Ethnomedicinal plants used for gastro-intestinal disorders (GIDs) by the tribal communities of Arunachal Pradesh (Eastern Himalayas), India: A comprehensive review

Yashpal Bhardwaj, Birina Bhuyan, Pulicherla Yugandhar, Shiddamallayya Nagayya, Cheemanapalli Srinivasulu, Taboh Mumtam and Taba Yehi

Correspondence

Yashpal Bhardwaj[1,2]*, Birina Bhuyan[1], Pulicherla Yugandhar[1], Shiddamallayya Nagayya[3], Cheemanapalli Srinivasulu[1], Taboh Mumtam[1] and Taba Yehi[1]

[1]Survey of Medicinal Plant Unit, Regional Ayurveda Research Institute, Itanagar, Arunachal Pradesh, India.
[2]Central Ayurveda Research Institute, Bhubaneswar, Odisha, India.
[3]Central Council for Research in Ayurvedic Sciences, New Delhi, India.

*Corresponding Author: yashpalbot.bhu@gmail.com

Ethnobotany Research and Applications 30:5 (2025)- http://dx.doi.org/10.32859/era.30.5.1-39
Manuscript received: 31/01/2024 – Revised manuscript received: 05/01/2025 - Published: 06/01/2025

Review

Abstract

Background: Medicinal plants used for treating Gastro-intestinal disorders (GIDs) by tribal communities of Arunachal Pradesh have a long history. This study aimed to compile the ethnomedicinal plants for GIDs with special reference to pharmacological activities and preclinical test of plants with high use value. This review provides baseline data for analysis of phytochemicals, bioactive compounds, and further research in the field of herbal drug discoveries.

Methods: For collection of data, specific keywords such as “Arunachal Pradesh”, “ethnomedicine”, “ethnobotany”, “Eastern Himalayas” etc. were searched as single-word or in different combination in online databases (Science Direct, PubMed, Web of Science, iMedPub, Google Scholar, Scopus, etc.).

Results: 256 plant species of 83 families were reported for GIDs. Dominant habit was herb (41%), Trees (27%), Shrubs (17%), Climbers and Undershrubs (7% each). Among the 256 species, plants with high use reports (UR) in treatment of various GIDs are *Paederia foetida* (20), *Centella asiatica* (15), *Houttuynia cordata* (14)*, Psidium guajava* (10), *Begonia roxburghii* (8), *Coptis teeta* (8), *Dillenia indica* (7), *Litsea cubeba* (6), *Solanum nigrum* (6) and *Allium hookeri* (5). The highest value of Informant consensus factor was reported for Stomach Inflammation/Gasatritis (0.24) while least for stomach ulcer/peptic ulcer. Leaves (27.49%) are the common plant part under use followed by fruit 19.64 %, root 9.67%, shoot 7.85% stem bark 6.65%, rhizome 6.34%, whole plant 6.04%, stem 4.83%, seed 3.63%, and other parts.

Conclusions: The overall review study suggests tribes of this region are using diverse medicinal plants/parts as herbal medicine for different GIDs.

Key words: Ethnobotany; Tribal community; Gastrointestinal; Eastern Himalayas; Use value

Background

Traditional and complementary medicine (T&CM) has played significant role in achieving universal health coverage by providing more affordable, accessible, and acceptable care at grass root level. Digestive tract ailments, collectively known as gastrointestinal disorders (GIDs) are mostly susceptible to communities where poor sanitation practices are more common which has been resulted in large numbers of morbidity and mortality in humans worldwide (Maman 2017). It includes diseases that are acute or last over a short period such an indigestion, while some are chronic such as constipation, cancer etc. As per the WHO report on GIDs, particularly diarrhoea, is the fifth leading cause of global mortality. GIDs can cause various symptoms like stomach-ache, diarrhoea, dysentery, constipation, acidity, bacillary dysentery, helminthiasis etc. due to several reasons like infection, imbalanced diet, adulteration of food, contaminated drinking water (Dogan & Ugulu 2013). In developing countries many people prefer plant based herbal medicine to treat the common disorders such as nausea, irritable bowel disease, indigestion, vomiting, diarrhoea etc. In recent study Bushi *et al.* (2021) reported the GIDs as the most frequently treated disorders among the tribal communities with the total of 163 ethnomedicinal plants species.

Arunachal Pradesh is a part of the far Eastern most Himalayas and largest state in the North-Eastern region (NER) of India by geographical area and covers c.a. 32 % (83,743 km^2) of the total surface area of NER with high biodiversity and endemism of flora and fauna (De & Singh 2017). The state falls within the IUCN recognized Himalayan and Indo-Burma Biodiversity Hotspot (Chatterjee *et al.* 2006, Mayer *et al.* 2000, Mittermeier *et al.* 2005). The land surface in entire state is mountainous with complex hill system with varying elevation that ranges from 100-7000 m and traversed by number of rivers and rivulets that results in lot of inaccessible areas in the state. From plant diversity point of view the state is being an important ecoregion among the 200 globally recognized region and harbours around 5,000 species of flowering plants out of which over 500-600 plant species are reported to be used by the ethnic communities of this region for various purposes including food, fodder, medicine etc. (Bhusi *et al.* 2021, Haridasan *et al.* 2003, Jambey *et al.* 2017). The state is home to 26 major tribes and 110 subtribes, each contributing to its rich traditional knowledge system and cultural diversity (Doley *et al.* 2009). People of the state mainly depend on natural resources for their livelihood and survival. Each of the ethnic communities has their own distinct socio-cultural identity and customs. Ethnic people of the state are well familiar with the medicinal and nutritional properties of plant resources (Tiwari *et al.* 2009). Forest is rich in endemic plants and animal species and has economical, ecological, and cultural significance to the region. Due to the lack of modern healthcare facilities in the remote rural pockets, the indigenous tribal communities of the state continue to rely on plant-based medicines for the treatment of various diseases within their communities. Each of the tribal communities of the state has its unique traditional knowledge on plants related to their faith and belief and ethnomedicinal practices that have orally passed down from generation to generation. This traditional knowledge of ethnomedicines is at risk of extinction in the near future due to inadequate documentation, lack of proper conservation (Das & Tag 2006), and the increasing rate of deforestation (FSI 2021). Traditional healing by using plant resources in developing countries is recognised as important method of treatment on which large number of human populations worldwide relies. Around 40,000 to 70,000 medicinal plant species are utilised across the world as traditional medicines (Verpoorte *et al.* 2006). Currently, the world trade in medicinal plants and derived products is evaluated at US$ 100 billion with an annual growth rate of 15%.

Documentation of ethno-medicinal plant has great significance in discovery of new drug and drug development. In the last few years, several researchers tried to document the traditional ethnobotanical practices and folklores of the Arunachal Pradesh tribes such as Apatani, Galo, Khamti, Monpa, Nyshi, Adi, Tagin, Nocte, Wancho, Idu-Mishmi (Ayam 2017, Bharali *et al.* 2016, Das & Tag 2006, Das *et al.* 2019, Gibji *et al.* 2012, Goswami *et al.* 2009, Jeri *et al.* 2011, Kagyung *et al.* 2010, Kala 2005, Kamum *et al.* 2018, Kar & Borthakur 2008, Khongsai *et al.* 2011, Tag *et al.* 2008, Tangjang *et al.* 2011, Taram *et al.* 2020, Tripathi *et al.* 2018). However, the information of medicinal plant in use by ethnic communities of this region remains scattered. This review mainly aims to document and emphasize the traditional knowledge of medicinal plants used by ethnic communities of Arunachal Pradesh for treatment of GIDs by thorough study of various published literatures. The review provides the important information of the medicinal plants, their habit, local names, uses by different tribes, types of ailments treated, mode of administration of drugs and IUCN status of the plant species. This review also focuses on the documenting the vide variety of ethnomedicinal plants used for GIDs and comprehensive quantitative ethnobotanical analysis of data to elucidate the plants with high use value, cultural importance, fidelity level. Our effort of this review is not only to document and disseminate the knowledge of the medicinal plants used by the ethnic communities of the states but also to think towards the conservation of the rare medicinally important plants which are widely used in traditional medicine by communities before its extinction from the natural environment due to various reasons.

Materials and Methods

Different keywords such as, “ethnomedicine”, “ethnobotany”, “Eastern Himalayas”, “tribes of Arunachal Pradesh”, “traditional knowledge”, “gastrointestinal diseases”, “North East India”, “Arunachal Pradesh” were searched individually and in different combination on online databases like Science Direct, PubMed, Web of Science, iMedPub, Google Scholar, Scopus, Research Gate etc. and relevant research articles, review papers, book chapter, report published in past 20 years i.e. between 2002 and 2022 were downloaded and thoroughly studied. The list of plant species used for the treatment GI diseases were prepared along with information like family name, habit, parts used, vernacular names, ethnic communities, mode of administration (where available), ailments treatment. Botanical name of the plants mentioned in the studies literature were validated by using authentic online available website https://powo.science.kew.org (Plants of the World Online, Kew Science), and accepted name with correct author citations were included. The conservation status of each medicinal plant species was finds out by searching each of the plant species in IUCN website (https://www.iucnredlist.org/). Pharmacological and preclinical evidence of plant species with high use reports are also included.

Statistical Analysis

Use Value (UV): In calculating Use Value (*UV*), the concept of "pseudo-informants" is used (Phumthum *et al.* 2018, Tardío & Pardode-Santayana 2008). Here, the "pseudo-informants" indicate the researchers who conduct ethnomedicinal studies, rather than the original informants who provided information about the plants during the fieldwork.

The Use value (*UV*) was calculated by following formula:

$$UV = \sum U/pN$$

Where, U represents the number of uses mentioned by all informants for a given species, and pN is the total number of pesudoinformant. The high Use value (UV) signifying the multi utility values and high economic importance of the species to the given ethnic community.

Informant Concensus Factor (ICF): ICF denotes an agreement between specific plants and informants concerning the treatment of ailments. ICF was calculated following Heinrich *et al.* (1998) formula:

$$\text{ICF} = \frac{\text{Nur} - \text{Ns}}{\text{Nur} - 1}$$

Where Nur is total used reports from informants for a particular category of disease whereasNs is the total number of species used for that particular category by the informant (Trotter & Logan 1996). This method is use to find potentiality of medicinal plant reported by theinformants.

Results ndDiscussion

Overview of the study

The present literature survey is mainly focused on Indigenous Traditional Knowledge (ITK) about the medicinal importance of plants among ethnic communities of Arunachal Pradesh, on treatment of GIDs. The local people use wide varieties of medicinal plants as herbal medicine for treating different diseases because of more benefit and lesser side effects. The study describes the experience of native people on folk medicine and information on medicinal plants that are used in ethno-botany. From the literature survey of past 20 years, a total of 256 plant species belonging to 83 families have been reported for the treatment of GIDs (Table 1). As per the documented ethno-botanically important medicinal plant for GIDs, 18.5 % plant species are used for treatment of diarrhoea, 15.51 % for stomach disorders, 15.06 % for dysentery, 13.93 % for stomach-ache, 10.56 % indigestion, 8.31 % for gastritis, 5.84 % for constipation, 4.94 % bacillary dysentery, 4.27 % for helminthiasis, 2.7 % for peptic ulcer, and 0.22% for food poisoning (Fig. 1). The top 10 plants with high use value among 256 species used in treatment of various GIDs includes *Paederia foetida* (0.36)*, Centella asiatica* (0.27)*, Houttuynia cordata* (0.25)*, Psidium guajava* (0.18), *Begonia roxburghii* (0.15)*, Coptis teeta* (0.15)*, Dillenia indica* (0.13)*, Litsea cubeba* (0.11)*, Solanum nigrum* (0.11) and *Allium hookeri* (0.09) (Table 2). The ICF value ranges from 0 (minimum) to 0.24 (maximum). According the evaluated values thirty-nine (39) medicinal plants with the Highest ICF category got the value of 0.24 which was for Stomach inflammation/Gastritis. It showed that Stomach inflammation/Gastritis is the most prevalent ailment in the study area, and most of the local informants have ethnopharmacological understanding for its cure. The second highest value observed is for Diarrhoea (0.23) with 80 taxa. The least agreement between the informants was observed for plants used for Food poisoning and Stomach ulcer/Peptic ulcer diseases both having the zero ICF. These informant consensus values suggest plausible insights on individual species that address certain health issues and therapeutic plants that address a variety of

health issues. Higher informant consensus medicinal plants should be given careful consideration for future ethnopharmacological research (Table 3).

Each tribe has a different vernacular name for the same plant which indicates the linguistic diversity within the state. The usage of plant material for treating different ailments varies among tribes, sometimes the same plant can be used for treating multiple diseases. The family with high use reports have been identified are Asteraceae (18 species, 27 use reports), Solanaceae (12 species with 27 use reports), Zingiberaceae (11 species, 20 use reports), Rutaceae (09 species, 19 use reports), (08 species, 14 use reports) (Fig. 2). Out of a total of 256 plant species 80 are categorized in IUCN red list (Fig. 3). These plants were listed in the category of Critically Endangered (01 species; *Nardostachys jatamansi* (D. Don) DC.), Endangered (04 species; *Illicium griffithii* Hook. f. & Thomson; *Coptis teeta* Wall.; *Picrorhiza kurroa* Royle ex Benth.; *Aconitum heterophyllum* Wall. ex-Royle), Vulnerable (02 species; *Piper pedicellatum* C.DC., *Paris polyphylla* Sm.), Near Threatened (1 sp; *Aegle marmelos* (L.)), Least Concern (63 sps.; See Table 1), Data deficient (9 sps. See Table 1). The listed RET plants are used as medicinal purposes by ethnic people for the treatment of various GI diseases that are facing the threat of becoming extinct in the wild. *Lysionotus gamosepalous* W.T.Wang and *Panax arunachalensis* Taram. A. P. Das & Tag are two species whose native range of distribution is Arunachal Pradesh which is reported here to be used in the treatment of GIDs.

Figure 1. Percentage of ethno-botanical plants used for various Gastro-intestinal disorders (GIDs).

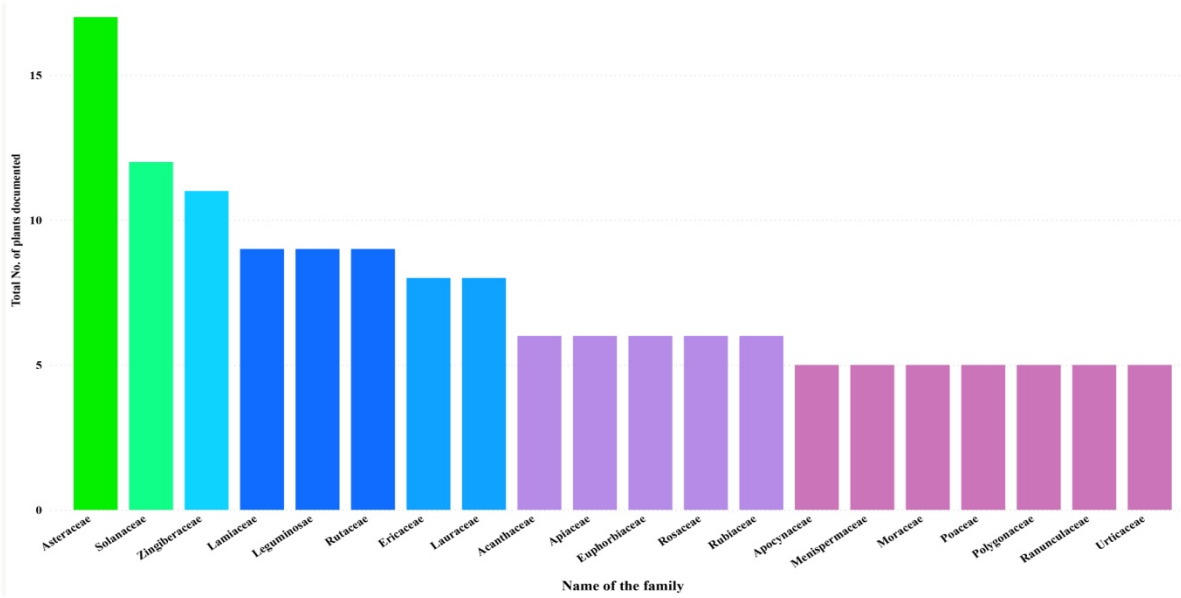

Figure 2. Each family with the reported number of plant species.

Table 1. List of ethnomedicinal plants used in treatment of GI diseases in Arunachal Pradesh.

[*Abbreviations used*; Habit: Herb = **H;** Shrub = **Sh;** Under Shrub = **USh;** Tree = **T;** Climber = **C;** Epiphyte = **Ep]**

[Ethnic communities: Apatani = **Ap**; Adi = **Ad**; Galo= **Ga**, Khampti= **Kh**; Monpa= **Mo;** Nyishi = **Ny**; Tagin = **Tg;** Data Unavailable= **DU**]

[IUCN status: Least concern =**LC**; Not evaluated =**NE**; Data Deficient =**DD**; Vulnerable =**VU**; Endangered =**EN**; Critically Endangered =**CR**]

Botanical Name (Updated name as per POWO) [Family]	**Habit**	**Name of plant in local language (Ethnic community)**	**Parts used**	**Therapeutic uses**	**Mode of preparation**	**Used by ethnic communities**	**IUCN Status**	**References**
Abroma augusta (L.) L.f. [Malvaceae]	Sh		Whole plant	Stomachache, Diarrhoea, dysentery	DU	DU	NE	Wangpan & Tangjang (2020)
Aconitum ferox Wall. ex Ser. [Ranunculaceae]	H	Omle, Shaga-Manshing, Niyong	Whole plant, root	Dysentery, Diarrhoea, Gastritis	dried roots	DU	NE	Murtem & Chaudhry (2016); Bhuyan & Pangu (2018); Tiwari *et al.* (2009)
Aconitum heterophyllum Wall. ex Royle [Ranunculaceae]	H	Chando (Mo)	Roots	Gastritis, dysentery	Dried	Mo	EN	Tiwari *et al.* (2009)
Acorus calamus L. [Araceae]	H	Ging Paychay, Boch	Rhizome	Bacillary Dysentery, Diarrhoea	Paste	Dirang (Mo), Padam	LC	Murtem & Chaudhry (2016); Khongsai *et al.* (2011)
Adhatoda vasica Nees. [Acanthaceae]	Sh	Bogabahog	Leaves	Gastritis	Raw	Kh	LC	Das & Tag (2006)
Aegle marmelos (L.) Correa [Rutaceae]	T	Vacha	Fruit	Dysentery, Diarrhoea	Juice	DU	NT	Tangjang *et al.* (2011)
Agapetes discolor C.B. Clarke. [Ericaceae]	C	DU	Fruit	Helminthiasis	Raw	Aka	NE	Panda *et al.* (2010)
Agapetes refracta Airy Shaw [Ericaceae]	C	Larimi (Aka)	Fruit	Helminthiasis	Raw	Aka	NE	Panda *et al.* (2010)
Ageratum conizoides L. [Asteraceae]	H	Yabum	Whole plant	Bacillary Dysentery, Diarrhoea	NA	Ad	NE	Srivastava (2009); Shankar *et al.* (2015).
Allium hookeri Thwaites [Liliaceae]	H	Alo/Pulo (Mishmi), Dilap (Ad), Lam (Mo)	Leaves, flower, Root, Stem	Stomach disorders, ulcer, dysentery	Juice	Mishmi, Ad, Mo	NE	Eko *et al.* (2020); Singh *et al.* (2021); Bhuyan & Pangu (2018); Payum *et al.* (2014)
Alpinia galanga (L.) Willd. [Zingiberaceae]	USh	King pang	Rhizome, shoot	Gastritis	Rhizome powdered	Kh	NE	Tushar *et al.* (2010)
Alstonia scholaris (L.) R.Br [Apocynaceae]	T	Singer, Pyamanang (Digaru Mishmi)	Leaf and Stem bark	Stomach disorders, Diarrhoea, Stomachache	Decoction	Digaru Mishmi	LC	Kala (2005); Moyong *et al.* (2021); Singh *et al.* (2021)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Amaranthus spinosus L. [Amaranthaceae]	H	Katailichaulai (Mishing)	Whole plant, Root	Stomach disorders and constipation, Stomachache	Root boiled extract	Mishing	NE	Wangpan & Tangjang (2020); Shankar *et al.* (2012)
Amaranthus viridis L. [Amaranthaceae]	H	Khana Ja (Mishmi)	Leaves, shoots.	Dysentery	Cooked as vegetables	Mishmi	NE	Eko *et al.* (2020)
Amomum subulatum Roxb. [Zingiberaceae]	USh	Sthula ela	Fruit	Stomach disorders	Raw	DU	NE	Tangjang *et al.* (2011); Murtem & Chaudhry (2016); Shankar & Rawat (2008)
Andrographis paniculata (Burm.f.) Nees [Acanthaceae]	H	Chirayata teeta (Ny)	Whole plant	Stomach disorders	Plant juice	Ny	NE	Shankar & Rawat (2008), Khongsai *et al.* (2011)
Angiopteris evecta (G.Forst.) Hoffm. [Angiopteridaceae]	Sh	Bokka (Aka), Tach	Rhizome	Dysentery, Diarrhoea	Powdered	Aka	NE	Murtem & Chaudhry (2016)
Artemisia indica Willd. [Asteraceae]	H	Khalap (Mishmi), Laglin (Ad)	Leaves and shoots.	Diarrhoea, Dysntery, Stomach disorder	Leaf paste	Mishmi, Ad	NE	Taram *et al.* (2019); Eko *et al.* (2020)
Artemisia nilagirica (C.B.Clarke) Pamp. [Asteraceae]	USh	DU	Leaves	Stomachache	Cooked as vegetables	DU	NE	Tangjang *et al.* (2011)
Artemisia vulgaris L. [Asteraceae]	Ush	Atung karpo (Mo)	Root	Stomachache	Paste	Mo	NE	Bhuyan & Pangu (2018)
Artocarpus heterophyllus Lam. [Moraceae]	T	Bella (Ga)	Leaves, Stems	Dysentery, Diarrhoea	Decoction	Ga	NE	Bharali *et al.* (2016)
Azadrachta indica A. Juss. [Meliaceae]	T	Dokam Belam	Leaves	Stomach disorders, Diarrhoea	Raw	DU	LC	Tangjang *et al.* (2011); Murtem and Chaudhry (2016); Namsa *et al.* (2011)
Bambusa stricta Roxb. [Poaceae]	H	Eh here (Ny)	Shoot	Indigestion, constipation	Cooked as vegetables	Ny	NE	Jeri *et al.* (2011)
Bauhinia acuminata L. [Leguminosae]	T	Agok (Ad Minyong)	Leaves	Stomachache	Cooked as vegetables	Ad Minyong	LC	Baruah *et al.* (2013)
Bauhinia purpurea L. [Leguminosae]	T	Gyesen yeali (Ap)	leaves, Stem bark	Dysentery, Diarrhoea, Helminthiasis	Raw	Ap	NE	Doley *et al.* (2014); Shankar & Rawat (2008)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Bauhinia vahlii Wight & Arn [Leguminosae]	T	Lingchirijong (Miji)	Seed	Dysentery, Diarrhoea	Roasted seeds	Miji	NE	Kar & Borthakur (2008)
Begonia aborensis Dunn [Begoniaceae]	H	Rebe (Tg)	Stem	Stomachache	Raw	Tg	NE	Rinyo *et. al* (2018)
Begonia palmata D. Don. [Begoniaceae]	H	Bikku yulu	Root	Dysentery, Diarrhoea	Powder	DU	NE	Murtem and Chaudhry (2016)
Begonia roxburghii (Miq.) A. DC [Begoniaceae]	H	Buku-surbu (Ga), Kosy (Nocte), Babeyaying (Ad), Boku yulu (Nys)	Stem and Leaves, Shoot, Rhizome	Constipation, Stomachache, Dysentery, Diarrhoea	Rhizome & Boiled Shoot	Ga, Nocte, Ad, Ny	NE	Bharali *et al.* (2016); Tangjang *et al.* (2011); Arya et. al (2020); Tag *et al.* (2008); Jeri *et al.* (2011)
Benincasa pruriens (Parkinson) Wde Wilde & Duyfjes [Cucurbitaceae]	C	Tham mangil	fruit	Diarrhoea, Dysntery	Cooked as vegetables	Mishmi	NE	Eko *et al.* (2020)
Berberis asiatica Roxb. ex DC [Berberidaceae]	Sh	Kanchaan (Mo)	Leaf, Flower,fruit	Stomachache	Decoction	Mo	NE	Das *et al.* (2019)
Bergenia ciliata (Haw.) Sternb. [Saxifragaceae]	H	Bra-mento	Roots	Diarrhoea	dried, decoction	Mo	LC	Bhuyan & Pangu (2018)
Bidens pilosa L. [Asteraceae]	H	Hau bok (Ap)	Leaves	Peptic ulcer, indigestion	Raw	Ap	NE	Khongsai *et al.* (2011); Kamum *et al.* (2018)
Bischofia javanica Blume [Phyllanthaceae]	T	Mebu-chagne (Ny)	Leaves and Stem bark	Gastritis	Decoction	Ny	LC	Doley *et al.* (2014)
Blechnum orientale L. [Blechnaceae]	Sh	DU	DU	Stomachache	NA	DU	NE	Shankar *et al.* (2015)
Blumea fistulosa (Roxb.) Kurz [Asteraceae]	Ush	Rumdum (Ad)	Leaves	Diarrhoea	Boiled or cooked	Ad	NE	Ali & Ghosh (2006); Srivastava (2009); Arya *et al.* (2020).
Breonia chinensis (Lam.) Capuron [Rubiaceae]	T	Kadamba	Whole plant	Dysentery	DU	DU	LC	Shankar & Rawat (2008)
Buddleja asiatica Lour. [Scrophulariaceae]	Sh	Phamshing (Mon)	Leaves and shoot	Diarrhoea	Raw	Mo	LC	Namsa *et al.* (2011)
Caesalpinia cucullata Roxb. [Leguminosae]	T	Pani Pgig traw	Leaves , seed	Stomachache	Paste	DU	NE	Murtem & Chaudhry (2016)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Callicarpa arborea Roxb. [Verbenaceae]	T	Bon mula (Pa), Mach kota (Chakma)	Stem, Stem bark	Indigestion and Gastritis problems	Extract	Param, chakma	NE	Khongsai *et al.* (2011); Sarmah *et al.* (2008)
Callicarpa macrophylla Vahl [Verbenaceae]	T	Priyangu	Fruit, stem bark & leaves	Bacillary Dysentery,	Decoction	Ad & Ny	LC	Shankar & Rawat (2008)
Calotropis procera (Aiton) W.T Aiton [Apocynaceae]	Sh	Akon-Asing	Leaves	Dysentery, Diarrhoea	Raw	DU	NE	Murtem & Chaudhry (2016)
Camellia sinensis L [Theaceae]	Sh	Khelap (Nocte)	Leaves	Stomachache	Cooked as vegetables	Nocte	DD	Tangjang *et al.* (2011)
Campylandra aurantiaca Baker [Asparagaceae]	H	Thermum (Dirang Mon),Dipa Talo (Ad)	Inflorescense, Rhizome	Dysentery, Diarrhoea, Stomach disorders	Inflorescence Raw	Dirang (Mo), Ad	NE	Srivastava (2009); Kar & Borthakur (2008)
Cannabis sativa L. [Cannabinaceae]	Sh	Vijaya, Bhaang (Aptani), Duwah (Digaru Mishmi)	Leaves	Dysentery, indigestion, Stomach disorders	Raw	Ap, Di. Mishmi	NE	Shankar & Rawat (2008); Kongsai *et al.* (2011); Moyong *et al.* (2021)
Capsicum chinense Jacq. [Solanaceae]	H	Mane yaluk (Ga), Pachaak Cla (Mishmi)	Fruit	Helminthiasis, Diarrhoea	Eaten raw	Ga, Mishmi	NE	Eko *et al.* (2020); Bharali *et al.* (2016)
Carica papaya L. [Caricaceae]	T	Papaya, Omita schein (Ga)	Latex , Fruits	Gastritis, Stomach disorders	Cooked as vegetables	Ga, Ad, Mo, Ap, Ny, Nocte, Tg	DD	Bharali *et al.* (2016); Khongsai *et al.*(2010); Murtem & Chaudhry (2016); Sen *et al.* (2008); Tangjanga *et al.* (2011)
Carum carvi L. [Apiaceae]	H	Go-Nyod (Mo)	Fruit	Stomachache	NA	Mo	LC	Bhuyan & Pangu (2018)
Centella asiatica (L.) Urb. [Apiaceae]	H	Ngilyang Khiiko (Ap) Watsey pesu (Aka), Nguli hik (Ny), Kippu (Adi)	Whole plant, Leaves	Stomach disorder, Dysentery, Peptic ulcer, Stomachache, Constipation,Diarrheo, Gastritis, indigestion	Raw, Decoction, Cooked as vegetables	Ap, Aka, Adi, Ap, Ga, Kh, Mo, Nocte, Ny, Tg, Wancho, Mishing	LC	Murtem & Chaudhry (2016); Tiwari *et al.* 2009; Ayam 2017; Rethy *et al.* (2010); Kala 2005; Khongsai et al, (2015); Namsa *et al.* (2011); Sen *et al.* (2008); Tangjanga *et al.* (2011); Das *et al.* (2019); Taram *et al.* 2019; Kamum *et al.* (2018); Shankar *et al.* (2012).

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Cheilocostus speciosus (J. Koenig) C.D. Specht [Costaceae]	H	DU	Roots and stem	Gastritis	Decoction	DU	LC	Tiwari *et al.* (2009)
Chenopodium album L. [Chenopodiaceae]	H	Tai (Ny), Jhilmili (Mishing)	Seed, leaves	Indigestion	Cooked or boiled	Ny, Mishing	NE	Jeri *et al.* (2011), Shankar *et al.* (2012)
Cinnamomum bejolghota (Buch.-Ham.) Sweet [Lauraceae]	T	Barbah-chagne (Ny), Mein chin (Aka-Mishi)	Stem bark and Roots	Dysentery, Diarrhoea	Extracted juice	Ny, Aka	LC	Doley *et al.* (2014); Doley *et al.* (2009).
Cinnamomum camphora (L.) J. Presl [Lauraceae]	T	Karpura	Leaves	Diarrhoea	Paste	DU	NE	Shankar & Rawat (2008)
Cinnamomum glanduliferum (Wall.) Meisner [Lauraceae]	T	Yakko (Ny), Yero asing (Ad)	Stem bark	Helminthiasis	Extracted juice	Ny, Ad.	LC	Doley *et al.* (2009)
Cinnamomum tamala (Buch.-Ham.) T.Nees & C.H.Eberm. [Lauraceae]	T	Tarpo (Ny), Jongkeng asing (Adi), Chipsing (Mo)	Stem bark	Gastritis & dysentery	Powdered bark	Ny, Adi, Mo	LC	Doley *et al.* (2009)
Cinnamomum zeylanicum Blume [Lauraceae]	T	Derto asind (Ny)	Stem bark	Diarrhoea, Helminthiasis	Extracted juice	Ny	NE	Doley *et al.* (2009)
Cirsium verutum (D.Don) Spreng. [Asteraceae]	Sh	Brongzom (T Mo)	Inflorescense	Stomachache	Dried	Tawang (Mo)	NE	Tsering *et al.* (2017)
Cissampelos pareira L. [Menispermaceae]	C	Ambastha	Root	Dysentery	Decoction	DU	NE	Shankar & Rawat (2008)
Citrus limon (L.) Osbeck [Rutaceae]	Sh	Sipin (Ga), Pasing tulu (Digaru Mishmi)	Fruits	Dysentery, Diarrhoea	Raw, Juice	Ga, Ad, Mo, D Mishmi	NE	Moyong *et al.* (2021)
Citrus medica L. [Rutaceae]	T	Narang (Ny)	Fruit	Indigestion	Raw	Ny	LC	Angami *et al.* (2006), Khongsai *et al.* (2011)
Citrus reticulata L. (*Citrus aurantium* L.) [Rutaceae]	T	Repaptasing	Fruit	Helminthiasis	Decoction	Ad	NE	Tangjang *et al.* (2011)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Clerodendrum colebrookeanum Walp. [Lamiaceae]	Sh	Tippin, Khangjela-shing (Mo), Potto (Ny)	Leaves	Stomach disorders, Dysentery, Diarrhoea	Boiled	Mo, Ny	NE	Murtem & Chaudhry (2016), Namsa *et al.* (2011), *Jeri et al.* (2011)
Clerodendrum glandulosum Lindl. [Verbenaceae]	Sh	Oing tapo (Ga)	Leaves	Stomachache & Stomach disorder	Decoction of leaves	Ga	NE	Bharali *et al.* (2016)
Clerodendrum infortunatum L. [Lamiaceae]	Sh	Kaaba-muk (Digaru Mishmi), Daabaka	Leaves	Stomachache	extract	Mi Mishmi, D. Mishmi	NE	Moyong *et al.* (2021)
Coffea benghalensis Roxb. [Rubiaceae]	Sh	Wancho	Shoot	Stomach disorders	Raw	DU	LC	Ali & Ghosh (2006)
Colocasia esculenta (L.) Schott [Araceae]	H	Asum (Mishmi), Ngaglin, Enge	Leaves and shoots.	Gastritis, constipation, indigestion	Cooked as vegetables	Mishmi, Mo, Ny	LC	Eko *et al.* (2020); Das *et al.* (2019); Jeri *et al.* (2011)
Colocasia giganatea Hook [Araceae]	Ush	Sam leo (Mishmi)	Shoot and leaves	Gastritis	Boiled	Mishmi	NE	Eko *et al.* (2020)
Coptis teeta Wall. [Ranunculaceae]	Sh	Ringko (Ad), Mishmi (Ny)	Roots, Leaves	Stomachache & Stomach disorder, Diarrhoea, dysentery, Gastritis	Raw	Ad, Ny	EN	Gibji *et al.* (2012); Ali & Ghosh (2006); Tangjang *et al.* (2011); Khongsai *et al.* (2011); Baruah *et al.* (2013); Tag *et al.* (2008)
Crassocephalum crepidioides (Benth.) S. Moore [Asteraceae]	H	Gende, Jakpangon	Leaves, shoot	Stomachache, Constipation	Boiled or cooked	Mo	NE	Kala (2005); Arya *et al.* (2020);
Curanga amara Juss. [Scrophulariaceae]	H	Bon ging (Chakma)	Whole plant	Dysentery	Decoction	Ad Minyong	LC	Baruah *et al.* (2013)
Curculigo orchioides Gaertn [Hypoxidaceae].	H	Kali Musali	Rhizome	Diarrhoea, Constipation	NA	DU	NE	Shankar *et al.* (2012); Shankar *et al.* (2015)
Curcuma aromatica Salisb. [Zingiberaceae]	H	DU	Rhizome	Stomach disorders, Bacillary Dysentery	Paste	DU	NE	Tushar *et al.* (2010)
Curcuma caesia Roxb. [Zingiberaceae]	H	Kayane-take (Ga)	Rhizome	Stomachache, Stomach disorder & Bacillary Dysentery	Juice	Ga	NE	Bharali *et al.* (2016)
Curcuma longa L. [Zingiberaceae]	Sh		Rhizome	Stomachache	Raw	DU	DD	Tangjang *et al.* (2011)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Cyperus brevifolius (Rottb.) Hassk. [Cyperaceae]	H	Shayle (Tawang Monpa)	Root Tuber	Bacillary Dysentery	Paste	Tawang (Mo)	NE	Kar & Borthakur (2008)
Debregeasia longifolia (Burm. f.) Wedd. [Urticaceae]	T	Nyajumna	Leaves	Indigestion	Cooked as vegetables	Mishmi	LC	Eko *et al.* (2020)
Dendrocalamus giganteus Munro [Poaceae]	H	Eeh Hiku (Ny)	Shoot	Indigestion, constipation	Cooked as vegetables	Ny	LC	Jeri *et al.* (2011)
Dioscorea alata L. [Dioscoreaceae]	C	DU	Root tuber	Gastritis, indigestion	raw	Ap & Mo	NE	Kala (2005); Namsa *et al.* (2011)
Dioscorea deltoidea Wall. ex Griseb. [Dioscoreaceae]	C	Egin nginte	Root tuber	Indigestion	Boiled or roasted	Ny	NE	Jeri *et al.* (2011)
Diplazium esculentum (Retz.) Sw. [Polypodiaceae]	H	Kajingna or khajung, taka peya (Ny)	Leaves and shoots	Indigestion	Boiled	Mishmi, Ny	LC	Eko *et. al* (2020); Jeri *et al.* (2011)
Dipsacus inermis Wall. [Caprifoliaceae]	H	Brymon (Tawang Mo)	Roots	Dysentery, Diarrhoea	Dried	Tawang (Mo)	NE	Kar & Borthakur (2008)
Dischidia bengalensis Colebr. [Apocynaceae]	H	DU	DU	Stomach disorders	NA	DU	NE	Shankar *et al.* (2015)
Echinocarpus assamicus Benth [Elaeocarpaceae]	T	Tophen-chagne (Ny)	Stem bark, Leaves	Dysentery, Diarrhoea	Raw	Ny	NE	Doley *et al.* (2014)
Eclipta prostrata (L.) L. [Asteraceae]	H	Donyi Hangkang (Ad)	Whole plant	Dysentery	Decoction	Ad	LC	Taram *et al.* (2019)
Elaeagnus parvifolia Wall. ex [Elaeagnaceae]	Sh	Damrep (Tawang Mo)	Fruit	Bacillary Dysentery	Ripen fruit eaten raw	Tawang (Mo)	NE	Kar & Borthakur (2008)
Elaeocarpus floribundus Blume [Elaeocarpaceae]	T	Sur-sur (Ga)	Fruits	Stomach disorders	Eaten raw	Ga	NE	Bharali *et al.* (2016)
Eluesine coracana (L.) Gaertn. [Poaceae]	H	DU	Seed	Stomach disorders	NA	DU	NE	Kala (2005)
Embelia ribes Burm. f. [Primulaceae]	C	Vai bidang, Onior (Tg), Hingkong (Ad)	Fruit, root, leaves	Helminthiasis, Diarrhoea, Stomachache	Tender leaf & shoot cooked	Tg, Ad	NE	Shankar & Rawat (2008); Goswami *et al.* (2009); Bhuyan & Pangu (2018); Arya *et al.* (2020); Baruah *et al.* (2013)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Emblica officinalis Gaertn. [Euphorbiaceae]	T	Phatmak (Noc), Khajaliang (Miji), Amlokhi (Chakma)	Fruit	Stomachache, Diarrhoea and dysentery	Raw	Nocte, Miji	LC	Tangjang *et al.* (2011); Moyong *et al.* (2021); Sarmah *et al.* (2008)
Entada scandens (L.) Benth. [Leguminosae]	C	Gilgaach	seed	Helminthiasis, Diarrhoea	Powder	DU	NE	Shankar & Rawat (2008); Shankar *et al.* (2015)
Eryngium foetidum L. [Apiaceae]	H	Rithak (Ga), Damgra (Mis)	Leaves	Stomach disorders, Stomachache, Diarrhoea	Juice or Boil	Ga, Mishmi	NE	Bharali *et al.* (2016); Eko *et al.* (2020)
Erythrina arborescens Roxb. [Leguminosae]	T	Nat- aheg (Tawang Mo)	Leaves	Bacillary Dysentery	Juice	Tawang (Mo)	NE	Kar & Borthakur (2008)
Euphorbia hirta L. [Euphorbiaceae]	H	Pusitoa, Laldodhi (Ny)	Whole plant	Dysentery, Helminthiasi	Juice	Ny	NE	Shankar & Rawat (2008); Kongsai *et al.* (2011)
Euphorbia neriifolia L. [Euphorbiaceae]	T	Hiju, Snuhi	Stem, Fruit	Stomachache, Dysentery	Raw	DU	LC	Murtem & Chaudhry (2016); Shankar *et al.* (2012)
Exacum tetragonum Roxb. [Gentianaceae]	H	Bhaghirota	Whole plant	Stomach disorders	Cooked as vegetables	DU	LC	Sarmah *et al.* (2008)
Fagopyrum esculentum Moench [Polygonacaea]	H	Nupuk (Ad), Huku (Ny)	Leaves	Constipation, Indigestion, Stomachache	Cooked as vegetables	Ad, Ny	NE	Tag *et al.* (2008); Jeri *et al.* (2011)
Ficus benjamina L. [Moraceae]	T	DU	Stem	Stomach disorders	Raw	DU	NE	Kala (2005)
Ficus cordata Thunb. [Moraceae]	T	Takuk	Root	Dysentery	extract	DU	LC	Payum *et al.* (2014)
Ficus racemosa L. [Moraceae]	T	Udambara	Root	Dysentery	Decoction	DU	LC	Shankar & Rawat (2008)
Ficus semicordata Buch. ex J.E. Smith [Moraceae]	T	Tokuk (Ny)	Fruit	Indigestion, constipation	Cooked as vegetables	Ny	NE	Jeri *et al.* (2011)
Garcinia lanceifolia Roxb. [Clusiaceae]	T	Takter (Ga)	Fruits	Stomach disorders	Decoction with water	Ga	NE	Bharali *et al.* (2016)
Garcinia pedunculata Roxb. ex Buch.-Ham.	T	Liba (Ga), Meba (Ny), Tabing (Ad)	Fruits	Bacillary Dysentery, Gastritis	Raw fruit pulp	Ga, Ny, Ad	NE	Bharali *et al.* (2016)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
[Clusiaceae]								
Gaultheria discolor Nutt. ex Hook. [Ericaceae]	T	Kalaguddi (Napalese)	Leaves	Gastritis	Tender leaf chewed raw	Napalese	NE	Panda *et al.* (2010)
Gaultheria fragrantissima Wall. [Ericaceae]	Sh	Shegshing mrep (Mo)	Fruit	Helminthiasis	Raw	Mo	NE	Das *et al.* (2019)
Gmelina arborea Roxb. ex Sm. [Lamiaceae]	T	Gomori Schein	Stem bark	Stomach disorders	Bark chewed raw	DU	LC	Murtem & Chaudhry (2016); Kala (2005)
Grewia tiliifolia Vahl [Malvaceae]	T	Mekuri-tai (Ad)	Fruits	Dysentery, Diarrhoea	Raw	Adi	NE	Doley *et al.* (2014)
Gynocardia odorata R. Br. [Achariaceae]	T	Takui (Ga)	Seed	Helminthiasis	Extraction of seed oil	Ga	NE	Bharali *et al.* (2016)
Hedychium coccineum Buch.-Ham. ex Sm. [Zingiberaceae]	Sh	Uii teli (H Miri)	Shoot	Indigestion	eaten raw	Hill Miri	NE	Tag & Das (2004)
Hedychium spicatum Sm. [Zingiberaceae]	USh	Blenga (Mo)	Rhizome	Stomach disorders, Diarrhoea, dysentery, indigestion	Raw	Mo	NE	Kala (2005); Tushar *et al.* (2010); Chakraborty *et al.* (2017); Bhuyan *et al.* (2018)
Hedyotis scandens Roxb. **(** [Rubiaceae]	H	Taja hoor. Pamshing (Mo)	Roots	Stomachache, Gastritis	Decoction	Mo	NE	Murtem & Chaudhry (2016); Namsa *et al.* (2011)
Hemerocallis fulva L. (L.) [Liliaceae]	H	Kuankai	Rhizome	Stomach disorders	Powdered	Kh	NE	Namsa *et al.* (2009)
Heracleum candidans Wall. ex DC. [Apiaceae]	H	Tru-Kar	Fruit	Helminthiasis	NA	Mo	NE	Bhuyan *et al.* (2018)
Hibiscus sabdariffa L. [Malvaceae]	Sh	Amta	Leaves and fruit	Dysentery, Diarrhoea	Cooked as vegetables	Ad	NE	Singh *et al.* (2012)
Houttuynia cordata Thunb. [Saururaceae]	H	Siya Hamang (Ap) Moyum-kneme (Ga), Mumarang (Mon)	Whole plant, Roots	Stomachache, Bacillary dysentery, dysentry, Stomach disorder, Diarrhoe, indigestion, gastritis	Chutney, Decoction.	Ap, Ga, Mo, Komkar Ad	NE	Tangjang *et al.* (2011); Kar & Borthakur (2008); Bhuyan & Pangu (2018); Taram *et al.* (2018); Shankar *et al.* (2012); Jeri *et al.* (2011); Kamum *et al.* (2018); Tag *et al.* (2008); Payum *et al.* (2014)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Hydnocarpus kurzii (King) Warb. [Achariaceae]	T	Talo-asing (Ny)	Stem bark	Gastritis and Stomach disorder	DU	Ny	DD	Doley *et al.* (2014)
Hydrocotyle sibthorpioides Lam. [Apiaceae]	H	Killing-kiro	Whole plant	Bacillary Dysentery	juice	DU	LC	Payum *et al.* (2014)
Hygrophila salicifolia (Vahl) Nees [Acanthaceae]	H	Talmakhana	Whole plant	Stomach disorders	Pounded	DU	LC	Shankar *et al.* (2012)
Hypodematium crenatum (Forssk.) Kuhn [Polypodiaceae]	H	Bhutkeshar	Rhizome	Dysentery	Decoction	DU	NE	Shankar & Rawat (2008)
Illicium griffithii Hook. f. & Thomson [Schisandraceae]	T	Lisi (Mo)	Fruit, Stem bark	Stomachache	Dried	Mo	EN	Das *et al.* (2019)
Dillenia indica L. [Dilenaceae]	T	Sompa (Ad), Champak (Ny)	Fruits, Leaves	Stomach disorders, Dysentery, Indigestion	Fruit boiled	Ad, Ny	NE	Gibji *et al.* (2012); Kala (2005); Singh *et al.* (2012); Tag *et al.* (2008); Jeri *et al.* (2011)
Ipomoea batatas (L.) Lam. [Convulvulaceae]	H	Egin Pegri (Ny)	Root tuber	Indigestion	Boiled, cooked, roasted	Ny	DD	Jeri *et al.* (2011)
Juglans regia L. [Juglandaceae]	T	DU	DU	Diarrhoea	NA	DU	LC	Shankar *et al.* (2015)
Kaempferia galanga L. [Zingiberaceae]	H	DU	Rhizome	Indigestion	Paste and eaten raw	DU	DD	Tushar *et al.* (2010)
Kalanchoe pinnata (Lam.) Pers. [Crassulaceae]	H	Nevi nelaum (Adi), Yasumsangrishi (K)	Leaves	Constipation, Stomach disorders	Raw	Adi, Kh	NE	Tangjang *et al.* (2011); Sen *et al.* (2008); Taram *et al.* (2019), Goswami *et al.* (2009)
Lactuca sativa L. [Asteraceae]	H	Rabjap (Ny)	Leaves	Stomachache, Gastritis	Raw	Ny	NE	Jeri *et al.* (2011)
Laportea crenulata Gaud. [Urticaceae]	Sh	Pud Raat	Shoot	Gastritis	Raw	DU	NE	Murtem & Chaudhry (2016)
Lasia spinosa (L.) Thwaites [Araceae]	H	Rubi (Ga)	Stem, Leaves	Helminthiasis	Paste	Ga	NE	Bharali *et al.* (2016); Kamum *et al.* (2018)
Leea crispa D. Royen ex L. [Vitaceae]	Sh	Murgithang (Chakma)	root	Dysentery and Diarrhoea	Decoction	Chakma	NE	Sarmah *et al.* (2008)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Leonurus sibiricus L. [Lamiaceae]	H	Rongadorum (Chakma)	Leaves and stem	Stomach disorders and Gastritis	Cooked as vegetables	Chakma	NE	Sarmah *et al.* (2008)
Lilium nepalense D. Don [Liliaceae]	USh	Whan (Mo)	Roots	Stomach disorders, Gastritis	dried roots	Mo	NE	Chakraborty *et al.* (2017); Bhuyan & Pangu (2018)
Lindera neesiana (Wall. ex Nees) Kurz [Lauraceae]	T	Lungkarmashing (Mon)	Fruit, seeds	Diarrhoea, Helminthiasis	Fruits Raw, Seed dried	Mo	LC	Namsa *et al.* (2011); Das *et al.* (2019)
Litsea cubeba (Lour.) Pers. [Lauraceae]	T	Tayer (Ga), Tayer (Ad), Nengshing (Mo), Sin tir (Ny)	Seeds, Fruits, Leaves	Stomach disorders, Bacillary Dysentery, Helminthiasis, Dysentry	Fruits taken raw, Powered seed	Ga, Ad, Mo, Ny	LC	Srivastava (2009); Namsa *et al.* (2011); Das *et al.* 2019; Wangpan *et al.* (2022)
Litsea salicifolia (Nees) Hk. f. [Lauraceae]	T	DU	Fruit	Stomach disorders	NA	DU	NE	Kala (2005)
Livistona jenkinsiana Griff. [Arecaceae]	T	Toko patta	Fruit	Gastritis	raw as chutney	Ad	NE	Singh *et al.* (2012)
Lobelia montana Reinw. ex Blume [Campanulaceae]	H	DU	Leaves	Stomachache	Raw	DU	NE	Murtem & Chaudhry (2016)
Lysionotus gamosepalus W.T.Wang [Gesneriaceae]	H	Litak-huj (Ny)	Leaves	Stomachache	Paste	Ny	NE	Taram *et al.* (2021)
Lysionotus serratus D. Don [Gesneriaceae]	H	Litak-huj (Ny)	Leaves	Stomachache	Paste	Ny	NE	Taram *et al.* (2021)
Macaranga indica Wight. [Euphorbiaceae]	T	Erapat	Leaves	Stomachache	warm oil coated leaf placed over St.	Mishing	LC	Shankar *et al.* (2012)
Magnolia oblonga (Wall. ex Hook.f. & Thomson) Figlar [Magnoliaceae]	T	Scrio-chagne (Ad)	Flower	Stomach disorders	DU	Ad	NE	Doley *et al.* (2014)
Mahonia nepaulensis DC. [Berberidaceae]	T	Taming (Ap)	Stem bark	Stomach disorders	DU	Ap	NE	Ayam (2017)
Manihot esculenta Crantz [Euphorbiaceae]	Sh	Sin Eegin (Ny)	Root tuber	Indigestion, constipation	Boiled, cooked, roasted	Ny	NE	Jeri *et al.* (2011)
Marsilea minuta L.	H	Sunisannka	Whole plant	Stomach disorders	NA	DU	LC	Shankar & Rawat (2008)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
[Marsiliaceae]								
Melastoma malabathricum L. [Melastomaceae]	Sh	Raja (Ga)	Leaves	Dysentery, Diarrhoea	Juice	Ga	NE	Bharali *et al.* (2016)
Melodinus khasianus Hook.f. [Apocynaceae]	Sh	Mumarang (Mo)	Leaves	Dysentery	Paste taken with water	Mo	NE	Kar & Borthakur (2008)
Mentha arvensis L. [Lamiaceae]	H	DU	Leaves	Stomach disorders	Crushed	Ap	LC	Khongsai *et al.* (2011)
Mentha piperita L. [Lamiaceae]	H		Leaves	Gastritis	Paste	DU	NE	Murtem & Chaudhry (2016)
Mentha spicata L. [Lamiaceae]	H	Podina	Leaves	Gastritis	Juice	Ga	LC	Bharali *et al.* (2016)
Michelia champaca L. [Magnoliaceae]	T	Salyo (Ap)	Fruits	Constipation, Stomach disorders.	DU	Ap	LC	Ayam (2017)
Mikania micrantha Kunth [Asteraceae]	C	Eili (Ad)	Leaves	Stomachache , dysentery and Diarrhoea	Paste	Ad	NE	Taram *et al.* (2019); Tag *et al.* (2008)
Mikania scandens (L.) Willd. [Asteraceae]	C	Namleriyong	Leaves	Diarrhoea, peptic ulcer	Paste	Ad	NE	Tangjang *et al.* (2011); Shankar *et al.* (2015)
Mimosa pudica L. [Leguminosae]	H	Haniang (Singpho)	Root	Helminthiasis	Extract	Singpho	NE	Khongsai *et al.* (2011)
Momordica charantia L. [Cucurbitaceae]	C	Khechak Kerela, kairu (Mo)	Fruit	Stomach disorders, Helminthiasis	Cooked as vegetables	Mo	NE	Murtem & Chaudhry (2016); Namsa *et al.* (2011)
Moringa oleifera Lam. [Moringaceae]	T	Shigru shwet, Sajna	Seed, leaves	Indigestion, Diarrhoea, Helminthiasis	Leaves cooked as vegetables	Ad	LC	Shankar & Rawat (2008); Singh *et al.* (2012)
Murraya koenigii (L.) Spr. [Rutaceae]	T	DU	Leaves	Stomach disorders	Cooked as vegetables	DU	LC	Kala (2005)
Musa balbisiana Colla. [Musaceae]	Sh	Hulu (Ga), Bimokh (Ad)	Fruits	Bacillary Dysentery, Diarrhoea	Raw	Ga	LC	Bharali *et al.* (2016)
Musa sapientum L. (*Musa paradsiaca* L.) [Musaceae]	Sh	kolung, Kopak (Ad)	Fruits, Stem	Dysentery, Diarrhoea	Juice of Pseudostem, boiled fruit	Ad	NE	Gibji *et al.* (2012); Arya *et al.* (2020); Payum *et al.* (2014)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Musa velutina H.Wendl. & Drude [Musaceae]	Sh	Kodak (Ga), Kappa-lonchi (Ny)	Inflorescense, shoot	Stomach disorders, Bacillary Dysentery	InflorescencRaw	Ga, Ny	NE	Bharali *et al.* (2016)
Mussaenda glabrata Hutch [Rubiaceae]	Ush	Palaphan (Mishmi)	Leaves and shoots	peptic ulcers	Cooked as vegetables	Mishmi	NE	Eko *et al.* (2020)
Nardostachys jatamansi (D. Don) DC. [Caprifoliaceae]	H	Pang-posh	Roots	Dysentery	Root stock	Mo	CR	Tiwari *et al.* (2009).
Neopicrorhiza scrophulariiflora (Pennell) D.Y.Hong [Plantaginaceae]	H	Hongleng Mukpo	Roots	Diarrhoea, Dysntery	NA	Mo	NE	Kar & Borthakur (2008)
Ocimum tenuiflorum L. [Lamiaceae]	H	Tulsi (Noc), Tilosi (Monp)	Leaves	Stomachache and Diarrhoea	Decoction	Nocte, Mo	NE	Tangjang *et al.* (2011); Namsa *et al.* (2011)
Oenanthe javanica (Blume) DC. [Apiaceae]	H	Zingruk, Bubu (Ny)	leaves, stem	Gastritis, indigestion	Raw or boiled	Dirang (Mo), Ny	LC	Wangpan *et al.* (2022); Jeri *et al.* (2011)
Oroxylum indicum Vent. [Bignoniaceae]	T	Mano (Ny), Bhatgila (Mongpa)	Stem Bark, Leaves	Bacillary Dysentery, Stomach disorders, Stomachache	Bark powder	Ny, Mo	NE	Murtem & Chaudhry (2016); Khongsai *et al.* (2011); Shankar *et al.* (2015)
Oxalis corniculata L. [Oxalidaceae]	H	O-Khui hamang	Whole plant	Dysentery, Diarrhoea	Raw	Ap	NE	Ayam (2017); Ali & Ghosh (2006); Arya *et al.* (2020); Payum *et al.* (2014)
Oxalis triangularis A.St.-Hil [Oxalidaceae]	H	Pakhip (Ad)	Leaves	Stomach disorders Diarrhoea	Cooked as vegetables	Adi	NE	Tangjang *et al.* (2011)
Paederia foetida L. [Rubiaceae]	C	Epitari (Mi), khamkingkham, Apatare (Ad)	Leaves, Stem	Bacillary Dysentery, Stomach disorders, Indigestion, gastritis., stomachache, dysentry, Diarrhoea	Stem boiled, leaves juice	Miji, Kh, Ad	NE	Murtem & Chaudhry (2016); Kala (2005); Sen *et al.* (2008); Singh *et al.* (2012); Arya *et al.* (2020); Taram *et al.* (2019); Taram *et al.* (2018); Tag *et al.* (2008); Baruah *et al.* (2013)
Panax arunachalensis M. Taram, A.P. Das & H.Tag [Araliaceae]	H	Mokam Pigri (Ny)	Rhizome	Stomach disorder	Powder	Ny	NE	Das *et al.* (2019)
Panax bipinnatifidus Seem. [Araliaceae]	H	Mud Pigri (N)	Root tuber	Peptic ulcers	Decoction	Ny	NE	Das *et al.* (2019)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Papaver somniferum L. [Pappavaraceae]	H	Kaning (D. Mis), Kani (M. Mis), Khanu (I. Mis)	latex	Diarrhoea	Raw	Dig Mishmi, Mij. Mishmi, Indu Mishmi	LC	Moyong *et al.* (2021)
Paris polyphylla Sm. [Melanthiaceae]	H	Nyomrang Takeng (Kom Ad)	Rhizome	Diarrhoea, Constipation, Stomachache, Helminthiasis	Decoction	Komkar Ad	VU	Bhuyan *et al.* (2018); Arya *et al.* (2020); Taram *et al.* (2018)
Phlogacanthus thyrsiflorusa (Roxb.) Nees. Mabb.) [Acanthaceae]	H	Kelong (Ad)	Leaves	Stomachache	Cooked as vegetables	Nocte	NE	Tangjang *et al.* (2011)
Phyllostachys pubescens (Pradelle) Mazel ex J. Houz. [Poaceae]	H	Taab (Ny)	Shoot	Indigestion	Cooked as vegetables	Ny	NE	Jeri *et al.* (2011)
Physalis angulata L. [Solanaceae]	H	Tumpet	Fruit, leaves	Stomach disorders	Powdered bark	Mishing	LC	Shankar *et al.* (2012)
Physalis lagascae Roem. & Schult. [Solanaceae]	H	Mamang	Leaves	Stomach disorders	Cooked as vegetables	Ad	LC	Singh *et al.* (2012)
Physalis peruviana L. [Solanaceae]	H	Donam As	Fruit	Gastritis	Raw	DU	NE	Murtem & Chaudhry (2016)
Phytolacca acinosa Roxb. [Phytolaccaceae]	H	Holap oh (Ny)	Shoots	Constipation and Indigestion	Cooked as vegetables	Ny	NE	Das *et al.* (2019)
Picrorhiza kurroa Royle ex Benth. [Plantaginaceae]	H	Rente	Whole plant	Stomach disorders	Infusion	DU	EN	Murtem & Chaudhry (2016)
Piper pedicellatum C.DC. [Piperaceae]	C	Lori	Fruit	Stomach disorders	Raw chewed	DU	VU	Payum *et al.* (2014)
Plantago major L. [Plantaginaceae]	H	Sevinyuri	Whole plant	Stomachache, Gastritis	Decoction	Kh	LC	Namsa *et al.* (2009)
Pogostemon benghalensis (Burm.f.) Kuntz [Lamiaceae]	H	yakinpit	Whole plant	Stomach disorders	Plant extract	Kh	NE	Sen *et al.* (2008)
Polygonum perfoliatum L. (*Persicaria perfoliata* (L.) H.Gross)	H	DU	Leaves	Indigestion	Raw	DU	NE	Kala (2005)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
[Polygonaceae]								
Pouzolzia bennettiana Wight [Urticaceae]	Sh	Oyek (Mon, Ad), Siglikna (Mishmi),	Leaves, Shoots	Stomach disorders, Constipation, Gastritis, Indigestion, Dysentery	Leaves cooked	Mo, Ad	NE	Namsa *et al.* (2011); Singh *et al.* (2012); Arya *et al.* (2020)
Pouzolzia hirta (Bl.) Hassk. (*Gonostegia triandra* (Blume) Miq.) [Urticaceae]	H	DU	Roots	Constipation	Decoction	DU	NE	Kala (2005)
Prunus persica (L.) Batsch [Rosaceae]	T	Ammantul (Miji), Amusi	Leaves and fruit	Bacillary dysentry	Fruit raw, Leaf juice	Miju Mishmi, I. Mishmi	NE	Moyong *et al.* (2021)
Pseuderanthemum latifolium (Vahl) B. Hansen [Acanthaceae]	H	Murmuchi patta	Leaves	Stomachache	NA	Kh	NE	Das & Tag (2006)
Psidium guajava L. [Myrtaceae]	T	Mudrandu (Ga), Bepsile seng (D Mo), Aamboo (D.M), Muduri(Ad)	Leaves	Dysentery, Diarrhoea, Bacillary dysentery, Stomachache, constipation	Raw, Decoction	Ga, Dirang (Mo), D. Mishmi, Ad	LC	Bharali *et al.* (2016); Moyong *et al.* (2021); Arya *et al.* (2020); Kamum *et al.* (2018); Tag *et al.* (2008); Baruah *et al.* (2013)
Punica granatum L. [Lythraceae]	T	Dalim, Dalemsing (Mo)	Shoot, fruit, Leaves	Diarrhoea, Stomachache, dysentry	Chewed raw	Kh, Mo	LC	Sen *et al.* (2008); Namsa *et al.* (2011)
Radermachera gigantea (Blume) Miq. [Bignoniaceae]	T	Duyu (Ny)	Stem bark	Dysentery, Diarrhoea	DU	Ny	LC	Doley *et al.* (2014)
Ranunculus diffusus DC. [Ranunculaceae]	H	Yapung gelung (Ap)	Roots	Stomachache	DU	Ap	NE	Ayam (2017)
Rauvolfia serpentina (L.) Benth. ex Kurz [Apocynaceae]	H	Bhungmaraja	Root	Stomachache	Root chewed raw	Kh	NE	Sen *et al.* (2008)
Rheum emodi Wall. [Polygonaceae]	H	Chu-Tsa (Mo)	Roots	Peptic ulcers, indigestion	NA	Mo	NE	Bhuyan & Pangu (2018)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Rhododendron arboreum Smith. [Ericaceae]	T	Woodongmento (Mo)	Flower	Dysentery, Diarrhoea	Decoction	Mo	LC	Namsa *et al.* (2011); Das *et al.* (2019)
Rhododendron fulgens Hook. f. [Ericaceae]	Sh	Tamementomarpu (Mo)	Flower	Bacillary Dysentery	Decoction	Mo	NE	Das *et al.* (2019)
Rhododendron hodgsonii Hook.f [Ericaceae]	Sh	Laah (Mo)	leaves	Food poisoning	Raw	Mo	NE	Das *et al.* (2019)
Rhus chinensis Mill. [Anacardiaceae]	T	DU	Fruit	Bacillary Dysentery	NA	DU	LC	Kala (2005)
Ricinus communis L. [Euphorbiaceae]	Sh	Porok ekam	Leaves	Stomachache	Pounded leaves	DU	NE	Murtem & Chaudhry (2016); Shankar *et al.* (2012)
Rubia cordifolia L. [Rubiaceae]	H	DU	Shoot	Stomachache	Raw	DU	NE	Kala (2005)
Rubus calycinus Wall. ex D. Don [Rosaceae]	H	DU	Fruit	Stomach disorders	Raw	DU	NE	Kala (2005)
Rubus ellipticus Sm. [Rosaceae]	USh	Ngingekberek (Ny)	Fruit	Indigestion	Raw	DU	NE	Kala (2005) Jeri *et al.* (2011)
Rubus lineatus Reinw. ex Blume [Rosaceae]	Ush	Ngintumbulum (Ny)	Fruit	Indigestion, constipation	Raw	Ny	NE	Jeri *et al.* (2011)
Rubus niveus Thunb. [Rosaceae]	Ush	Kiblukpum hench (Ny)	Fruit	Indigestion, constipation	Raw	Ny	NE	Jeri *et al.* (2011)
Rubus paniculatus Sm. [Rosaceae]	H	DU	Fruit	Stomach disorders	Raw	DU	NE	Kala (2005)
Rumex acetosella L. [Polygonaceae]	H	Shaydong (Dirang Mo)	Root, Leaves	Bacillary Dysentery & Dysentery	Juice	Dirang (Mo)	NE	Kar & Borthakur (2008)
Rumex nepalensis Spreng. [Polygonaceae]	H	DU	Leaves	Indigestion	Powder	DU	NE	Kala (2005)
Sarcochlamys pulcherrima Gaud. [Urticaceae]	T	Ombe (Ad)	Leaves	Indigestion	Decoction	Ad	NE	Doley *et al.* (2014)
Saurauia napaulensis DC. [Actinidiaceae]	T	Sicho hench (Ny)	Fruit	Indigestion, constipation	Raw	Ny	LC	Jeri *et al.* (2011)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Saurauia roxburghii Wall. [Actinidiaceae]	T	DU	Leaves	Indigestion	Powder	DU	NE	Kala (2005)
Schima wallichii (DC.) Korth. [Theaceae]	T	Salsang Sagne	Seed	Stomach disorders	Dried powder	DU	LC	Murtem & Chaudhry (2016)
Schizostachyum capitatum (Munro) R. B. Majumdar [Poaceae]	H	DU	Shoot, Leaves	Stomach disorders, Diarrhoea, Dysentery, Helminthiasis, Stomachache	Dried leaves	DU	NE	Kala (2005); Das & Tag (2006); Kar & Borthakur (2008)
Scoparia dulcis L. [Scrophulariaceae]	H	Mithasem (Mishing)	Leaves	Digestion	Decoction	Mishing	NE	Shankar *et al.* (2012)
Senna hirsuta L. [Leguminosae]	USh	Kungu	Stem bark	Gastritis	Paste	Kh	NE	Das & Tag (2006)
Senna obtusifolia (L.) H.S.Irwin & Barneby [Leguminosae]	Sh	DU	Fruit	Dysentery	Powder	Mo	LC	Kar & Borthakur (2008)
Solanum indicum Roxb. [Solanaceae]	USh	Misang byako (Ap), Kharangeh (Mo)	Fruits, Seeds	Constipation, Stomach disorder, Helminthiasis	Seeds, Boiled, Fruit taken as vegetables.	Ap, Mo	NE	Ayam (2017); Namsa *et al.* (2011)
Solanum khasianum CB Clarke [Solanaceae]	USh	Siitii byako (Ap), kasi biik (Ny)	Fruits	Helminthiasis	Cooked as vegetables	Ap, Ny	NE	Payum *et al.* (2014)
Solanum nigrum L. [Solanaceae]	H	Hiiro byako (Ap), Hoor (Ny)	Fruits, Leaves	Dysentery, Stomach disorders and Gastritis, Indigestion	Cooked leaves	Ap, Ny	NE	Ayam (2017); Murtem & Chaudhry (2016); Kala (2005); Shankar & Rawat (2008); Jeri *et al.* (2011); Payum *et al.* (2014)
Solanum spirale Roxb. [Solanaceae]	Sh	Okobang (Ad), Khasou (Mishmi), Suchakaya (Tg)	Fruits, Leaves	Stomachache and indigestion, Diarrhoea	Boiled	Ad, Mishmi, Tg	NE	Eko *et al.* (2020); Ali & Ghosh (2006); Rinyo *et al.* (2018); Arya *et al.* (2020)
Solanum surattense Burm. f. [Solanaceae]	H	Mopu	Seed	Stomachache	Dried	Kh	NE	Das & Tag (2006)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Solanum torvum Sw. [Solanaceae]	Sh	Mehengchang, Bonboingam, Kopi, Sot biik (Ny)	Fruit, Leaves	Stomachache, Indigestion, Diarrhoea	Fruits roasted and consume	Kh, Param, Ad	NE	Das & Tag (2006); Khongsai *et al.* (2011); Jeri *et al.* (2011)
Solanum viarum Dunal [Solanaceae]	H	Kopi Tang (Adi), Sibin biik (Ny)	Fruit	Diarrhoea, Stomachache	Roasted	Adi, Ny	LC	Tag *et al.* (2008); Jeri *et al.* (2011)
Solanum violaceum Ortega [Solanaceae]	Sh	Biik (Ny)	Fruit	Stomachache and indigestion	Raw or dried	Ny	NE	Murtem & Chaudhry (2016)
Sonchus arvensis L. [Asteraceae]	USh	Tuku rubu (Ny)	Shoot, Leaves	Stomachache, Gastritis, Diarrhoea	Leaves consume raw	Ny	NE	Kala (2005); Jeri *et al.* (2011)
Sonchus wightianus DC. [Asteraceae]	H	Balakhar (Tawang Mo)	Root	Dysentery, Diarrhoea	Juice	Tawang (Mo)	NE	Kar & Borthakur (2008)
Spilanthes paniculata Wall. Ex DC. [Asteraceae]	H	Yorkhung Hamang (Ap), Marsa (Ga)	Leaves, Stems, Shoot, Flower	Dysentery, Helminthiasis, constipation	Flower and young shoot directly chewed,	Ap, Ga	NE	Ayam (2017); Shankar *et al.* (2015); Bharali *et al.* (2016)
Spondias pinnata (L. f.) Kurz. [Anacardiaceae]	T	Ansiari (Ga), Pakka (Ny)	Fruit, Stem bark	Gastritis and Dysentery, Stomachache.	Fruit is eaten raw	Ga, Ny	NE	Doley *et al.* (2014); Jeri *et al.* (2011)
Stemona tuberosa Lour. [Stemonaceae]	C	Pa-gore (Ga), Tassomagya (Ad)	Rhizome	Stomachache, Diarrhoea, Gastritis	Roasted Rhizome	Ga, Ad	NE	Bharali *et al.* (2016); Tag *et al.* (2008)
Stephania glabra (Roxb.) Miers [Menispermaceae]	C	Rajpatha	DU	Diarrhoea	NA	DU	NE	Shankar *et al.* (2015)
Stephania glandulifera Miers [Menispermaceae]	C	Gapik tarreng (Ad)	Root tuber	Stomach disorders	Powered	Adi	NE	Tag *et al.* (2008)
Stephania japonica (Thunb.) Miers [Menispermaceae]	C	Raikey	Stem	Dysentery, Diarrhoea	Raw	DU	NE	Murtem & Chaudhry (2016)
Stereospermum suaveolens (Roxb.) DC. [Bignoniaceae]	T	Mano (Mo)	Stem bark	Dysentery, Diarrhoea	Decoction	Mo	NE	Doley *et al.* (2014)
Strobilanthus helicta T. Anders. [Acanthaceae]	USh	DU	Shoot	Indigestion	NA	DU	NE	Kala (2005)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Swertia chirayita (Roxb.) H.Karst. [Gentianaceae]	H	Gonga Marpo (Mo)	Whole plant	Stomachache	NA	Mo	NE	Bhuyan & Pangu (2018)
Swertia hookeri C.B. Clarke [Gentianaceae]	H	Rinku (Miji)	Roots	Dysentery, Diarrhoea	Juice	Miji	NE	Kar & Borthakur (2008)
Swertia speciosa D. Don [Gentianaceae]	H	DU	Roots	Dysentery	Decoction	Mo	NE	Tiwari *et al.* (2009)
Syzygium cumini (L.) Skeels [Mrytaceae]	T	Jamun	Fruit	Stomach disorders, Diarrhoea, Dysentery	Raw	Padam	LC	Khongsai *et al.* (2011)
Syzygium megacarpum (Craib) Rathakr. & N.C. Nair [Myrtaceae]	T	Kurak (Ny)	Stem bark	Dysentery, Diarrhoea	DU	Ny	NE	Doley *et al.* (2014)
Tacca integrifolia Ker Gawl. [Taccaceae]	H	Pisir, Tagoon (Ad)	Rhizome and fruit	Stomach disorders, Bacilary Dysentery, Stomachache, Diarrhoea	Raw	DU	NE	Murtem & Chaudhry (2016); Srivastava (2009)
Terminalia bellirica (Gaertn.) Roxb. [Combretaceae]	T	Sudumpona (Ny)	Fruit and Stem bark	Dysentery, Diarrhoea, Gastritis	Raw	Ny	LC	Doley *et al.* (2014)
Terminalia chebula Retz. [Combretaceae]	T	Kiangsa (D. Mishmi), Reembo (I. Mishm)	Fruit	Gastritis and Constipation, Stomachache	Raw	Digaru Mishmi, Idu Mishmi	NE	Murtem & Chaudhry (2016); Moyong *et al.* (2021); Kamum *et al.* (2018)
Thalictrum foliolosum DC. [Ranunculaceae]	H	Yengchera (Dirang Mo)	Rhizome	Dysentery, Diarrhoea	Juice	Dirang (Mo)	NE	Kar & Borthakur (2008)
Tinospora cordifolia Miers. [Menispermaceae]	C	Swein kije, Egyum (Ad)	Stem	Stomach disorders, Diarrhoea	Pounded powder	Ad	NE	Murtem & Chaudhry (2016); Tag *et al.* (2008)
Toddalia asiatica (L.) Lam [Rutaceae]	Sh	Koche taa (Ny)	Fruit	Dysentery, Constipation, Indigestion	Ripe fruit	Ny	NE	Shankar & Rawat (2008); Jeri *et al.* (2011)
Torenia asiatica L. [Linderniaceae]	H	Suji Ei	Leaves	Stomach disorders	Raw	DU	NE	Murtem & Chaudhry (2016)
Torenia parviflora Buch. -Ham. ex Benth. [Linderniaceae]	H		Fruit	Gastritis	Raw	DU	LC	Murtem & Chaudhry (2016)

Botanical Name (Updated name as per POWO) [Family]	Habit	Name of plant in local language (Ethnic community)	Parts used	Therapeutic uses	Mode of preparation	Used by ethnic communities	IUCN Status	References
Trevesia palmata Visiani [Araliaceae]	T	Tago- meyo (Ny)	Flower	Indigestion	Cooked as vegetables	Ny	LC	Jeri *et al.* (2011)
Trichosanthes cordata Roxb. [Cucurbitaceae]	C	Dongkoriyong (Ad)	Root	Dysentery, Diarrhoea	Decoction	Ad	NE	Arya *et al.* (2020)
Tupistra aurantiaca (Baker) Wall. ex Hook.f. [Asparagaceae]	Sh	Rinkey	Stem	Stomachache	Dried stem boiled	DU	NE	Murtem & Chaudhry (2016)
Vaccinium glaucoalbum Hook. f. ex C.B. Clarke [Ericaceae]	Sh	Fepchang (Mo)	Fruits	Dysentery, Diarrhoea	Juice	Mos	NE	Das *et al.* (2019); Wangpan *et al.* (2022)
Vernonia cinerea (L.) Less [Asteraceae]	H	DU	Leaves	Indigestion	Raw	DU	NE	Kala (2005)
Woodfordia fruticosa (L.) Kurz [Lythraceae]	Sh	Hing (Dirang Mo)	Flower	Bacillary Dysentery, Diarrhoea	Eaten raw	Dirang (Mo)	NE	Kar & Borthakur (2008); Shankar *et al.* (2015)
Zanthoxylum acanthopodium DC. [Rutaceae]	Sh	Mekat	Fruit, Leaves and Stem bark	Dysentery, Stomachache	Paste of leaves and bark	Kh	LC	Kala (2005); Das & Tag (2006)
Zanthoxylum armatum DC. [Rutaceae]	Sh	Ngyung (Dirang Mo)	Flower	Dysentery, Diarrhoea	Dried	Dirang (Mo)	NE	Kar & Borthakur (2008)
Zanthoxylum rhetsa (Roxb.) DC. [Rutaceae]	T	Onger (Ad), Mechme (M) Honyor (N)	Leaves	Stomach disorders, Constipation, Helminthiasis, Diarrhoea	Raw	Ad, Mo, Ny	LC	Singh *et al.* (2012); Singh *et al.* (2021)
Zingiber cassumunar Roxb. [Zingiberaceae]	H	DU	Rhizome	Indigestion	Paste	DU	DD	Tushar *et al.* (2010)
Zingiber officinale Rosc. [Zingiberaceae]	H	Saagha (Mo)	Rhizome	Stomachache	Paste	Mo	DD	Namsa *et al.* (2011)
Zingiber zerumbet (L) Smith [Zingiberaceae]	Sh	Kekiir (Ad)	Root tuber and Leaves, Rhizome	Stomachache, Diarrhoea	Decoction	Ad	DD	Gibji *et al.* (2012); Arya *et al.* (2020); Tushar *et al.* (2010)
Zizyphus mauritiana Lam. [Rhamnaceae]	T	Bogouri	Stem bark	Stomachache	Decoction	Mishing	NE	Shankar *et al.* (2012)

Habit, plant part used and mode of preparation of drug

In terms of habit of the plants, herbaceous form is most dominant among other habits with 41% of total, followed by trees (27%), shrubs (17%), climbers and under shrubs (7% each) (Fig. 4). In most ethno-botanical studies, herbs are commonly used in folk claims due to their high medicinal value. It could also mention that the threats, including deforestation, primarily affect shrubs and trees more than herbs. In the state of Arunachal Pradesh, high annual rainfall (average rainfall 2,411.60 mm) might support the growth of high diversity of herbs and shrubs. Bhusi et al. (2021) analyzed 358 ethno-medicinal plant species from 100 families used by the tribal communities of Arunachal Pradesh. Of these, 41% are herbs, followed by trees, shrubs, and climbers. The cultivation and supply of herbaceous plants could be advantageous as they are annual.

In this study, the data depicted the plant part used for the treatment of GI diseases are as follows, leaf 27.49%, fruit 19.64 %, root 9.67%, shoot 7.85% stem bark 6.65%, rhizome 6.34%, whole plant 6.04%, stem 4.83%, seed 3.63%, flower 2.72%, root tuber 2.42%, inflorescence 0.91% and latex 0.6% (Fig. 5). The results indicated that leaves are the predominant part used in treatment of diseases, followed by fruit and root. Almost all parts of the plant have medicinal uses, but in certain species the medicinal value might be constituted by only desired parts. The leaves of sweet potatoes have been recorded with high amounts of phyto-chemicals which indicate high levels of free radical scavenging activity. High levels of phenolics, flavonoids, vitamin C and antioxidant properties are recorded in mainly leaves of sweet potatoes than the roots (Oko *et al.* 2020). The high amount of total phenol, tannin and flavonoid are reported in leaves of *Stylochiton borumensis* than in roots (Makhawi & Hamadnalla 2019). The desired medicinal property of each and every plant depends on their phyto-chemical constituents such as phenols, flavonoids, tannins, terpenoids, steroids, lignans etc.

In terms of mode preparation of the medicinal plants, most plants are taken as raw form followed by decoction and cooked form. The recorded 256 plants are being used in the treatment of a variety of GIDs and the mode of administration of the medicinal plants is mainly done orally. There are total of 31 plant species which are consumed as vegetables and those plants are also being used as medicinal value for the treatment of various diseases. Among the reported medicinal plants, some of the medicinal plants are categorized under IUCN Red list (Table 1).

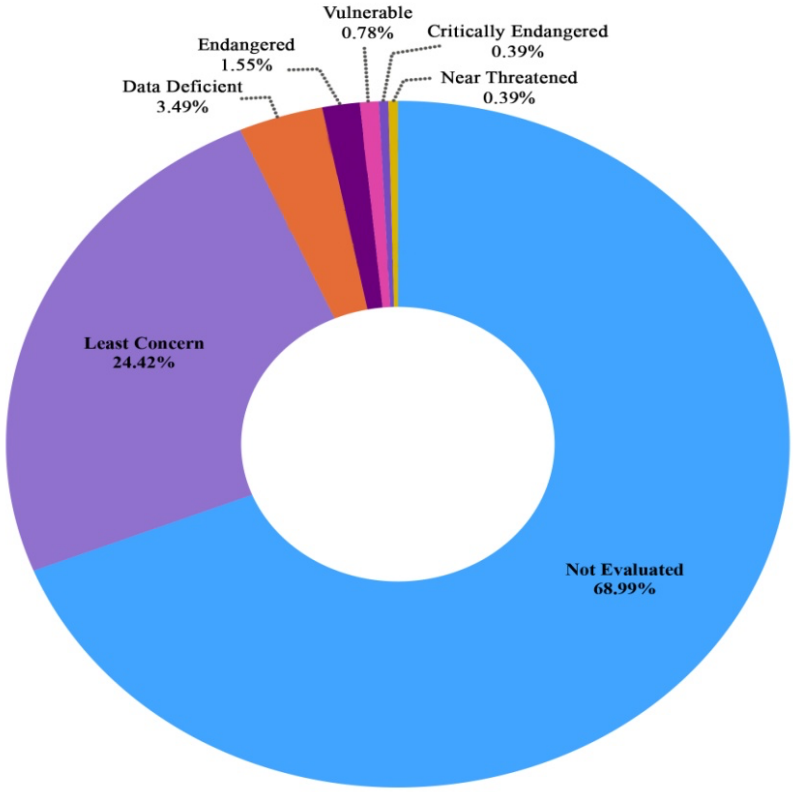

Figure 3. Pie chart showing the total percentage of plant species reported for IUCN categories

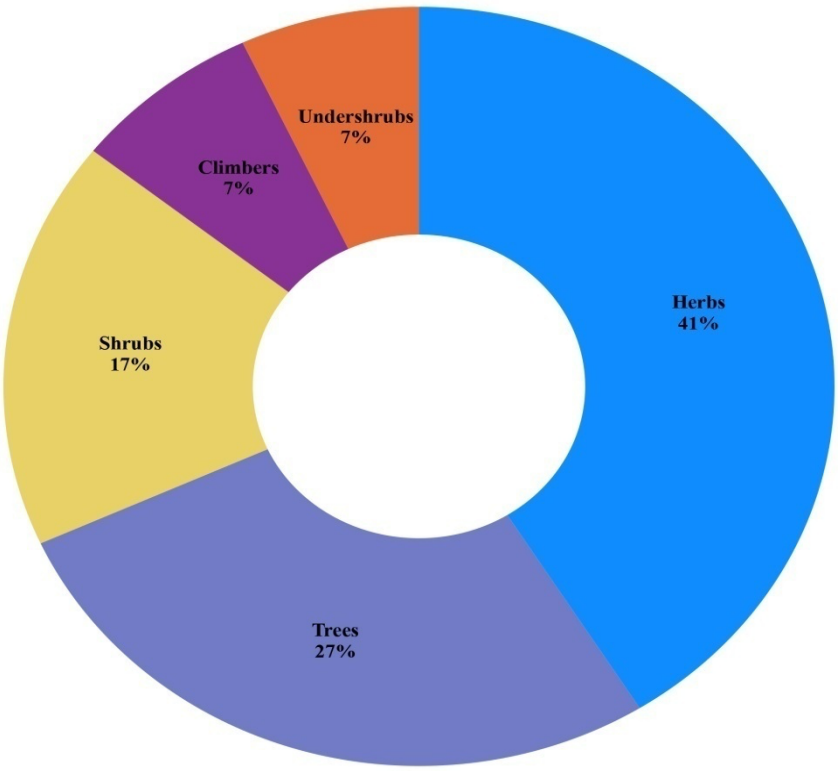

Figure 4. Percentage of species under various plant habit categories

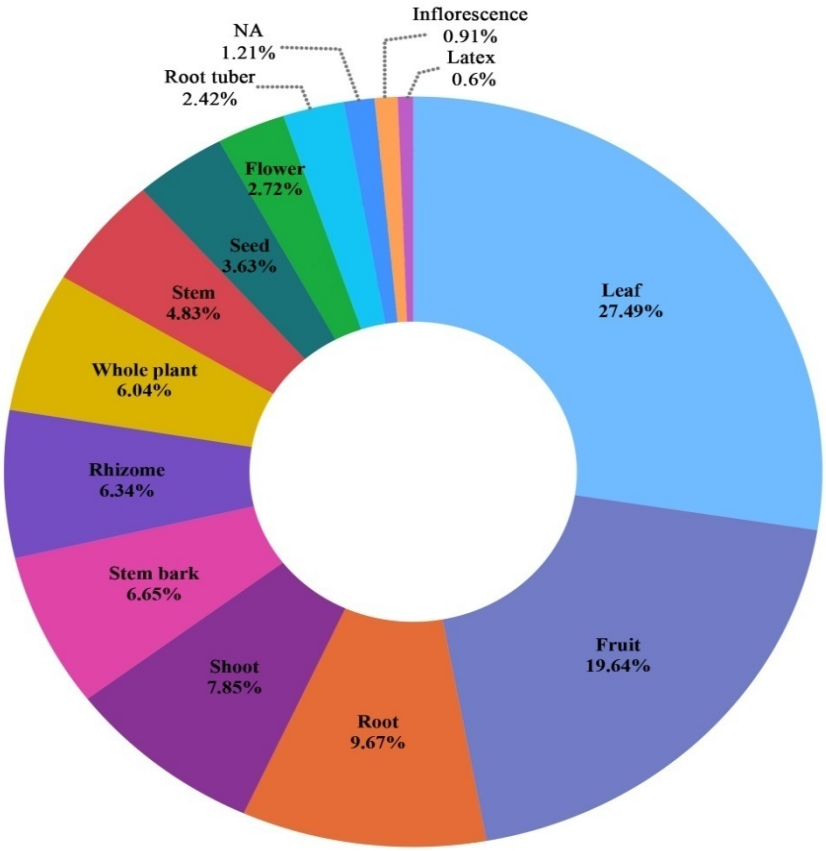

Figure. 5 Percentage of plant parts used by the various tribes of Arunachal pradesh

The top 10 plants with high use value in treatment of various GI diseases

The high Use value (UV) signifying the multi utility values and high economic importance of the species to the given ethnic community. Use value (UV) ranges between 0 and 1 cannot be greater than one (Tardio & Pardo-de-Santayana 2008). Top 10 most used plant species by the ethnic communities are *Paederia foetida, Centella asiatica, Houttuynia cordata, Psidium guajava, Begonia roxburghii, Coptis teeta, Dillenia indica, Litsea cubeba, Solanum nigrum, Allium hookeri, and* other. These medicinal plants have been characterized for their important bioactive compounds, pharmacogogical activities (Table 4).

Table 2. Top 10 plant species with high use value

Name of the Plant species	No. of Use reports	Use value
Paederia foetida L. [Rubiaceae]	20	0.36
Centella asiatica (L.) Urb. [Apiaceae]	15	0.27
Houttuynia cordata Thunb. [Saururaceae]	14	0.25
Psidium guajava L. [Myrtaceae]	10	0.18
Begonia roxburghii (Miq.) A. DC [Begoniaceae]	8	0.15
Coptis teeta Wall. [Ranunculaceae]	8	0.15
Dillenia indica L. [Dillaneacea]	7	0.13
Litsea cubeba (Lour.) Pers. [Lauraceae]	6	0.11
Solanum nigrum L. [Solanaceae]	6	0.11
Allium hookeri Thwaites [Liliaceae]	5	0.09

***Paederia foetida* L.**

Paederia foetida L. is widely known as Skunk vine, Chinese fever vine (in English) and *Gandha Prasarini* (in Sanskrit). Locally known as *Uppe tire* (in Tagin), *Yepe tare* (in Adi) and *Upteri* (in Nyishi). It is a perennial climbing herb belonging to Rubiaceae family. It is native to both temperate and tropical Asian countries. The leaves of *P. foetida* L. has been reported for treating Blood Dysentery, Stomach disorders, Indigestion among the tribal communities (Goswami *et al.* 2009, Nimasow *et al.* 2011). Various studies show the therapeutic properties of *P. foetida* L. such as Anti- diarrhoeal activity (Afroz *et al.* 2006) and Anti-ulcer activity (Reddy *et al.* 2011). Afroz *et al.* (2006) investigated the ethanolic extract of *P. foetida* L. (whole plant) anti-diarrheal activity on castor oil and magnesium sulphate induced diarrhea models in Swiss–Webstar strain mice. Different doses (100, 250 and 500 mg/kg) of plant extract were administered. During the study 500 mg/kg (dose) was proven to have potent anti-diarrheal activity. Constipating effect through an action on the local enteric nervous system as well as on the central nervous system by ethanolic extract of *P. foetida* L. was observed in Cisplatin-induced gastrointestinal motility test and Morphine induced motility test (Afroz *et al.* 2006). The methanolic extract of the leaves of *P. foetida* L. shows significant decrease in stomach acid volume and total acidity in Aspirin-induced ulcerations.

***Centella asiatica* (L.) Urb.a**

Centella asiatica is commonly known as *Gotu kola* or *Mandukaparni* (Sanskrit). It is locally named as *Nguli hik* (in Nyishi), *Ngilyang khiiko* (in Apatani) and *Kipum* (in Adi). It is a perennial herb belonging to Apiaceae family consisting of a glabrous trailing stem, rooting at the nodes and orbicular to reniform shaped leaves. It grows profusely in swampy areas and is widely distributed in many tropical and subtropical countries of the world. The whole plant is very popular in Ayurveda (Indian system of Medicine) for enhancing memory. Besides this the whole plant or leaves are also traditionally being used for treating many diseases including stomach disorder, dysentery, ulcer etc. by tribals of Arunachal Pradesh. Pharmacologically reported activities include antioxidant activity (Zainol *et al.* 2003), anti-inflammatory (Guo *et al.* 2004) and anti-ulcer activity (Cheng *et al.* 2004). The gastro-protective effect of ethanol leaf extract of *C. asiatica* has been reported by Abdulla *et al.* (2010). The study was done on Sprague Dawley healthy adult male rats (weighing between 220-250 g). Gastric ulcer was induced by orogastric incubation of absolute ethanol (5 ml/kg) where ulcer control group was orally administered with Carboxy Methyl Cellulose (CMC, 0.25 % w/v, 5ml/kg). The positive controls were administered with oral dose of omeprazole (20 mg/kg). The experimental group were administered with ethanol extract of *C. asiatica* leaf of different doses (100, 200 and 400 mg/kg) in CMC solution (5ml/kg). The experimental group showed dose dependent protection of gastric mucosa against ethanol induced injury leading to reduction of ulcer areas in the gastric wall, inhibition of edema and leucocytes infiltration of submucosal layers. The protection was prominently seen at 400 mg/kg leaf extract. Important bioactive compounds identified for various pharmacological activities includes pentacyclic triterpenoid glycosides, madecassoside, asiaticoside and their corresponding aglycones, asiatic acid and madecassic acid (Bandopadhyay *et al.* 2023).

***Houttuynia cordata* Thunb.**

Houttunia cordata Thunb. is a flowering and perennial herbaceous plant usually found in the moist and shady hillside. It is popularly known as Chameleon plant and fish mint plant (in English). Locally known as *Siya hamang* (in Apatani), *Heya oo* (in Nyishi) and *Punkyo* (in Khamti). *H. cordata* Thunb. is a sole species in the genus Houttuynia belonging to the Saururaceae family. It is native to many Southeast Asian countries. The raw leaf of *H. cordata* Thunb. is being consumed for curing dysentery and indigestion (Das & Tag 2006). It has been reported for many pharmacological activities such as Anti-tumour activity (Jones *et al.* 2018), Immuno-modulatory activity (Marshall 2018), Anti-viral activity (Chen *et al.* 2011) and Digestive system protection activity (Zhu *et al.* 2018). Polysaccharides and Sodium houttuyfonate in *H. cordata* Thunb. has been proven to protect the intestinal flora by strengthening the intestinal mechanical barriers and immune barrier (Zhu *et al.* 2018). In vivo study shows that *H. cordata* Thunb. Affect the intestinal protective activity by inhibiting the NF-κB signalling pathway and further regulate the intestinal flora hence it strengthens the intestinal barrier in mice (Zhang *et al.* 2020).

***Psidium guajava* L.**

Psidium guajava L. popularly referred to as the "*Poor man's apple of the tropics*" for its therapeutic properties to heal variety of ailments. It is a small tree belonging to Myrtaceae family widely distributed throughout the tropics. Reactive nitrogen species (RNS) is known to be involved in gastric mucosal damage. Quercetin (flavonoids) identified in the ethanolic extract of *P. guajava* L. leaf is believed to have antiulcer activity due to its antioxidant property which shows better mucoprotective activity and gastric anti secretory when compared with reference drug (Ranitidine) in Wistar albino rats (Jayakumari *et al.* 2012). A study on guinea pig by George (1988) showing the anti-diarrhoeal activity of flavonoid present in the *P. guajava* L. leaf, which suppresses the action of Prostaglandin E1 (PGE1) like substance responsible for the increase in intestinal secretion leading to diarrhoea in an organism. Another study on Wistar rat where diarrhoea was induced by Enteropathogenic Escherichia coli (EPEC) a significant decline in the number of diarrhoeal stools resulted in higher percentage of protection over diarrhoea when administered with *P. guajava* L extract (Hirudkar *et al.* 2020).

Begonia roxburghii

Begonia roxburghii is an annual dicot plant belonging to family Begoniaceae are widely distributed in North East India. The plant is regularly used as a vegetable and food item by the tribal communities of Arunachal Pradesh. The plant's root, stem and leaves are traditionally used in treating various digestive disorders including diarrhoea, dysentery etc. The phytochemical standardization revealed that the roots extract are significantly rich in flavonoids and tannins, including its marker compound rutin (Prasad *et al.* 2023a). Rutin is one of the important flavonoids found in Begonia roxburghii and contributes to its potential therapeutic properties. In recent study by Prasad *et al.* (2023b) has reported the antidiarrhoeal effect of vegetable root *Begonia roxburghii* and its marker flavonoids against nonpathogenic and pathogenic diarrhoea. In an in vitro, in vivo and computational study conducted by Prasad *et al.* (2023c) showed that the marker compound rutin extracted from Begonia roxburghii modulates iNOS and Sep A activity in treatment of Shigella flexneri induced diarrhoea in rats. Other parts like leaves also have been shown to possess the antioxidant properties (Akter *et al.* 2020).

***Coptis teeta* Wall.**

C. teeta also known as "Mishmi teeta" is an endemic plant belonging to the Ranunculaceae family. It is listed as an endangered species found in the North-Eastern region of India and Yunnan province of China. Traditionally the diluted root extract of *C. teeta* wall has been reported to be used for treating fever and gastric problems (Kagyung *et al.* 2010). Biochemical analysis shows the presence of wide range of pharmacologically important bioactive molecules identified as lignans, benzyliso quinoline alkaloids, terpenoids, flavonoids, organic acids and sterol glycosides in the roots of *C. teeta* wall. The root of *C. teeta* is bitter and pungent that contains several compounds that are effective in inhibiting various bacteria and they are a safe and effective treatment for stomach related ailments like dysentery which are caused by bacteria. The root contains 8–8.5 % of berberine, which is considered as the active ingredients of the plant (Latif 2008). Berberine is a natural alkaloid which exhibit antibiotic, antioxidant, anti-inflammatory and many pharmacological properties (Shah *et al.* 2023). As per Tsai *et al.* (2004) who studied anti-diarrhoeal action of ethanolic extracts of three Chinese medicinal plants namely *Fraxini cortex, Sophora flavescens* and *Coptis teeta* Wall. on the rat intestinal epithelia. It was observed that ethanol extracts of these three plants could reduce the short circuit current across the forskolin activated rat ileam epithelia which imply that extracts of the three plants may affect ion transport in the rat ileum epithelia and this may be critical for their therapeutic effects as anti-diarrheal agents.

***Dillenia indica* L.**

Dillenia indica L. belongs to Dilleniaceae (Karmal family). It is popularly called as Elephant apple and known by different names such as Chalta (in Hindi), Avartaki (in Sanskrit), Outenga (in Assamese) and Jampa ahi (in Nyishi). It is a large evergreen

shrub or medium sized tree growing upto 15 m tall native to southeastern Asia to southwestern China and Vietnam and south through Thailand to Malayasia. The fruit juice, bark, root, and leaves of *D. indica* L. is recognised as valuable for its medicinal properties. The secondary metabolite like alkaloids, phenols, glycosides, tannins, saponins, steroids and terpenoids are responsible for its anti-diabetic, anti-cancerous and anti diarrhaeal properties. The aqueous and methanolic extracts of *D. indica* L. leaves when monitored against castor-oil-induced diarrhoeal mice a significant decrease of diarrhoea was observed (Yeshwante *et al.* 2009). According to Shoba *et al.* (2001) ethanolic extract of *D. indica* L. were more potent against castor-induced diarrhoea model compared to aqueous extract. Another study shows that ethanolic extract of fruits and leaves lowered overall amount of wet faeces and gastrointestinal motility in castor-induced diarrhoeal mice relative to loperamide (Rahman *et al.* 2011).

***Litsea cubeba* Pers.**

Litsea cubeba is a tree species belongs to family Lauraceae with its predominant distribution in tropical and subtropical regions of India, Southeast Asia, southern China, Taiwan, and Japan. Traditionally it is used for curing variety of diseases including gastro-intestinal ailments (e.g., diarrhea, stomachache, indigestion, and gastroenteritis) along with diabetes, edema, cold, arthritis, asthma, and traumatic injury. Fresh green fruits are used for culinary purposes like salad preparation, chutneys, pickles, etc. (Mao 1993). The essential oil extracted from *Litsea cubeba fruit* is economically very important and has been used as an enhancer of aroma in cosmetic and food products other uses includes antifungal and bio-insecticide etc. Xia *et al.* (2023) has reported the therapeutic effects of *Litsea cubeba* essential oil on Lipopolysaccharides-induced intestinal inflammation and the gut microbiome and suggested its potential in the treatment of intestinal inflammation. In a computational based study Panday *et al.* (2024) screened out 121 natural compounds of Litsea cubeba against the dengue virus and identified four potential compounds (Ushinsunine, Cassameridine, (+)-Epiexcelsin, (-)-Phanostenine) with good binding scores and allosteric interactions with the target protein.

***Solanum nigrum* L.**

Solanum nigrum L. is an annual plant belonging to Solanaceae family that emerge naturally as weeds on the disturbed areas such as roadside, near buildings and along the fences. *S. nigrum* L. is commonly known as Black nightshade (in English) also referred as *Horo hamang* (in Apatani) and *Horoo* (in Nyishi) which is considered as a delicacy in many parts of North-eastern part of India and is widely consumed for its therapeutic properties also. Various parts of the *S. nigrum* L. plant is being used to treat different diseases. The presence of alkaloid, flavonoids, tannins, saponins, glycosides, proteins, carbohydrates, coumarins and phytosterols in the leaves of *S. nigrum* L. is said to possess laxative properties which helps to relieve constipation, indigestion, and stomach discomfort (Thejaswini *et al.* 2023). Oxygen free radicals are one of the main factors in the pathogenesis of gastric ulcer. In-vivo study shows that the methanolic extract of *S. nigrum* L. berries produce gastroprotective effect by free radical scavenging action in aspirin induced ulcerated rat where elevated level of lipid peroxides was considered as an index of oxidative stress in rats with acute gastric ulcer. Pre-treatment with methanolic extract of *S. nigrum* have berries in the ulcerated rats led to the optimization of the decreasing level of antioxidant enzymes and increased mucosal injury to near normal status hence the *S. nigrum* L. berries has been proven to exert antiulcerogenic effects (Jainu 2004). The ethanolic extract of *S. nigrum* L. berries showed a significant anti diarrhoeal activity against castor oil induced diarrhoea in mice with observable decrease in the frequency in defecation along with increase in the mean latent period at different doses (250mg/kg and 500mg/kg) as reported by Karmakar *et al.* (2010).

Allium hookeri

Allium hookeri Thwaites is widely known as “East- Himalayan chives”, belonging to the Amaryllidaceae family. It is native to East Himalaya, Central- South China, Myanmar, Tibet and Sri Lanka. It is consumed as condiments among the tribal communities of Northeastern part of India (Ayam *et al*. 2011; Tsering *et al.* 2015; Das *et al.* 2019). The plant is traditional used for cough and skin disorders like swelling and eruptions (Kala 2005), it is also reported as stimulant and remedy for gastritis and indigestion (Rinyo *et al.* 2021). The compounds like benzoic acid, cinnamic acid, ferulic acid, tetradecanoic acid, hexadecanoic acid and octadecanoic acid from the root extract of *Allium hookeri* Thwaites showed antimicrobial activity against infectious microorganisms like *Candida ablicans, Klebsiela pneumoniae, Pseudomonas aeruginosa, Aspergillus fumigatus, Staphylococcus aureus* and MRSA 098 (Kim *et al*. 2016). According to Zang *et al.* (2015) the ethanolic extract of *Allium hookeri* Thwaites root possess strong antioxidant activity which exhibited dominant effects on scavenging of DPPH radicals, nitrites and Superoxide radicals. The root extract of *Allium hookeri* Thwaites reported to show anti-inflammatory property during invitro study (Kim *et al*. 2017). In vivo study on the methanolic extract of *Allium hookeri* Thwaites exhibited the anti-diabetic activity in streptozotocin induced diabetic rats (Singh *et al.* 2013).

Table 3. Informat consensus factor (ICF) value for reported disease categories

Disease category	Number of use report (Nur)	Number of Taxa used in the category (Nt)	ICF (Informant Consensus Factor)
Stomach Inflammation/Gastritis	51	39	0.24
Diarrhoea	103	80	0.23
Stomach-ache	88	70	0.21
Stomach disorder	84	67	0.20
Dysentery	94	77	0.18
Helminthiasis/Worm Infestation	30	25	0.17
Indigestion	55	49	0.11
Constipation	28	26	0.07
Blood dysentery/Bacillary dysentery	20	19	0.05
Food poisoning	1	1	0.00
Stomach ulcer/Peptic ulcer	7	7	0.00

Table 4. Pharmacological and preclinical evidence of top 10 most cited medicinal plant species

Plant species	No. Use Reports	Pharmacological activity	Extract/Fractions/plant parts	In-vitro/in-vivo/ex-vivo assays/model	Bioactive chemical content	References
Paederia foetida L.	20	a) Anti-diarrheal activity	a) Ethanol extract of plant	a) Castor oil and magnesium sulphate-induced diarrhoea male and female mice (Swiss–Webstar strain) 20–25 gm	Paederone, paederine, paederolone, paederenine and iridiod glycosides	a) Afroz *et al.* (2006)
		b) Anti-inflammatory activity	b) Ethanolic extract of leaves	b) Acetic acid induced colitis in albino rats (150-200gm)	Alkaloids (a and b-paederine), sitosterol, vitamin C and flavonoid	b) Das *et al.* (2013)
Centella asiatica (L.) Urb.	15	Antiulcerogenic activity	Aqueous extract of whole plant	Ethanol induced gastric mucosal lesions in male Sprague-Dawley rats (150–170gm)	Pentacyclic triterpenoid glycosides, madecassoside, asiaticoside, aglycones, asiatic acid and madecassic acid	Cheng & Koo (2000)
Houttuynia cordata Thunb.	14	a) Anti-gastric activity	Ethanol extract of aerial part	a) Male and female Sprague–Dawley rats at 4–8-week-old (140–180gm)	Polysaccharides, houttuynoids, volatile oil, alkaloids, flavonoids, terpenoids, and phenylpropanoids.	a) Chen *et al.* (2021)
		b) Antiulcerogenic activity	Ethanol extract of leaves	b) Young Albino rats (120-200gm)	(Quercetin)flavonoids, alkaloids and tannins	b) Basak & Dey (2016)
Psidium guajava L.	10	Anti-diarrheal activity	Ethanol leaf extract of Leaves	Enteropathogenic escherichia coli induced male and female Wistar rats (150-200gm)	Quercetin (flavonoids)	Hirudkar *et al.* (2020)
Begonia roxburghii (Miq.) A. DC	8	Anti-diarrheal,	Root extract	Nonpathogenic (castor oil-induced) and Pathogenic (entero pathogenic *E. coli*-induced) diarrhoea in rat model	Rutin, luteonin	Prasad *et al.* 2023a; 2023b; 2023c
Coptis teeta Wall.	8	Anti-diarrheal activity	Ethanol extract of plant material	Male Sprague-Dawley rats (250-300gm)	Berberin (Alkaloid)	Tsai *et al.* (2004)
Dillenia indica L.	7	Anti diarrheal activity	Methanolic extract of bark	Castor oil and magnesium sulphate induced diarrheal model mice	Alkaloids, phenols, glycosides, tannins, saponins, steroids and terpenoids	Islam *et al.* (2013)
Litsea cubeba (Lour.) Pers.	6	Anti intestinal inflammatory	Essential oil	Lipopolysaccharides induced intestinal inflammation in male mice	Sabinene, α-pinene, terpinen-4-ol, α-terpineol, 1,8-cineole, myrcene, citronellol and citronella	Xia *et al.* (2023); Saikia *et al.* (2013)

Solanum nigrum L.	6	a) Antigastritic activity	Aqueous extract and hydro alcoholic extract of leaves and fruits	a) Ethanol induced mucosal damage in female albino rats of Sprague-Dawley (180-200gm)	Alkaloid, flavonoids, tannins, saponins, glycosides, proteins, carbohydrates, coumarins and phytosterols	Rajeswari *et al.* (2013)
		b) Antiulcerogenic activity		b) Aspirin induced pylorus ligated in female albino rats of Sprague-Dawley (180-200gm)	Solanine, solamargine, solanigrine and solasodine (Glycoalkaloids), (β-solamargine, solasonine and α, β-solansodamine)steroidal glycosides , (Diosgenin) steroidal saponins , steroidal genin, tannin and polyphenolic compounds.	
Allium Hookeri	5	Anti-ulcer	Methanolic leaf extract	Ethanol (1ml/200g) and Indomethacin (20mg/kg). Induced Gastric ulcer in Male Wistar rats (150-200g)	Flavonoids, saponins, phytosterols and organosulphur compounds, allicin	Singh *et al.*, (2018)

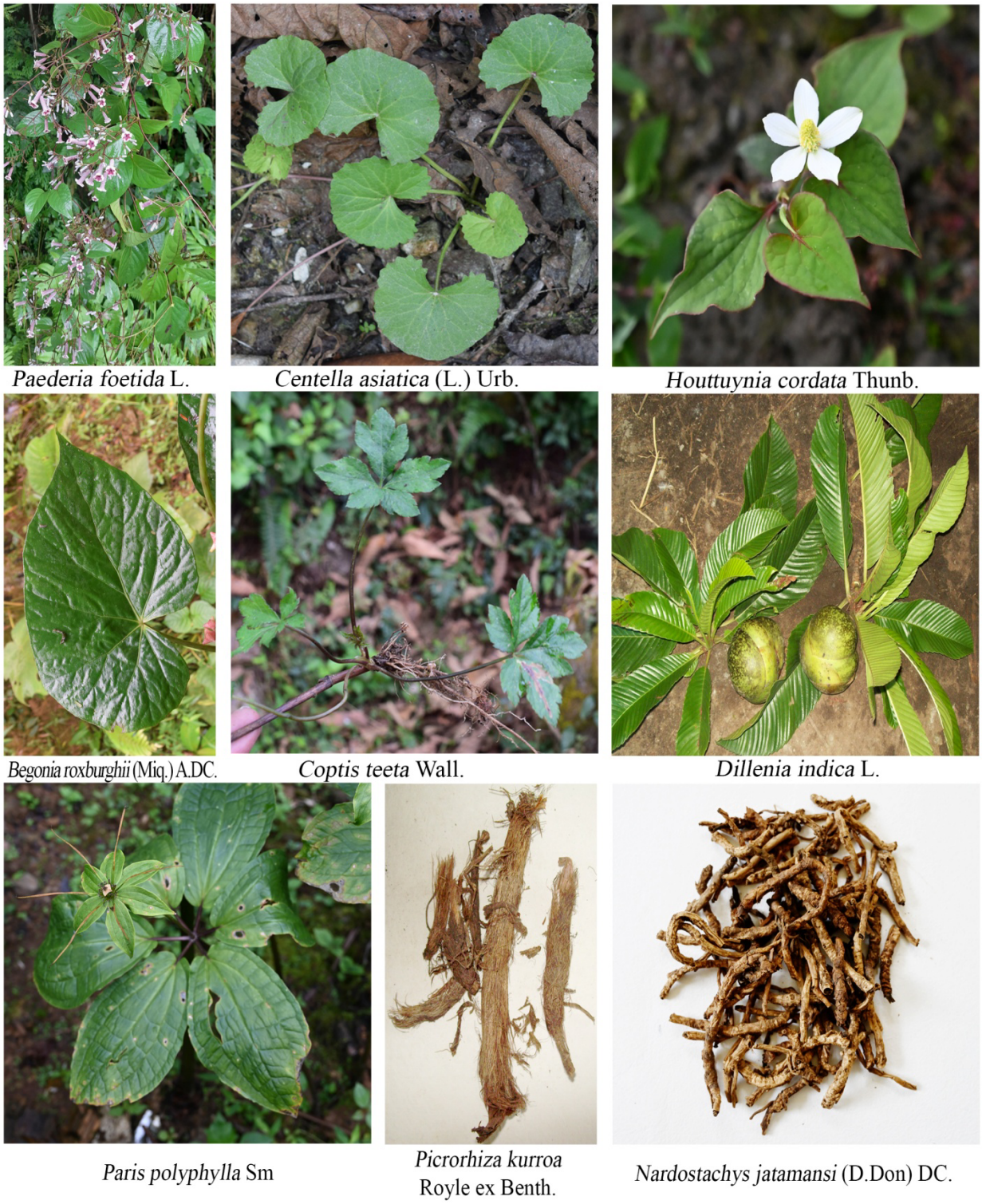

Figure. 6 Important medicinal plant including RET and most cited

Conclusions

All the medicinal plants recorded in the present review work are used by ethnic communities for the treatment of various ailments under GIDs. The reported medicinal plants belong to a total of 83 families and Asteraceae was the dominant family with 17 no. of species. The highest numbers of plants (83 species) are being used in the treatment of diarrhea. Among all the plant parts used, leaf is the dominant part used for various ailments. Herbs are the dominant plants among all the habits of the reported medicinal plants. There are 80 plants which are being categorized in the IUCN red list. These plants were listed

in the category of critically Endangered (1 sp.), Endangered (4 sps.), Vulnerable (2 sps.), Near Threatened (1 sp.), Least Concern (63 sps.), Data deficient (9 sps.). The listed RET plants are used as medicinal purposes by ethnic people for the treatment of various GI diseases. It is utmost necessary and immense need for conservation of diversity of medicinal plant wealth for the present and near future, by adapting the proper strategies with most appropriate method of conservation of RET plants. This review shows that the administration of extracts from most medicinal plant species is administrated orally. We have compiled the pharmacological activity and preclinical test of the extracts of the most cited plants against different mice models. Therefore, this review work of ethno medicinal plants used in treatment of GIDs would provide a new insight on analysis of phytochemicals, new bioactive compounds, and further research in the field of drug discoveries.

Declarations

List of abbreviations: GIDs -Gastrointestinal Disorders; UV- Use Value; ICF-Informant Concensus Factor; ITK-Indigenous Traditional Knowledge

Ethics approval and consent to participate: Not applicable

Consent for publication: Not applicable

Availability of data and materials: All the data related to the present study is included in the manuscript.

Competing interests: Authors declare that there is no conflict of interest.

Funding: This study was financially supported by National Medicinal Plant Board in the form of an EMR research project grant (F. No.Z.18017/187/CSS/R&D/AS-01/2021-22-NMPB-IV A; Dated: 21.01.2022).

Author contributions: Yashpal Bhardwaj conceptualized, supervised and prepared the original draft of the manuscript. Birina Bhuyan helped in preparation of Manuscript draft. Pulicherla yugandhar prepared and analysed the data and helped in figure preparation. Shiddamallayya Nagayya and Cheemanapalli Srinivasulu involved in analysis and editing. Mumtam Taboh and Taba Yehi worked in data collection and writing.

Acknowledgements

The contributors are thankful to the Assistant Director (Ayu), Regional Ayurveda Research Institute Itanagar, for providing the necessary facilities to carry out this work.

Literature cited

Abdulla MA, Al-Bayaty FH, Younis LT, Abu Hassan MI. 2010. Anti-ulcer activity of *Centella asiatica* leaf extract against ethanol-induced gastric mucosal injury in rats. Journal of Medicinal Plants Research 4(13):1253-1259.

Afroz S, Alamgir M, Khan MT, Jabbar S, Nahar N, Choudhuri MS. 2006. Anti-diarrhoeal activity of the ethanol extract of *Paederia foetida* Linn. (Rubiaceae). Journal of Ethnopharmacology 105(1-2):125-130.

Akter T, Nawar A, Alam MN, Rafiquzzaman M. 2020. In vitro antioxidant activity of the methanolic extract of leaves of a hill tract plant *Begonia roxburghii*. Journal of Biological Sciences 9(1-2):79-89.

Ali N & Ghosh B. 2006. Ethnomedicinal plants in Arunachal Pradesh: Some tacit prospects. ENVIS Bulletin Himalaya Ecology 14(2):22-27.

Angami A, Gajurel PR, Rethy P, Singh B, Kalita SK. 2006. Status and potential of wild edible plants of Arunachal Pradesh. Indian Journal of Traditional Knowledge 5(4):541-550.

Arya OP, Mylliemngap W, Pandey A. 2020. Ethnomedicinal plants used by Adi community of Upper Siang district of Arunachal Pradesh in North-East India. Pleione 14(2):265-276

Ayam VK. 2017. Ethnomedicine of Wild of Ziro, Arunachal Pradesh. International Journal of Research Studies in Biosciences 5(7):1-12

Bandopadhyay S, Mandal S, Ghorai M, Jha NK, Kumar M, Radha Ghosh A, Proćków J, Perez de la Lastra JM, Dey A. 2023. Therapeutic properties and pharmacological activities of asiaticoside and madecassoside: A review. Journal of Cellular and Molecular Medicine 27(5):593-608.

Baruah S, Borthakur SK, Gogoi P, Ahmed M. 2013. Ethnomedicinal plants used by Adi-Minyong tribe of Arunachal Pradesh, Eastern Himalaya. Indian Journal of Natural Products and Resources 4(3): 278-282.

Basak M, Dey BK. 2016. Phytochemical and antiulcer potential of ethanolic leaf extract of *Houttuynia Cordata*, thumb. Americal Journal of Pharmatech Research. 6 (5).

Bharali P, Singh B, Sharma CL. 2016. Ethnomedicinal knowledge of Galo Tribe from Arunachal Pradesh, India. International Journal of Current Research in Biosciences and Plant Biology 3(6):139-48.

Bhuyan LR, Pangu Y. 2018. High altitude medicinal plants of Tawang district, Arunachal Pradesh. Bulletin of Arunachal Forest Research 33(1):35-43.

Bushi D, Bam K, Mahato R, Nimasow G, Nimasow OD, Tag H. 2021. Ethnomedicinal plants used by the indigenous tribal communities of Arunachal Pradesh, India: a review. Ethnobotany Research and Applications 22(34):1-40.

Chakraborty T, Saha S, Bisht NS. 2017. First report on the ethnopharmacological uses of medicinal plants by Monpa tribe from the Zemithang Region of Arunachal Pradesh, Eastern Himalayas, India. Plants 6(1):1-12.

Chatterjee S, Saikia A, Dutta P, Ghosh, D, Pangging G, Goswami AK. 2006. Background paper on "Biodiversity Significance of Northeast India. WWF–India, New Delhi.

Chen H, Sha X, Luo Y, Chen J, Li X, Wang J, Cao G, Peng X. 2021. Acute and subacute toxicity evaluation of *Houttuynia cordata* ethanol extract and plasma metabolic profiling analysis in both male and female rats. Journal of Applied Toxicology 41(12):2068-2082.

Chen X, Wang Z, Yang Z, Wang J, Xu Y, Tan RX, Li E. 2011. *Houttuynia cordata* blocks HSV infection through inhibition of NF-κB activation. Antiviral Research 92(2):341-345.

Cheng CL, Guo JS, Luk J, Koo MW. 2004. The healing effects of *Centella* extract and asiaticoside on acetic acid induced gastric ulcers in rats. Life sciences. 74(18):2237-2249.

Cheng CL, Koo MWL. 2000. Effects of *Centella asiatica* on ethanol induced gastric mucosal lesions in rats. Life Sciences 67(21):2647-2653.

Das AK, Tag H. 2006. Ethnomedicinal studies of the Khamti tribe of Arunachal Pradesh. Indian Journal of Traditional Knowledge 5(3):317-322.

Das S, Kanodia L, Mukherjee A, Hakim A. 2013. Effect of ethanolic extract of leaves of *Paederia foetida* Linn. on acetic acid induced colitis in albino rats. Indian Journal of Pharmacology 45(5):453-457.

Das SK, Das TJ, Tshering D, Tsering J, Paul D, Gupta DD, Yanka H, Taram M, Bansod S, Godugu C, Ananthan R. 2019. Ethnobotanical notes on significant food and medicinal flora used by the indigenous Monpa and Nyishi communities of Arunachal Pradesh, India. Pleione 1:291-304.

De LC, Singh DR. 2017. Natural Resources in Northeast Region of India. International Journal of Agriculture 7(5):51-66.

Dogan Y, Ugulu I. 2013. Medicinal plants used for gastrointestinal disorders in some districts of Izmir province, Turkey. Studies on Ethno-Medicine 7(3):149-161.

Doley B, Gajurel PR, Rethy P, Buragohain R. 2014. Uses of trees as medicine by the ethnic communities of Arunachal Pradesh, India. Journal of Medicinal Plant Reserach 8(24):857-863.

Doley B, Gajurel PR, Rethy P, Singh B, Hazarika H. 2009. Ethnomedicinal uses of different species of *Cinnamomum Schaeffer* (Lauraceae) by ethnic communities in Arunachal Pradesh, India. Pleione 3(1):9-12.

Eko R, Ngomle S, Kanwat M, Kalita H, Moyon NN. 2020. Eating from the Wild: an insight into the indigenous wild edible plant consumed by the Digaru Mishmi tribe of Arunachal Pradesh. Indian Journal of Traditional Knowledge 19(2):360-369.

Gibji N, Ringu N, Dai NO. 2012. Ethnomedicinal knowledge among the Adi tribes of lower dibang valley district of Arunachal Pradesh, India. International Reearch Journal of Pharmacy 3(6):223-229.

Goswami P, Saku D, Jaishi A, Das A, Sharma HN. 2009. Traditional health care practices among Tagin tribe of Arunachal Pradesh. Indian Journal of Traditional Knowledge 8(1):127-130.

Guo JS, Chen CL, Koo MWL. 2004. Inhibitory effects of *Centella asiatica* water extract and asiaticoside on inducible nitric oxide synthase during gastric ulcer healing in rats. Planta medica 70(12):1150-1154.

Haridasan K, Sarmah AN, Bhuyan LR, Bisht NS. 2003. Medicinal plants sector in Arunachal Pradesh-an overview. Indian forester 129(1):37-47.

Heinrich M, Ankli A, Frei B, Weimann C, Sticher O. 1998. Medicinal plants in Mexico: healers' consensus and cultural importance. Social Science & Medicine 47:1859-1871.

Hirudkar JR, Parmar KM, Prasad RS, Sinha SK, Lomte AD, Itankar PR, Prasad SK. 2020. The antidiarrhoeal evaluation of *Psidium guajava* L. against enteropathogenic Escherichia coli induced infectious diarrhoea. Journal of Ethnopharmacology 251:112561.

Islam MM, Pia RS, Sifath-E-Jahan K, Chowdhury J, Akter F, Parvin N, Akter S. 2013. Antidiarrheal activity of *Dillenia indica* bark extract. International Journal of Pharmaceutical Sciences and Research. 4(2):682-688.

Jainu M, Devi CS. 2004. Antioxidant effect of methanolic extract of *Solanum nigrum* berries on aspirin induced gastric mucosal injury. Indian Journal of Clinical Biochemistry 19:57-61.

Jambey T, Gogoi BJ, Pallabi KH, Tam N, Tag H. 2017. Ethnobotanical appraisal on the wild edible plants used by the Monpa community of Arunachal Pradesh. Indian Journal of Traditional Knowledge 16(4):626-637.

Jayakumari S, Anbu J, Ravichandiran V, Anjana AS, Kumar GS, Singh MA. 2012. Antiulcerogenic and free radical scavenging activity of flavonoid fraction of *Psidium guajava* Linn leaves. International Journal of Pharmacy and Pharmaceutical Sciences 4:170-174.

Jeri L, Tag H, Tsering J, Kalita P, Mingki T, Das AK. 2011. Ethnobotanical Investigation of Edible and Medicinal Plants in Pakke Wildlife Sanctuary of East Kameng District 5(1):83-90

Jones GS, Baldwin DR. 2018. Recent advances in the management of lung cancer. Clinical Medicine 18:41-46.

Kagyung R, Gajurel PR, Rethy P, Singh B. 2010. Ethnomedicinal plants used for gastro-intestinal diseases by Adi tribes of Dehang-Debang Biosphere Reserve in Arunachal Pradesh. Indian Journal of Traditional Knowledge 9(3):496-501.

Kala CP. 2005. Ethnomedicinal botany of the Apatani in the Eastern Himalayan region of India. Journal of Ethnobiology and Ethnomedicine 1(11):1-8.

Kamum G, Kanwal KS, Yama L. 2018. Ethnomedicinal plants used by Galo Community of West Siang district, Arunachal Pradesh. International Journal for Research in Applied Science and Engineering Technology 6(10):438-444.

Kar A, Borthakur S.K. 2008. Medicinal Plants used against dysentery, diarrhoea, and cholera by the tribes of erstwhile Kameng district of Arunachal Pradesh. Natural Product Radiance 7(2): 176-181.

Karmakar UK, Tarafder UK, Sadhu SK, Biswas NN, Shill MC. 2010. Biological Investigations of Dried Fruit of *Solanum nigrum* Linn. Stamford Journal Pharmaceutical Sciences 3(1):38-45.

Khongsai M, Saikia M, Kayang H. 2011. Ethnomedicinal plants used by different tribes of Arunachal Pradesh. Indian Journal of Traditional Knowledge 10(3):541-546.

Kim JE, Park KM, Lee SY, Seo JH, Yoon IS, Bae CS, Yoo JC, Bang MA, Cho SS, Park DH. 2017. Anti-inflammatory effect of *Allium hookeri* on carrageenan-induced air pouch mouse model. PLoS One. 12(12):e0190305.

Kim JE, Seo JH, Bae MS, Bae CS, Yoo JC, Bang MA, Cho SS, Park DH. 2016. Antimicrobial constituents from *Allium hookeri* root. Natural product communications. 11(2):1934578X1601100226.

Latif A, Razique A, Asadullah RS, Zuberi RH. 2008. Phytochemical and Physico-chemical study of *Coptis teeta* Wall.: An effective drug of choice in ocular ailments. European Journal of Integrative Medicine 1:22-23.

Makhawi AM, Hamadnalla H. 2019. Phytochemical screening of leaves and roots of *Stylochiton borumensis*: a medicinal plant. Earth & Environmental Science Research & Review 2(1):1-5.

Maman ML, Moussa I, Ikhri K. 2017. Ethnobotanical survey: A comprehensive review of medicinal plants used against Gastrointestinal disorders in Niger, West Africa. Jundishapur Journal of Natural Pharmaceutical Products 12(4): 65730.

Mao, A. 1993. Preliminary report on the folklore botany of Mao Nagas of Manipur India. Ethnobotany 5, 143–147.

Marshall GD. 2018. Challenges in allergy immunology practice: Solutions needed for persistent patient problems. Annals of Allergy Asthma & Immunology 121(6):647-648.

Mayer N, Mittermeier RA, Mittermeier CA, da Fornseca GAB, Kent J. 2000. Biodiversity hotspots for conservation priorities. Nature 403:853-858.

Mittermeier RA, Gil PR, Hoffmann M, Pilgrim J, Brooks T, Mittermeier CG, Lamoreux J, Da Fonseca GAB. 2005. Hotspots revisited: Earth's biologically richest and most endangered terrestrial ecoregions: Conservation International. Sierra Madre, Cemex, 315.

Moyong S, Hui PK, Tag H. 2021. Documentation of some significant ethnobotanical resources used by the Mishmi community in Lohit District of Arunachal Pradesh, India. Pleione 15(2):165-178.

Namsa ND, Mandal M, Tangjang S, Mandal SC. 2011. Ethnobotany of the Monpa ethnic group at Arunachal Pradesh, India. Journal of Ethnobiology and Ethnomedicine 7(1):1-14

Namsa ND, Tag H, Mandal M, Kalita P, Das AK. 2009. An ethnobotanical study of traditional anti-inflammatory plants used by the Lohit community of Arunachal Pradesh, India. Journal of Ethnopharmacology 125(2):234-245.

Nimachow G, Rawat JS, Arunachalam A, Dai O. 2011. Ethno-medicines of Aka tribe, West Kameng District, Arunachal Pradesh (India). Science and Culture. 1;77(3-4):149-155.

Ooko Abong G, Muzhingi T, Wandayi Okoth M, Ng'ang'a F, Ochieng PE, Mahuga Mbogo D, Malavi D, Akhwale M, Ghimire S. 2020. Phytochemicals in leaves and roots of selected Kenyan orange fleshed sweet potato (OFSP) varieties. International Journal of Food Science.1-11

Panda S, Srivastava RC. 2010. New ethnomedicinal practices by the Akas, Nepalese and Dirang Monpas of West kameng district of Arunachal Pradesh. Indian Journal of Traditional Knowledge 9(4):721-723.

Panday H, Jha SK, Al-Shehri M, Panda SP, Rana R, Alwathinani NF, Azhar EI, Dwivedi VD, Jha AK. Allosteric inhibition of dengue virus RNA-dependent RNA polymerase by *Litsea cubeba* phytochemicals: a computational study. 2024. Journal of Biomolecular Structure and Dynamics 42(10):5402-5414.

Payum T, Das AK, Shankar R. 2014. Nutraceutical folk food plants used among indigenous people of east siang district of Arunachal Pradesh, India. American Journal of Pharmtech Research 4(4):696-704.

Phumthum M, Srithi K, Inta A, Junsongduang A, Tangjitman K, Pongamornkul W, Trisonthi C, Balslev H. 2018. Ethnomedicinal plant diversity in Thailand. Journal of Ethnopharmacology 214:90-98.

Prasad RS, Chikhale RV, Rai N, Akojwar NS, Purohit RA, Sharma P, Kulkarni O, Laloo D, Gurav SS, Itankar PR and Prasad SK. 2023c. Rutin from *Begonia roxburghii* modulates iNOS and Sep A activity in treatment of *Shigella flexneri* induced diarrhoea in rats: An in vitro, in vivo and computational analysis. Microbial Pathogenesis, 184, p.106380.

Prasad RS, Dhaswadikar SR, Laloo D, Dhobi M, Itankar PR and Prasad SK, 2023a. Quality control profiling, nutritional analysis and phytochemical standardization of a vegetable root *Begonia roxburghii*. Vegetos, *36*(3), pp.842-850.

Prasad RS, Yenorkar NY, Dhaswadikar SR, Sinha SK, Rai N, Sharma P, Kulkarni O, Kumar N, Dhobi M, Laloo D and Gurav SS. 2023b. A systematic antidiarrhoeal evaluation of a vegetable root *Begonia roxburghii* and its marker flavonoids against nonpathogenic and pathogenic diarrhoea. Food Bioscience, *53*, p.102672.

Rahman MS, Shams-Ud-Doha KM, Rahman R. 2011. Antidiarrheal activity of the leaf and fruit extracts of *Dillenia indica*. International Journal of Biosciences 1(6):39-46.

Rajeswari M, Gurumurthy S, Kamat S. 2013. Anti gastritic and antiulcerogenic effects of *Solanum nigrum* in laboratory animals. International Journal of Food Sciences and Nutrition 2(6):266-271.

Reddy KS, Kumar AS, Ganapaty S. 2011. Evaluation of anti-ulcer activity of *Paederia foetida* root extracts in experimentally induced gastric ulcer in rats. International Journal Research in Ayurveda and Pharmacy 2(5):1556-1559

Rethy B, Singh B, Kagyung R, Gajurel PR. 2010. Ethnobotanical studies of Dehang–Debang Biosphere Reserve of Arunachal Pradesh with special references to Memba tribe. India Indian Journal of Traditional Knowledge 9(1):61-67.

Rinyo R, Pallabi KH, Vineet KR, Tag H. 2021. Medicinal plants used by the Apatani and Tagin tribes of Arunachal Pradesh for the treatment of stomach disorders. Journal of Bioresources 8(2):36-40.

Rinyo R, Taram M, Hui P.K, Tag H. 2018. Ethnobotanical resources and traditional skills prevalent among the Tagin community of Arunachal Pradesh, India. Pleione 12(2):265-274.

Saikia AK, Chetia D, D'Arrigo M, Smeriglio A, Strano T, Ruberto G. 2013. Screening of fruit and leaf essential oils of Litsea cubeba Pers. from north-east India–chemical composition and antimicrobial activity. Journal of Essential Oil Research 25(4):330-338.

Sarmah R, Adhikari D, Majumder M, Arunachalam A. 2008. Traditional medicobotany of Chakma community residing in the Northwestern periphery of Namdapha National Park in Arunachal Pradesh. Indian Journal of Traditional Knowledge 7(4):587-593.

Sen P, Dollo M, Choudhury MD, Choudhury D. 2008. Documentation of traditional herbal knowledge of Khamptis of Arunachal Pradesh. Indian journal of Traditional Knowledge 7(3):438-442.

Shah U, Patel M, Patel A, Patel K, Patel M, Akabari A, Patel S, Patel V, Maheshwari R, Sen A, Sethiya NK. 2023. Review on Determination of Berberine in Biological and Pharmaceutical Matrices: An Analytical and Therapeutic Perspective. Current Pharmaceutical Analysis 19(5):379-398.

Shankar R, Rawat MS, Deb S, Sharma BK. 2012. Jaundice and its traditional cure in Arunachal pradesh. Journal of pharmaceutical and Scientific Innovation 1(3):93-97.

Shankar R, Rawat MS. 2008. Medicinal plants used in traditional medicine in Lohit and Dibang Valley district of Arunachal Pradesh. Indian Journal of Traditional Knowledge 7(2):288-295.

Shankar R, Tripathi AK, Neyaz S, Anku G, Rawat MS, Dhiman KS. 2015. Distribution of medicinal plants in Kurung Kumey, East Kameng and West Kameng districts of Arunachal Pradesh: their systemic conservation. World Journal of Pharmaceutical Research 4(9):977-993.

Shoba FG, Thomas M. 2001. Study of antidiarrhoeal activity of four medicinal plants in castor-oil induced diarrhoea. Journal of Ethnopharmacology 76:73-76

Singh A, Singh RK, Bharadwaj R, Singh AK. 2012. Adaptation of culturally and nutritionally important traditional foods in Eastern Himalaya: A case study with Adi women of Arunachal Pradesh. Indian Journal of Traditional. Knowledge 11(4):623-633.

Singh H, Singh AP, Singh AP. 2021. A review on *Kalanchoe pinnata* (Crassulaceae). Indian Journal of Pharmacy and Pharmacology 8(3):182-88.

Singh KD, Chetia D, Biplab DE. 2018. New flavonoid compound from Allium Hookeri thwaites as a gastroprotective agent. International Journal of Pharmacy and Pharmaceutical Sciences 1:24-30.

Singh KD, Chetia D, Mazumdar S. Anti-diabetic activity of methanolic extract of *Allium hookeri* leaves. Indo American Journal of Pharmaceutical Reseach 2013;3:4098-4104.

Singh RK, Lego YJ, Sureja AK, Srivastava RK, Hazarika BN. 2021. People and plant: Learning with Adi community on ethnomedicinal practices and conservation in Arunachal Pradesh. Indian Journal of Traditional Knowledge 20(1):74-82.

Srivastava RC, Adi community. 2009. Traditional knowledge of Adi tribe of Arunachal Pradesh on plants. Indian Journal of Traditional Knowledge 8(2):146-153.

State of forest report 2021. Forest Survey of India (Ministry of Environment, Forest and Climate Change). ISBN 978-81-950073-1-8.

Tag H, Murtem G, Das AK, Singh RK. 2008. Diversity and distribution of ethnomedicinal plants used by the Adi Tribe in East Siang District of Arunachal Pradesh, India. Pleione 2(1):123-136.

Tag, H, Das AK. 2004. Etnobotanical notes on the Hill Miri tribe of Arunachal Pradesh. Indian Journal of Traditional Knowledge 3(1):80-85.

Tangjang S, Namsa ND, Arana C, Litin A. 2011. An ethnobotanical survey of medicinal plants in the Eastern Himalayan zone of Arunachal Pradesh, India. Journal of Ethnopharmacology 134(1):18-25.

Taram M, Borah D, Mipun P, Taram V, Das AP. 2020. Evaluation of ethnobotanical knowledge in Komkar–Adi Biocultural Landscape of Eastern Himalayan Region of India. Asian Journal of Ethnoboiology 21:70-87.

Taram M, Borah D, Rinyo R, Tag H. 2018. Wild food plant resources of komkar adi tribe of upper siang district in Arunachal Pradesh, India. Bulletin of Arunachal Forest Research 33(2): 27-35.

Taram M, Hui PK, Tag H. 2021. Ethnobotanical uses of Gesneriaceae members by the indigenous tribal communities in Arunachal Pradesh (India). Pleione 15(3):425-433.

Taram M, Rinyo R, Gammi L, Yanggi K, Nangkar A, Hui PK, Jambhulkar S, Tag H. 2019. Diversity of ethnobotanically significant angiospermic weeds in Siang Belt of Arunachal Himalayan Region in India. Pleione 13(2):336-345.

Tardío J, Pardo-de-Santayana M. 2008. Cultural importance indices: a comparative analysis based on the useful wild plants of southern Cantabria (Northern Spain). Economic Botany 62:24-39.

Thejaswini BM, Satish S, Shabaraya R. 2023. A review on Pharmacological potential of Solanum nigrum: Pharmacological review on *Solanum nigrum*. Indian Journal of Pharmacy and Drug Studies 2(3):95-102.

Tiwari UL, Kotia A, Rawat GS. 2009. Medico–ethnobotany of the Monpas in Tawang and West Kameng districts of Arunachal Pradesh, India. Pleione 3(1):1-8.

Tripathi AK, Borah L, Shankar R, Rath C. 2018. Folk Medicines Used by Nyishi tribe Of Arunachal Pradesh. Conference: National Conference on Diseases and Drugs: Emerging Trends and Challenges, Delhi University.

Tripathi VJ, Dasgupta B. 1974. Anti-diarrhoeal potential of *Paederia foetida.* Journal of Indian chemical Society 51:1057.

Trotter RT, Logan MH, 2019. Informant consensus: a new approach for identifying potentially effective medicinal plants. In Plants and indigenous medicine and diet (pp. 91-112). Routledge.

Tsai JC, Tsai S, Chang WC. 2004. Effect of ethanol extracts of three Chinese medicinal plants with anti-diarrheal properties on ion transport of the rat intestinal epithelia. Journal of Pharmacological Sciences 94(1:60-66.

Tsering J, Tag H. 2015. High altitude ethnomedicinal plants of Western Arunachal Himalayan landscape. Pleione 9(1):18-25.

Tushar S, Basaka GC, Sarma L. 2010. Ethnomedical uses of Zingiberaceous plants of Northeast India. Journal of Ethnopharmacology 132:286-296

Varpoorte R, Kim H, Choi Y. 2006. Plants as source of medicines: new perspectives. Medicinal and aromatic plants. Frontis 1:261-73.

Wangpan T, Tangjang S. Status of medicinal plants in context of Arunachal Pradesh. 2020. Environmental Concerns and Sustainable Development: Vol 2: Biodiversity, Soil and Waste Management.63-80.

Wangpan T, Wangmu L, Tangjang S. 2022. Medicinal plants used in management of certain ailments by the Monpas of Dirang, Arunachal Pradesh, India. Notulae Scientia Biologicae 14(1):1-11

Xia L, Li R, Tao T, Zhong R, Du H, Liao Z, Sun Z and Xu C (2023) Therapeutic potential of *Litsea cubeba* essential oil in modulating inflammation and the gut microbiome. Frontier in Microbiology 14:1233934. doi: 10.3389/fmicb.2023.1233934

Yeshwante SB, Juvekar AR, Pimprikar RB, Kakade RT, Tabrej M, Kale MK, Firke SD. 2009. Anti-diarrheal activity of methanolic and aqueous extracts of Dillenia indica L. Research Journal of Pharmacology and Pharmacodynamics 1(3):140-142.

Zainol MK, Abd-Hamid A, Yusof S, Muse R. 2003. Antioxidative activity and total phenolic compounds of leaf, root and petiole of four accessions of *Centella asiatica* (L.) Urban. Food Chemistry 81(4):575-81.

Zhang C, Tong T, Kim CK, Liu Y, Seo HJ, Kim BS, Kang SG. 2015. Antioxidant and anti-inflammatory properties of extracts from *Allium hookeri* root. Korean Journal of Food Preservation 22(6):867-77.

Zhang L, Lv H, Li Y, Dong N, Bi C, Shan A, Wu Z, Shi B. 2020. Sodium houttuyfonate enhances the intestinal barrier and attenuates inflammation induced by Salmonella typhimurium through the NF-κB pathway in mice. International Immunopharmacology 89:107058.