lauraceae	**tejpat**	0.01	Leaf	0.01	Tonsilitis	Smoke, decoction	Oral	1
Cinnnamomum verum J. Presl	Lauraceae	**dalchini**	0.03	Bark	0.03	Stomach ache	Decoction	Oral	0
Cissampelos pareira L.	Menispermaceae	**tubuki lota**	0.03	Stem	0.03	Jaundice	juice	Oral	1
Cissus quadrangularis L.	Vitaceae	**haatjora**	0.03	Stem	0.03	Bone fracture	Paste	External	1
Citrus x aurantifolia (Christm.) Swingle	Rutaceae	**tuila nareng**	0.07	Fruit	0.07	Gastritis, intestinal worm, digestive, high blood pressure	Pickle, direct consume	Oral	0.3
Citrus x limon (L.) Osbeck	Rutaceae	**lebu, nareng karji**	0.03	Fruit, leaf	0.03	Body pain, anti-dandruff	Juice, paste	Oral, external	0
Clerodendrum infortunatum L.	Lamiaceae	**mwkhna bilai**	0.09	Young leaf	0.09	Dysentery, diarrhea, Swollen stomach, intestinal worm	Juice	Oral	0.4
Colocasia esculenta (L.) Schott	Araceae	**hagrani thaso gwswm**	0.06	Leaf, latex	0.06	Heel pain, boil	Paste	External	0.7
Commelina benghalensis L.	Commelinaceae	**khana-simla**	0.07	Twig, latex	0.07	Boil, white spoton eyes, Scabies	Paste	External	0.5

Corchorus capsularis L.	Malvaceae	**fathw**	0.07	Leaf	0.04	Cut and wound, intestinal worm, fever, diabetes	Paste, vegetable	Oral, external	0.3
Crateva magna (Lour.) DC.	Capparaceae	**barun bifang**	0.01	Leaf	0.01	Bone fracture	Paste	External	0
Crinum asiaticum L.	Amaryllidaceae	**hagrani sambram**	0.03	Bulb	0.03	Piles	Direct use	External	1
Cryptolepis sinensis (Lour.) Merr.	Apocynaceae	**dudh lewa**	0.03	Leaf, stem	0.03	Galactogogue, Swollen stomach & loose motion in baby	Vegetable	Oral	0
Cuminum cyminum L.	Apiaceae	**jeera**	0.01	fruit	0.01	Dog bite	Spices	Oral	0
Curcuma longa L.	Zingiberaceae	**haldi**	0.04	Rhizome	0.03	Acne, urethritis, skin disease	Paste, juice	Oral, external	0
Cuscuta reflexa Roxb.	Convolvulaceae	**rabon nari**	0.03	Tender shoot	0.03	Jaundice	Vegetable	Oral	1
Cyathula prostrata (L.) Blume	Amaranthaceae	**wngkhamfrwm bilai**	0.01	Leaf	0.01	Bullous impetigo	Paste	External	0
Cynodon dactylon (L.) Pers.	Poaceae	**dubri hagra**	0.1	Twig, dewdrop on leaf	0.1	Headache, Eye sore, Urethritis, cut and wound, dizziness	Paste, juice	Oral, external	0.3
Cyperus rotundus L.	Cyperaceae	**khaya hagra, omakhaya**	0.07	Rhizome, leaf	0.04	Intestinal worm, external wounds	Juice, paste	Oral, external	0.8
Dillenia indica L.	Dilleniaceae	**thaigir**	0.04	Fruit	0.04	Diabetes, dysentery	Decoction, vegetable	Oral	0.5
Diplanzium esculentum (Retz.) Sw.	Athyriaceae	**dingkhia**	0.01	Leaf	0.01	External wounds	Paste	External	0
Dracaena trifasciata (Prain) Mabb.	Asparagaceae	**jibou bilai**	0.01	Leaf	0.01	Burning	Paste	External	0
Drymaria cordata (L.) Willd. ex Schult.	Caryophyllaceae	**sanmwjwngkhri**	0.04	Leaf	0.04	Tinea versicolor, Fever	Paste	Oral, external	0.5
Dryopteris filix- mas (L.) Schott	Polypodiaceae	**bis dingkhia**	0.01	Leaf	0.01	External wounds	Paste	External	0
Eclipta prostrata (L.) L.	Asteraceae	**daogangjwla**	0.15	Twig, leaf	0.12	Cut and wound healing, Cold sore, Itchy scalp, Premature hair whitening,	Paste, juice	External	0.4

						Scabies, anti-hair-fall			
Equisetum ramosissimum var. *huegelii* (Milde) Christenh, & Husby	Equisetaceae	**noljora**	0.03	Stem	0.03	Bone fracture	Paste	External	1
Euphorbia neriifolia L.	Euphorbiaceae	**sijou**	0.17	Leaf, stem, latex	0.07	Ringworm, Bronchitis, cold and cough, paronychia	Paste, juice, other	Oral, external	0.7
Ficus hispida L.f.	Moraceae	**aoaa dumru**	0.01	Young leaf	0.01	Galactogogue	Vegetable	Oral	0
Garcinia pedunculata Roxb. ex Buch.-Ham.	Clusiaceae	**thaikha**	0.07	Fruit	0.07	Stomach ache	Decoction, vegetable	Oral	1
Glycosmis pentaphylla (Retz.) DC.	Rutaceae	**hagrani nareng**	0.04	Leaf	0.04	Tonsilitis	Decoction	Oral	1
Grewia serrulata DC.	Malvaceae	**kongkusita**	0.01	Leaf	0.01	Bone fracture	Paste	External	0
Hibiscus x rosa-sinensis L.	Malvaceae	**gwjajoba**	0.12	Leaf, flower	0.09	Dandruff, Rough and dry hair, menstrual pain, pregnancy, cut and wound	Juice, direct consume	Oral, external	0.4
Homalomena aromatica (Spreng.) Schott	Araceae	**gangjema thaso**	0.07	Rhizome, leaf petiole	0.04	Delivery recovery, fever, blood purification	Vegetable	Oral	0.5
Houttuynia cordata Thunb.	Saururaceae	**maisundri**	0.1	Leaf, root	0.1	Stomach ache, fever, dysentery	Paste, vegetable	Oral	0.7
Hydrocotyle sibthorpioides Lam.	Araliaceae	**fisa mani muni**	0.14	Twig	0.14	Stomach ache, fever, dysentery, Pancreas pain, Diarrhea, Gastritis, Intestinal worm, Leukorrhea, Scabies	Juice, paste, vegetable	Oral	0
Impatiens tripetala Roxb. ex DC.	Balsaminaceae	**domdomokha**	0.03	Leaf	0.03	Boil, external wounds	Paste	External	0

Ipomoea aquatica Forssk.	Convolvulaceae	**mandia megong, khwlwm megong**	0.01	Twig	0.01	Diabetes,	Vegetable	Oral	0
Jatropha curcas L.	Euphorbiaceae	**endadalai**	0.04	Stem	0.04	Tooth decay	Brush the teeth	Oral	1
Justicia adhatoda L.	Acanthaceae	**gufur barsigi**	0.01	Flower	0.01	Cough	Juice	Oral	0
Kalanchoe pinnata (Lam.) Pers.	Crassulaceae	**pategaja**	0.21	Leaf	0.17	Stomach ache, kidney stone, fever, urethritis, indigestion	Juice	Oral	0.7
Lasia spinosa (L.) Thwaites	Araceae	**sibru thaso**	0.1	Yong leaf, rhizome	0.07	Gastritis, jaundice, menstruation pain, small pox,	Vegetable, paste	Oral	0.5
Lawsonia inermis L.	Lythraceae	**jenthoka**	0.09	Leaf	0.07	Athlete's foot, anti-hair-fall, anti-dandruff	Paste	External	0.6
Leucas aspera (Willd.) Link	Lamiaceae	**durungful**	0.1	Leaf, flower	0.1	Bronchitis, Nasal bleeding, Dysmenorrhea, Cold cough, Sinusitis	Juice, vegetable	Oral,nasal	0.3
Lippia alba (Mill.) N.E.Br. ex Britton & P.Wilson	Verbenaceae	**bwrmadari, onthai bajab**	0.04	Twig	0.04	Fever	Vegetable	Oral	1
Malva verticillata L.	Malvaceae	**lafa megong**	0.03	Leaf	0.03	Dry cough	Juice	Oral	1
Melia azidarach L.	Meliaceae	**gwkha dongfang**	0.01	Leaf	0.01	Itchy allergic skin	Decoction	External	0
Mentha arvensis L.	Lamiaceae	**podina**	0.07	Twig	0.04	Heart weak, Over heartbeat, Indigestion, stomach ache, memory booster	Juice, vegetable	Oral	0
Mikania micrantha Kunth	Asteraceae	**lewalata**	0.07	Twig	0.04	Gastritis, Malaria, Typhoid	Juice, vegetable	Oral	0.5
Mimosa pudica L.	Mimosaceae	**lajoti hagra**	0.06	Leaf	0.06	Boil, Jaundice, Scabies, Cut and wound	Paste, juice	Oral, external	0
Mirabilis jalapa L.	Nyctaginaceae	**jondis bifang**	0.01	Leaf, flower	0.01	Jaundice	Paste	External	0

Momordica charantia L.	Cucurbitaceae	**gwkha khangkhilor**	0.03	Fruit, leaf	0.03	Diabetes	Vegetable	Oral	1
Moringa oleifera Lam.	Moringaceae	**sojona**	0.03	Fruit, leaf	0.03	Hemoglobin enhancer, high blood pressure	Vegetable	Oral	0
Morus alba L.	Moraceae	**meskuri**	0.03	Fruit, young tender leaf	0.03	Jaundice, menstrual pain	Vegetable	Oral	0
Musa balbisiana Colla	Musaceae	**aitha thalir**	0.43	Fruit, pseudo-stem sap, flower	0.37	Dysentery, Cut and wound healing, Diarrhea, Dry cough, high fever, allergy, loose motion	Decoction, juice, vegetable	Oral	0.8
Myristica fragrans Houtt.	Myristicaceae	**jabrang**	0.01	Fruit	0.01	Jaundice	Spices, decoction	Oral	0
Nyctanthes arbor-tristis L.	Oleaceae	**sewali**	0.04	Flower, leaf	0.04	Indigestion in baby, intestinal worm	Juice, vegetable	Oral	0
Ocimum basilicum L.	Lamiaceae	**thulungshi**	0.01	Leaf	0.01	cough	Juice	Oral	0
Ocimum gratissimum L.	Lamiaceae	**ram thulungshi**	0.04	Leaf	0.01	Ringworm, cold and cough, high blood pressure	Paste, juice	Oral, external	0
Ocimum tenuiflorum L.	Lamiaceae	**thulungshi**	0.35	Leaf	0.32	Cold and cough, fever, allergy, ringworm, urethritis	Juice, paste	Oral, external	0.8
Oldenlandia corymbosa L.	Rubiaceae	**daosri aitheng**	0.07	Twig, fruit	0.04	Cold sore, Pancreas pain due to over latrine	Paste, juice	Oral, external	0.8
Oroxylum indicum (L.) Kurz	Bignoniaceae	**kharong-khandai**	0.03	Flower, seed	0.01	Miliria rubra, Gastritis	Paste, vegetable	Oral, external	0
Oxalis corniculata L.	Oxalidaceae	**singri mwikhi**	0.04	Leaf	0.04	Dysentery, small pox	Paste	Oral, external	0.5
Paederia foetida L.	Rubiaceae	**khifi bendwng**	0.15	Leaf	0.14	Diarrhea, Stomachache, dizziness, fever, loose motion	Juice, vegetable	Oral	0.6

Phlogacanthus thyrsiformis (Roxb. ex Hardw.) Mabb.	Acanthaceae	**gwja barsigi**	0.14	Flower, leaf	0.1	Itchy allergic skin, Fever, cough, intestinal worm, diarrhea, gastritis	Paste, decoction, vegetable	Oral, external	0.4
Phyllanthus emblica L.	Phyllanthaceae	**amlokhi**	0.1	Fruit	0.09	Diabetes, indigestion	Direct consume	Oral	0.8
Physalis angulata L.	Solanaceae	**gangathopa**	0.03	Leaf, fruit	0.01	Fever, mineral deficiency	Paste, direct consume	Oral, external	0
Piper betle L.	Piperaceae	**fathwi**	0.03	Leaf	0.03	Gastritis, tonsilitis	Direct consume	Oral	0
Piper nigrum L.	Piperaceae	**jaluk**	0.06	Fruit	0.06	Jaundice, tonsilitis	Decoction, spices	Oral	0.7
Piper retrofractum Vahl	Piperaceae	**semfri**	0.04	Fruit, Twig	0.04	Dizziness, cough, bronchitis	Spices	Oral	0
Portulaca oleracea L.	Portulacaceae	**sonapuli**	0.03	Leaf	0.03	Dizziness, fever	Vegetable, roasted paste	Oral	0
Premna herbacea Roxb.	Lamiaceae	**mati galdab, kheradafini**	0.03	Leaf	0.03	Immunity booster	Vegetable	Oral	1
Psidium guajava L.	Myrtaceae	**somfreng**	0.15	Yong leaf	0.15	Dysentery, Diarrhea, Swollen stomach, intestinal worm	Juice	Oral	0.7
Ricinus communis L.	Euphorbiaceae	**endi bifang**	0.1	Root, young leaf	0.09	Warmness of pancreas, Fever in baby, Jaundice, Scabies, dizziness	Paste, Other	External	0.3
Rotheca serrata (L.) Steane & Mabb.	Lamiaceae	**khungkha megong**	0.06	Leaf	0.06	Diabetes	Vegetable	Oral	1
Scoparia dulcis L.	Plantagnaceae	**sini bifang**	0.03	Twig, leaf	0.03	Fever, urethritis	Juice, vegetable	Oral, external	0
Senna occidentalis (L.) Link	Fabaceae	**solleng**	0.03	Leaf	0.03	Jaundice, fever	Vegetable	Oral	0
Senna tora (L.) Roxb	Fabaceae	**adidiga**	0.01	Leaf	0.01	Melena	Vegetable	Oral	0
Sesamum indicum L.	Pedaliaceae	**sibin, gatha**	0.01	Seed	0.01	Galactogogue	Paste	Oral	0
Sida rhombifolia L.	Malvaceae	**bamwn mara**	0.15	Leaf, root	0.14	Boil, Jaundice, Bullous impetigo, Scabies	Paste	External	0.7
Solanum anguivi Lam.	Solanaceae	**khunthai**	0.01	Fruit	0.01	External wounds	Paste	Oral, external	0

Solanum nigrum L.	Solanaceae	**dwisumwi**	0.01	Leaf	0.01	Irregular fever	Paste	External	0
Solanum viarum Dunal	Solanaceae	**ambu fanthao**	0.01	Fruit	0.01	Tooth decay	Paste	Oral	0
Solena amplexicaulis (Lam.) Gandhi	Cucurbitaceae	**lonthi megong**	0.01	Stem, leaf	0.01	Small pox	Vegetable, paste	Oral	0
Spondias pinnata (L.f.) Kurz	Anacardiaceae	**thaisuri**	0.03	Fruit	0.03	Athlete's foot, dog bite	Paste, vegetable	Oral, external	0
Stephania japonica (Thunb.) Miers	Menispermaceae	**fenal khuga**	0.01	Leaf	0.01	Urethritis	Vegetable	Oral	0
Syzygium cumini (L.) Skeels	Myrtaceae	**jam**	0.04	Fruit	0.04	Enhance hemoglobin	Direct consume	Oral	1
Tabernaemontana divaricata (L.) R.Br. ex Roem. & Schult.	Apocynaceae	**kathonda, daodwiful**	0.34	Flower	0.29	Headache, Fever, Sore eyes	Paste, juice	External	0.9
Tamarindus indica L.	Fabaceae	**thengkhleng**	0.04	Fruit	0.04	High blood pressure	Decoction	Oral	1
Terminalia arjuna (Roxb. ex DC.) Wight & Arn.	Combretaceae	**arjun dongfang**	0.03	Bark	0.03	Gastritis	Decoction	Oral	1
Terminalia chebula Retz.	Combretaceae	**silikha**	0.04	Fruit	0.04	Indigestion	Direct consume, paste	Oral	1
Trichosanthes costata Blume	Cucurbitaceae	**khaila fithai**	0.01	Fruit	0.01	Diabetes	Vegetable	Oral	0
Vigna mungo (L.) Hepper	Fabaceae	**sobai dali**	0.01	Seed	0.01	Dog bite	Vegetable	Oral	0
Vitex negundo L.	Lamiaceae	**posotia**	0.07	Leaf	0.07	Muscle pain, Stomachache, Cold and fever, jaundice	Vegetable	Oral	0.3
Xanthosoma sagittifolium (L.) Schott	Araceae	**dudh thaso**	0.01	Petiole	0.01	Galactogogue	Vegetable	Oral	0
Zingiber officinale Roscoe	Zingiberaceae	**haijeng**	0.06	Rhizome	0.06	Jaundice, cold and cough, tonsilitis	Paste, spices, decoction	Oral	0.3
Ziziphus mouritiana Lam.	Rhamnaceae	**bwigri**	0.03	Leaf	0.03	Cold sore, allergy	Paste, decoction	Oral, external	0

Informants Agreement Ratio (IAR)

In the present investigation, the highest IAR value (IAR=1.0) was recorded for a total of thirty plant species. These included *Acmella uliginosa, Alternanthera brasiliana, Ananas comosus, Artocarpus heterophyllus, Bambusa tulda, Bergera koenigii*, *Blumea lanceolaria, Brassica juncea, Cajanus cajan, Calotropis gigantea, Catharanthus roseus*, *Cinnamomum verum, Cissampelos pareira* and others. Conversely, a total of fifty nine species showed the lowestIAR value (IAR=0). These included *Acmella oleracea, Aegle mermelos, Ageratum conyzoides, Allium cepa, Amaranthus tricolor*, *Capsicum frutescens, Cassia fistula* and several more. Additionally, forty three plant species displayed intermediate IAR values ranging between 0 and 1, specifically within the range of $0.2 \leq IAR \leq 0.9$ as presented in Table 2.

Table 3. Family wise distribution of documented medicinal plant species showing the number and percentage of genus and species belonging to each plant family.

Sl. No.	Family	No. of genera	Percentage of genera (%)	No. of species	Percentage of species (%)
1	Acanthaceae	3	2.58	3	2.29
2	Acoraceae	1	0.86	1	0.76
3	Amaranthaceae	3	2.58	3	2.29
4	Amaryllidaceae	2	1.74	3	2.29
5	Anacardiaceae	1	0.86	1	0.76
6	Apiaceae	2	1.74	2	1.52
7	Apocynaceae	4	3.44	4	3.05
8	Araceae	6	5.17	6	4.58
9	Araliaceae	1	0.86	1	0.76
10	Arecaceae	1	0.86	1	0.76
11	Asparagaceae	1	0.86	1	0.76
12	Asphodelaceae	1	0.86	1	0.76
13	Asteraceae	7	6.03	10	7.63
14	Athyriaceae	1	0.86	1	0.76
15	Balsaminaceae	1	0.86	1	0.76
16	Basellaceae	1	0.86	1	0.76
17	Bignoniaceae	1	0.86	1	0.76
18	Brassicaceae	1	0.86	1	0.76
19	Bromeliaceae	1	0.86	1	0.76
20	Capparaceae	1	0.86	1	0.76
21	Caricaceae	1	0.86	1	0.76
22	Caryophyllaceae	1	0.86	1	0.76
23	Clusiaceae	1	0.86	1	0.76
24	Combretaceae	1	0.86	2	1.52
25	Commelinaceae	1	0.86	1	0.76
26	Convolvulaceae	2	1.72	2	1.52
27	Crassulaceae	1	0.86	2	1.52
28	Cucurbitaceae	3	2.58	3	2.29
29	Cyperaceae	1	0.86	1	0.76
30	Dilleniaceae	1	0.86	1	0.76
31	Equisetaceae	1	0.86	1	0.76
32	Euphorbiaceae	3	2.58	3	2.29
33	Fabaceae	5	4.31	6	4.58
34	Lamiaceae	7	6.03	9	6.87
35	Lauraceae	1	0.86	2	1.52
36	Lythraceae	1	0.86	1	0.76
37	Malvaceae	5	4.31	5	3.81
38	Meliaceae	2	1.72	2	1.52
39	Menispermaceae	2	1.72	2	1.52

40	Mimosaceae	1	0.86	1	0.76
41	Moraceae	3	2.58	3	2.29
42	Moringaceae	1	0.86	1	0.76
43	Musaceae	1	0.86	1	0.76
44	Myristicaceae	1	0.86	1	0.76
45	Myrtaceae	2	1.72	2	1.52
46	Nyctaginaceae	1	0.86	1	0.76
47	Oleaceae	1	0.86	1	0.76
48	Oxalidaceae	1	0.86	1	0.76
49	Pedaliaceae	1	0.86	1	0.76
50	Phyllanthaceae	1	0.86	1	0.76
51	Piperaceae	1	0.86	3	2.29
52	Plantaginaceae	2	1.72	2	1.52
53	Poaceae	2	1.72	2	1.52
54	Polypodiaceae	1	0.86	1	0.76
55	Portulacaceae	1	0.86	1	0.76
56	Rhamnaceae	1	0.86	1	0.76
57	Rubiaceae	2	1.72	2	1.52
58	Rutaceae	4	3.44	5	3.81
59	Saururaceae	1	0.86	1	0.76
60	Solanaceae	3	2.58	5	3.81
61	Verbenaceae	1	0.86	1	0.76
62	Vitaceae	1	0.86	1	0.76
63	Zingiberaceae	2	1.72	2	1.52
Total	**63**	**116**	**100**	**131**	**100**

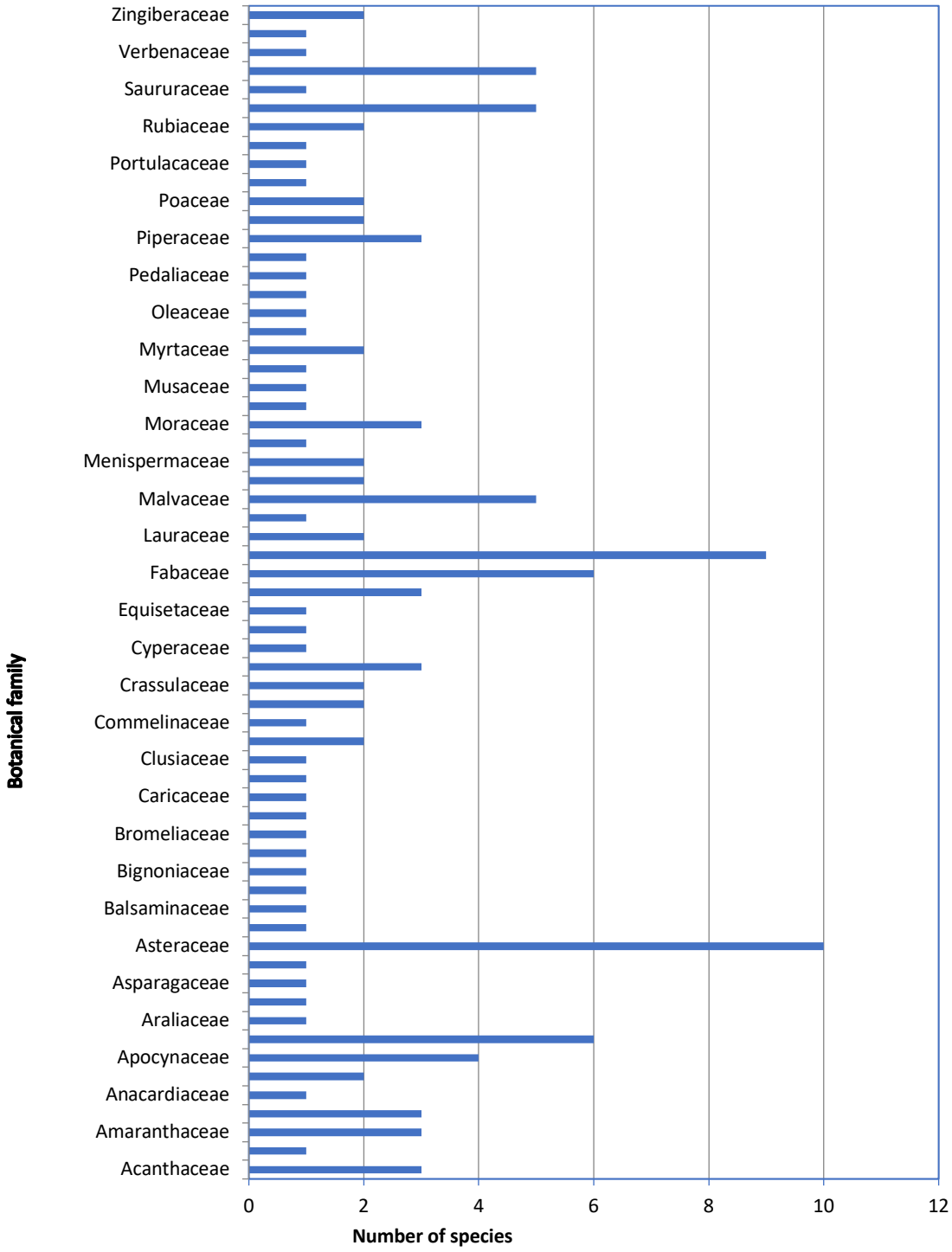

Figure 3. Family wise representation of documented medicinal plants.

Table 4. Diversity of documented plant species showing the number of family, genus and species to each division of plant namely dicot, monocot and pteridophyte.

Division	Family	Genera	Species
Dicot	48	93	107
Monocot	12	20	21
Pteridophyte	3	3	3
Total	63	116	131

Table 5. Ailment categories treated with ethnomedicinal plants in Bajali, Assam and their quantitative indices including use reports (N_{ur}), number of taxa **(**N_t) employed and Informant consensus factor (F_{ic}).

	Ailment category	Use reports (N_{ur})	No. of taxa (N_t)	Informant consensus factor (F_{ic})
1.	Digestive disorder (Diarrhea, gastritis, pancreatic pain due to frequent bowel movements, indigestion, piles, burning sensation in pancreas, swollen stomach, melina)	59	27	0.53
2.	Metabolic disease (Diabetes)	26	14	0.48
3.	Infectious disease (Fever, Cold and fever, bullous impetigo, intestinal worms in a baby/ adult, malaria, tonsillitis, common cold, dysentery, boil, Urethritis, cold sore, cold and cough, loose motion in a baby/ adult, smallpox, athlete's foot, high fever, intermittent fever, burning sensation of urine)	139	67	0.52
4.	Respiratory disorder (Rhinitis, bronchitis, nasal bleeding, sinusitis, dry cough)	16	4	0.8
5.	Ophthalmological disorder (white spot on the eyes, sore eyes, allergic eyes)	21	3	0.9
6.	Inflammatory (Canker sore)	7	3	0.66
7.	Allergic/Hypersensitivity Skin Disorder (Itchy/allergic skin, allergy)	21	6	0.75
8.	Musculoskeletal symptom (Joint pain, muscle pain)	5	2	0.75
9.	Multisystem symptom (Dizziness, body pain, stomach ache, jaundice, heel pain,)	70	33	0.53
10.	Neurological disorder (Migraine, headache)	4	3	0.33
11.	Infectious or non-infectious dermatological disorder (Skin problem, itchy scalp, miliaria rubra, dandruff, acne, skin disease, tinea versicolor, ringworm, paronychia, scabies)	26	18	0.32
12.	Cardiovascular disease (High blood pressure, heart weakness, over heartbeat)	11	6	0.5
13.	Lifestyle and nutrition (Skin care, premature hair whitening, Hair-fall, blood purification, tooth decay, mineral deficiency)	14	8	0.46
14.	External or traumatic injury (to stop bleeding from cut and wounds, bone fracture, dog bite, flame burns, cut and wound healing)	38	21	0.45
15.	Reproductive supportive therapy (Galactogogue, prenatal care, postpartum recovery)	8	6	0.28
16.	Supportive therapy (Haemoglobin enhancer, memory booster, immunity booster, enhance iron level in blood, increase blood in the body)	9	7	0.25
17.	Gynecological/Reproductive system disorder (Menstrual pain, Leucorrhea)	9	6	0.37
18.	Urological disorder (Kidney stone)	9	1	1

Table 6. Number and percentage of reported ethnomedicinal plants based on their habit.

Habit	Number of taxa	Percentage (%)
Herbs	62	47.32
Shrubs	26	19.84
Trees	28	21.37
Climbers	15	11.45
Total	131	100

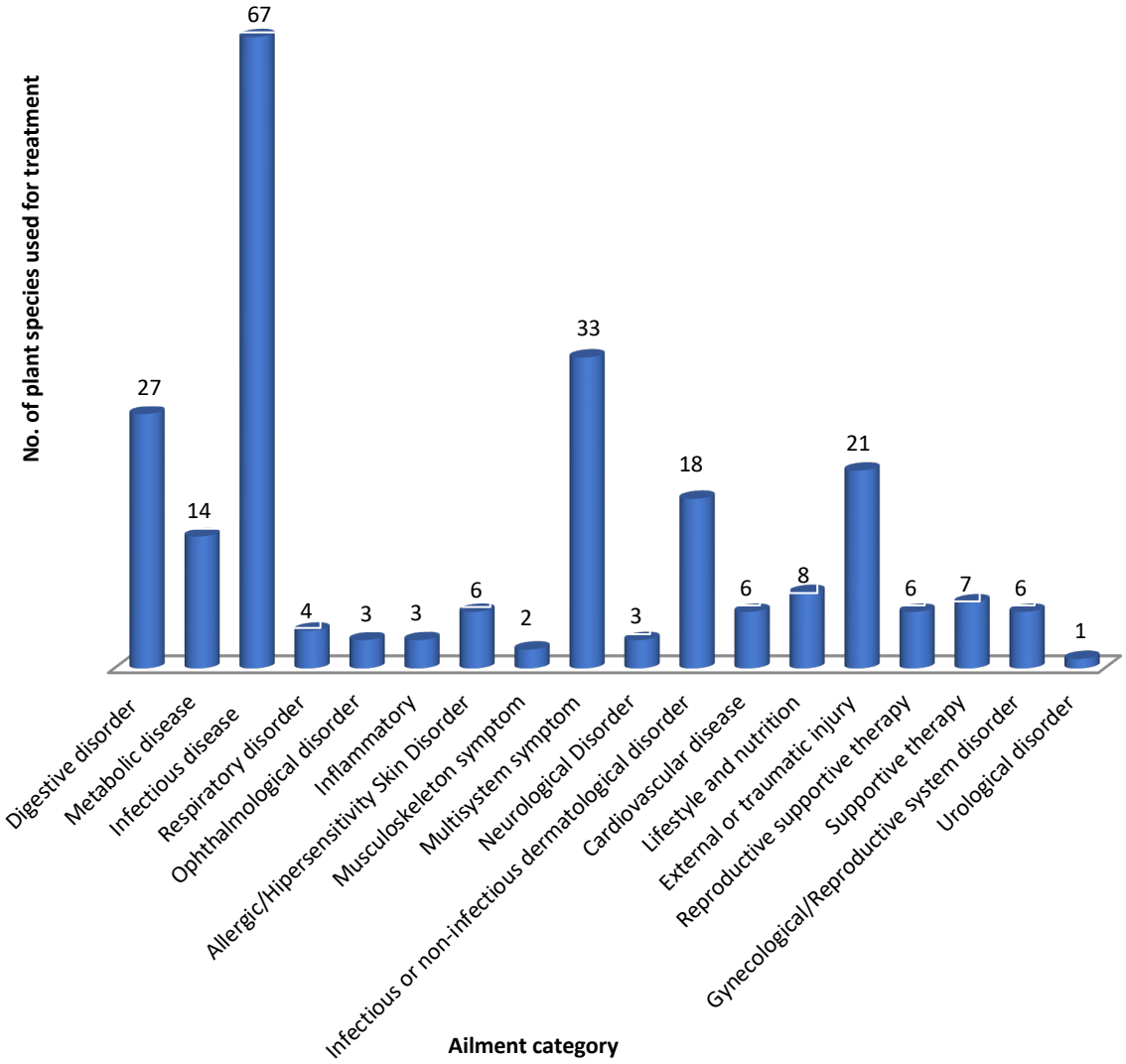

Figure 4. Number of medicinal plant species used for treating different ailment categories in the present study.

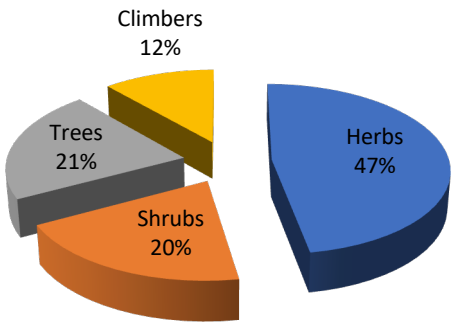

Figure 5. Pie chart presenting habit-wise percentage distribution of the documented medicinal plants.

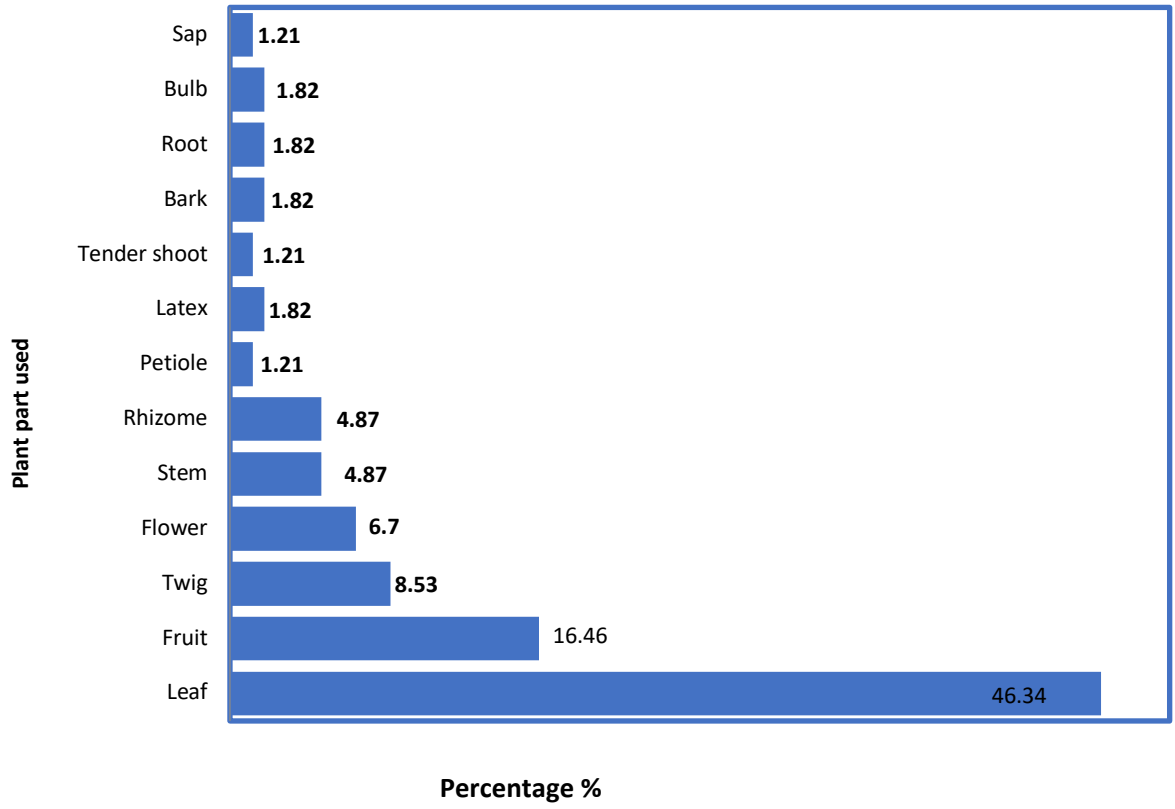

Figure 6. Horizontal bar chart depicting the percentage of different plant parts used by the local healers of Bajali, Assam in remedy preparation.

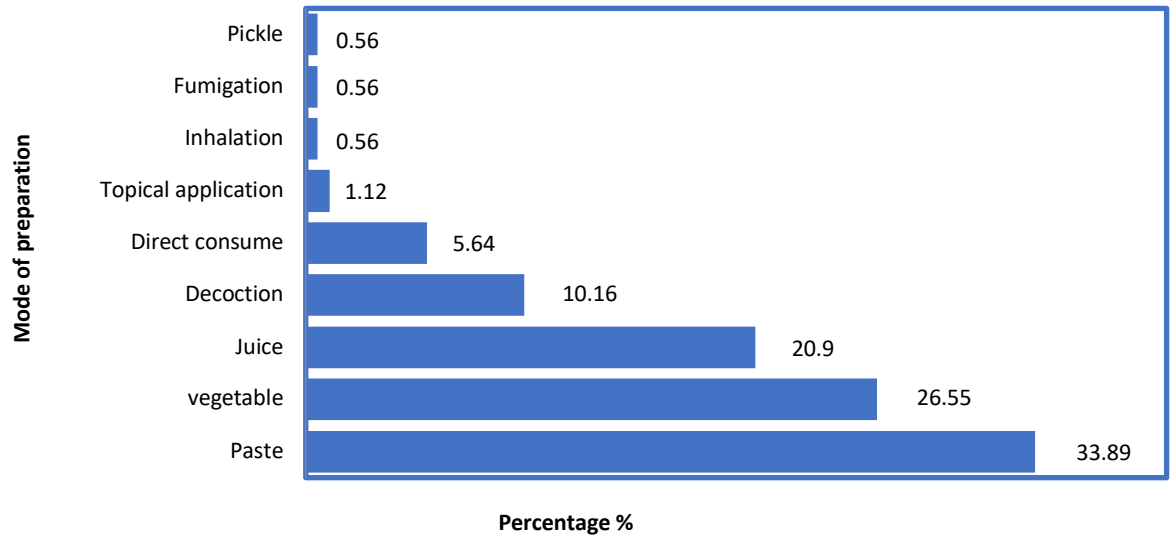

Figure 7.Percentage distribution of the preparation methods employed in traditional remedy formulation in Bajali, Assam.

Discussion

In the present study 64.06 % of the informants are female, indicating their strong participation in traditional healing practices. Predominantly the females are more actively contributed to the collection of data during the survey in Bajali district and commonly prefer to share and transmit their traditional knowledge to other people. The larger proportion of female informants can be explained by the fact that men often migrate from the village in search of work for their livelihood. Comparable findings have been noted in earlier ethnobotanical studies of Abbas *et al*. 2016, Chaachouay *et al*. 2019, Guimbo *et al*. 2011, Tuler and Silva 2014. Among all informants the highest representation was from the 50-60 year age group, which

reveals that the older adults are particularly motivated to acquire and preserve ancestral knowledge related to herbal therapies. Likewise, reports from research conducted by Jishtu *et al*. 2025. In the present survey records informants above 70 years were few, possibly due to shorter life expectancy that limits the availability of individuals in these age groups. The equal participation of literate and illiterate informants highlights the widespread cultural importance of traditional medicines among the Bodo tribe and reflects the cultural continuity of ethnomedicinal knowledge regardless of educational background. The majority of the documented plant species were from the different families of angiosperm with only three species represented by pteridophytes. The higher use of angiosperms likely reflects their high species diversity, easy accessibility and abundant around their settlements and agricultural landscapes, making them more familiar to local healers compared to pteridophytes which are less common and confined to specialized habitats (Baskaran X. *et al*. 2018, Subba Y. *et al*. 2024, Uprety Y. *et al*. 2012). Asteraceae family was reported to be the most commonly used, which is consistent with earlier reports of Buragohain *et al*. 2024, Mir *et al*. 2021, Nafeesa *et al*. 2021, Poudel *et al*. 2021, Singh *et al.* 2017 and followed by Lamiaceae, Fabaceae, Araceae and Malvaceae. Asteraceae family is the most represented owing to their broad ecological range, ability to establish rapidly and withstand dry, arid habitats (Haq *et al*. 2021). Previous studies also reported that Asteraceae comprises the highest number of medicinal plants making it one of the leading families with diverse traditional uses in herbal medicine (Bhattarai *et al*. 2010, Mesfin *et al*. 2000, Singh *et al*. 2000, Teklehaymanot & Giday 2007). The Lamiaceae family has been recognized as prevalent in previous ethnobotanical studies (Bano *et al*. 2014, Jishtu *et al*. 2022, Jishtu*et al*. 2025, Ralte *et al*. 2024, Umair *et al*. 2017). The Lamiaceae and Fabaceae families have also been reported as dominant in quantitative ethnobotanical studies conducted in nearby regions, such as Manipur (Singh *et al.* 2025). Herbs were found to be most dominant life-form used in herbal medication, likely because they require less time to grow and mature than trees and shrubs and are more easily accessible to the local population. In the same way various ethnobotanical investigations from nearby regions (Bora *et al*. 2016, Jamir & Yepthomi 2025, Ralte *et al*. 2024) as well as from other parts of the world (Batool *et al*. 2023, Ballabh *et al*. 2008, Faruque *et al.* 2018, Jishtu *et al*. 2021, Jishtu *et al.* 2025, Karakose 2022, Rehman *et al*. 2022, Tuler and da Silva 2014), all of which highlight the dominant role of herbs in traditional medicinal practices. In order to prepare herbal remedies for the various ailments different plant parts were used such as bark, rhizome, flower, seed, fruit, bulb, root, leaf, stem, latex, twig, and others as shown in figure 6. In the present findings leaves were the most preferred plant part for treating health issues. This pattern is consistent with previous ethnobotanical reports from Assam, Manipur, Tripura, Nagaland and Mizoram(Begum *et al.* 2024 Choudhury *et al*. 2015,Jamir & Yepthomi 2025,Jyrwa*et al*. 2024, Kalita *et al*. 2024, Ralte and Singh 2024, Ralte *et al*. 2024, Singh *et al*. 2025) as well as studies from other regions (Balamurugan *et al*. 2018, Batool *et al*. 2023, Bhatia *et al*. 2014,Emre *et al*. 2021,Haq *et al*. 2021, Kala 2006, Rao *et al*. 2015, Rehman *et al*. 2022, Umair *et al*. 2017). As their harvesting is ecologically sustainable and collection of the leaves does not typically harm the plant, thus allowing continued growth and supporting biodiversity conservation (Ralte *et. al.* 2024). The predominance of leaves in traditional medicine can be attributed to their high phytochemical diversity, which includes flavonoids, tannins, saponins, glycosides, terpenoids, alkaloids and phenolic compounds (Dubale *et al*. 2023, Zulkurnain *et al*. 2023).Oral administration was reported as the most preferred mode of using herbal medicines among the local people that consistent with earlier findings (Kalita *et al*. 2024, Anusha *et al*. 2025, Batool et al. 2023). This preference may be attributed to the perception that ingestion plant preparations ensure better therapeutic outcomes or faster relief by allowing the medicinal compounds to act systemically compared to external applications. The predominant mode of preparation of medicinal remedies was paste which was widely used by the local healers. Other common forms included vegetables, juices and decoctions. Pastes can be prepared quickly using readily available tools e.g., grinding stones and rely on fresh plant parts which are actually considered more potent (Giday *et al*. 2003, Uniyal *et al*. 2006,). The use of vegetables and juices is consistent with the community's dietary habits making these preparations familiar and acceptable. Decoctions remain popular because boiling facilitates the extraction of bioactive compounds enhancing therapeutic efficacy (Heinrich *et al*. 1998, Sasidharan *et al*. 2011)

In the quantitative analysis *Musa balbisiana* exhibited the highest values for UV and RFC, followed by *Azadirachta indica*, *Ocimum tenuiflorum*, *Tabernaemontana divaricata and Centella asiatica*. The high use of these species could be because local healers consider it highly effective for treating certain ailments or because the illness they addresses are commonly encountered in the region. The high UV and RFC values of a plant species reflects its long-term validation within traditional medicine. This cultural consensus can guide researchers in isolating bioactive compounds for modern drug development and also inform sustainable harvesting and conservation strategies to ensure long term availability of these species for scientific research. Previous studies also reported that *Musa balbisiana* is highly valued in ethnic medicine for its therapeutic and nutritional benefits (Saikia *et al*. 2025). According to previous study (Siddiq *et al*. 2020) traditionally, various parts of the plant *Musa balbisiana* such as the flowers, pseudo-stem, peels, roots and sap have been extensively used in traditional medicine for treating different ailments, including gastrointestinal problems, ulcers, wound infections, menstrual disorders, and metabolic conditions. According to the report of Saikia *et al*. 2025 *M. balbisiana* is rich in bioactive compounds, including

total flavonoids, carotenoids, and phenols. In addition, *M. balbisiana* is a rich source of essential minerals, including magnesium, potassium, calcium (Puraikalan *et al*. 2018). The quantitative analysis of F_{ic} revealed that urological disorder had the highest consensus value of 1% which indicates strong agreement among local informants regarding the use of plant species for the treatment of this ailment category. It is noteworthy that *Kalanchoe pinnata* was the only species cited for urological disorder suggesting a high level of trust in its therapeutic effectiveness. This strong consensus may reflect both the perceived efficacy of *K. pinnata* and the consistent traditional use of this species for managing urological health issue in the study area. Such a strong cultural consensus reduces research uncertainty and helps scientists to prioritize the most promising species thereby improving the efficiency of drug discovery for specific diseases.

Conclusion

The finding of this study indicates that the Bodo tribe of Bajali district relies on a diverse range of locally available plants and possesses extensive knowledge of their uses in traditional healthcare practices. Despite the growing influence of modern medical facilities, the indigenous knowledge on herbal therapy continues to be practice for treating common ailments due to its cost-effectiveness, minimum side effects and easy accessibility. Sustained efforts are essential to document and protect this knowledge ensuring its meaningful incorporation into modern healthcare systems. Such initiative not only encourages translational research but also strengthen local communities and supports sustainable utilization and conservation of plant species. This study will enable people around the world to gain awareness of the ethnobotanical wealth in their own regions. The plant species with ethnomedicinal properties can be chemically evaluated to identify bioactive compounds which could serve as promising leads for future drug and development of effective plant-based remedies. Empowering local people through conservation training can increase awareness and enable them to establish effective strategies for safeguarding ethnomedicinal plants and overall floral diversity.

Declarations

List of abbreviations: UV (Use Value), RFC (Relative Frequency of Citation),F_{ic} (Informant Consensus Factor), IAR (Informant Agreement Ratio)

Ethics statement: Prior to conducting the survey, verbal consent and permission were obtained from all participants and the village headman. All individuals appearing in the photographs also granted permission verbally for their images to be published.

Funding: No funding was received for this study.

Consent to participate: All participants shown in images agrees to have their image published.

Conflicts of interest: The authors declare that there are no conflicts of interest regarding the publication of this article.

Availability of data and materials: All figures and tables have been provided with proper captions, and the original datasets are available upon request.

Authors' contributions:

Field survey and the first draft of manuscript were prepared by Maina Basumatary, Mijing Boro. Namita Nath contributed in research design and plant identification and supervised the whole work. Barnali Das contributed in statistical data analysis. Madhusmita Nath contributed in, manuscript editing of this work.

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