Ethnomedicinal plants used by the indigenous tribal communities of Arunachal Pradesh, India: a review

Dhoni Bushi, Kenjum Bam, Ranjit Mahato, Gibji Nimasow, Oyi Dai Nimasow and Hui Tag

Correspondence

Dhoni Bushi¹, Kenjum Bam¹, Ranjit Mahato¹, Gibji Nimasow¹, Oyi Dai Nimasow*¹, Hui Tag²

¹Soil and Limnological Laboratory, Department of Geography, Rajiv Gandhi University, Arunachal Pradesh (INDIA).
²Plant Systematics and Ethnobotanical Research Laboratory, Department of Botany, Rajiv Gandhi University, Arunachal Pradesh (INDIA).

*Corresponding Author: oyidai.nimasow@rgu.ac.in

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Review

Abstract

Background. In the absence of modern healthcare facilities in remote rural localities, the indigenous tribal communities of Arunachal Pradesh in the Eastern Himalayan region of India continue to rely on plant-based ethnomedicine for the treatment of various ailments prevalent within their biocultural landscape. This review work has been carried out to document the ethnomedicinal knowledge of the indigenous tribal communities of Arunachal Pradesh by critically perusing the selected published literature. The exploration of ethnomedicinal knowledge of the tribal communities may provide clues for development of new drugs and can also help in the continuity and preservation of such important traditional healing practices.

Methods. We downloaded 20 published ethnomedicinal literature (between 2005 to 2019) from online databases such as iMedPub, Academia.edu, ResearchGate, Semantic Scholar, Scopus, Web of Science, Publons, PubMed, etc. using keywords ‘ethnomedicine’, ‘tribes of Arunachal Pradesh’, and ‘North-East India’. The diversity of ethnomedicinal plants, types of ailments treated, herbal formulation, informant consensus and the species and family use values have been quantified using relevant statistical tools and techniques.

Results. The present review have reported 358 species of medicinal plants belonging to 100 families used by the fourteen indigenous tribal communities for treating 107 specific types of ailments which are classified under 10 broad categories of ailments, namely, cardiovascular, dermatological, gastrointestinal, general health, gynecological, musculoskeletal, odontological, orthopaedic, respiratory, and urological disorders. Asteraceae has shown the highest use reports per family (86) while Acanthaceae demonstrated the highest family use value index (UVf) of 4.90. The highest species use report was observed under gastrointestinal disorders with an Informant consensus factor (Fic) of 0.41 while the least species use report was observed under urological disorder (Fic 0.11).

Conclusion. Plants showing higher UVf index and Fic in the present analysis should be useful for conservation priority. It will also help in prioritization for in-depth investigation of bioactive phytochemicals of potential medicinal plants effective against reported target ailment categories.

Keywords: Ailments, Ethnomedicine, Family use value (UVf), Tribal communities, Informant consensus factor (Fic).
Background

Ethnomedicine refers to the totality of health, knowledge, skills, values, beliefs, and practices of members of the traditional society, including all the clinical and non-clinical activities that narrate their health needs (Foster & Anderson 1978). It is more than a privileged study of the stunning or the typical form of unusual healing rituals and culturally bound syndromes (Kleinman 1980). In other words, it is the practices of traditional healers who are dependent on indigenous medicine along with some ritual practices to treat the illness of the patient that is essentially the outcome of culture (Neumann & Lauro 1982). It entails the full range and distribution of health-related experience, discourse knowledge, and practice among different strata of the human population (Nichter 1991) and the vital vehicle for understanding indigenous societies and their relationship with nature (Anyinam 1995). It is the documentation of the consequences of particular behaviors and practices through cultural and biological expertise inherent to the fields of anthropology and biology (Pieroni et al. 2005). Ethnomedicine is the explanation of illness and diseases from the classic point of view (Bhasin 2007). The ethnomedicinal plants are the major source for novel drug discovery and development from traditional herbal technology methods used by the local herbal healers (Heinrich & Gibbons 2001). The exploration of ethnomedicinal knowledge of the tribal people can reveal the uses of plants for medicinal purposes and can help in the formulation of modern herbal drugs that are comparatively safer and cheaper (Manna & Mishra 2018). Ethnobotanical studies have significantly contributed in the development of new drugs for many centuries and may also prove worthy for modern medicinal practices (Pandey & Tripathi 2017).

Genetic resources including plant resources are an integral component of biological diversity. They provide the basis for the continuous evolution and maintenance of the life-supporting systems on earth and also contribute to the sustainable economic, scientific, technological, cultural, and spiritual development of humankind (Push pangadan & George 2010). In the recent decades, the resurgence of interest in ethnomedicine is increasing exponentially, and, the herbal products trade in both national and international markets. As per the World Health Organization (2002), about 80% of the world’s rural populations of the developing countries are primarily dependent on herbal medicines for their basic healthcare needs. India has an officially recorded list of 45,000 plant species (Paul et al. 2005) and various estimations have put a list of 7,500 species of medicinal importance (Nam sa et al. 2009). The ethnomedicinal plants play a significant role in the lives of rural people of tribal areas of India (Raghuvanshi et al. 2021).

The tribal people who live in a mutual relationship with the forests have developed a highly balanced physical and mental state without endangering biodiversity even today. Different tribal societies of North-East India use about 1963 species of medicinal plants for ethnomedicinal purposes (Sajem & Gosai 2006). Arunachal Pradesh is the largest State of North-East India which is endowed with a rich heritage of biological and cultural diversity. The State harbors around 5,000 species of angiosperms, out of which over 500-600 plant species are reported to be used in traditional ethnomedicinal practices (Haridasan et al. 2003, Jambey et al. 2017, Tag 2007). The State is inhabited by 26 major tribes and more than 110 sub-tribes with rich heritage of ethnobotanical knowledge system (Nimachow et al. 2011). Each of these ethnic groups possesses unique sets of traditional knowledge related to their faith and belief systems, agricultural and ethnomedicinal practices that had been orally passed down from generation to generation. However, these valuable traditional knowledge systems could face extinction in immediate future due to lack of proper conservation, documentation, and promotional activities (Das & Tag 2006). Over the last two decades, several researchers have endeavored to document the ethnomedicinal practices of the tribes of Arunachal Pradesh. So far, we have partial records of the traditional healing practices of Adi, Aka, Apatani, Galo, Idu Mishmi, Tai Khamti, Membia, Mompa, Nocte, Nyishi, Singpho, Tagin, Tangsa, and Wancho. However, ethnomedicinal practices of certain tribes and sub-tribes like Bugun (Khowa), Diganu Mishmi, Khamba, Lisu (Yobin), Miju Mishmi, Nah, Puroik (Sulung), Sajolang (Miji), Sherdikpen, and Zakhings are still largely unexplored. This review is intended to document various medicinal plants reportedly used by fourteen indigenous tribal communities of Arunachal Pradesh in their ethnomedicinal practices through critical screening of the selected published ethnomedicinal literature published in between the year 2005 to 2019. This paper also quantified the diversity of ethnomedicinal plants, types of ailments treated, herbal formulation, informant consensus, and species as well as family use values.

Materials and Methods

Study area

The present review on ethnomedicinal plants is based on the tribal communities of Arunachal Pradesh, India. The State is situated in between 26° 30’ N and 29° 31’ N latitudes and 91° 30’ E to 97° 30’ E longitudes. It shares an international boundary with Bhutan (160 Km) in the west, China (1080 Km) in the north, Myanmar (440 Km) in the southeast and state boundary with Assam and Nagaland (Fig. 1). Some of the major tribes of the State are Aka, Adi,
Apatani, Galo, Tai Khamti, Puroik, Mishmi (Idu, Taraon & Kaman), Monpa, Nyishi, Nocte, Sajolang, Singpho, Tagin, Tangsa, Wancho, etc. As per the Census of India (2011), the total population of the state was 13,83,727 with 7,13,912 males and 6,69,815 females. The sex ratio was 938 females per 1,000 males and the percentage of decadal growth rate was 26. The density of population was only 17 persons per km² and the literacy rate was 65.38%. The total urban population was 3,17,369 and a major chunk of the population i.e., 10,66,358 was categorized as rural population. The total number of villages was 5,589 with 2,70,577 households. Out of the total population 9,51,821 belong to the Scheduled Tribe. The tribal communities of the state largely depend on the surrounding forests to derive their livelihood including medicinal requirements due to remoteness and predominance of rural population.

**Figure 1. Location map of the study area.**

**Screening of published ethnomedicinal literature**
There are several research papers available on the general ethnobotany of the indigenous tribal communities of Arunachal Pradesh, India. This review includes 20 research papers published between the years 2005 to 2019 that have reported ethnomedicinal uses of the plant resources by the various tribes of Arunachal Pradesh (Table 1). The relevant published ethnomedicinal literature was downloaded from online databases like iMedPub, Academia.edu, ResearchGate, Semantic Scholar, Scopus, Web of Science, Publons, PubMed, etc. using keywords like ethnomedicine, tribes of Arunachal Pradesh, and North-East India. The accepted botanical names and author citations of the plant species mentioned in the original papers were updated by consulting website http://www.theplantlist.org (The Plant List), http://www.worldfloraonline.org (World Flora Online), http://www.plantsoftheworldonline.org (Plants of the World Online). The consulted articles reflect the botanical name, family name, conservation status, habit, parts used, herbal formulation, ailments treated, and the ethnic groups. The ethnomedicinal plants were grouped into 10 broad disorders/disease categories that include 107 specific types of ailments.

**Statistical analysis**
The cultural importance of botanical species was initially proposed by Phillips and Gentry (1993) using the formula as shown below:

$$UV_{is} = \sum \frac{U_{is}}{N_{is}}$$
Where $U_{sf}$ represents the number of uses mentioned by all informants for a given species $s$ (use reports for species $s$), and $N_{s}$ is the total number of informants that reported species $s$. In this study, the concept of pseudo-informant was used instead of informants, as described previously (Phumthum et al. 2018, Tardío & Pardode-Santayana 2008). A pseudo-informant refers to the individual authors who have taken out ethnomedicinal study rather than the original informants who reported the number of plants during the field studies. The modified equation of Tardío and Pardo-de-Santayana (2008) was used to calculate the family Use Values ($UV_f$) as given below:

$$UV_f = \sum U_f / N_f$$

Where, $U_f$ represents the number of uses mentioned by all pseudo-informants for a given family $f$ (use reports for the family $f$), and $N_f$ is the total number of pseudo-informants that reported family $f$.

Further, the Informant Consensus Factor ($F_{IC}$) was calculated following Heinrich et al. (1998) as given below:

$$F_{IC} = \frac{n_{ur} - n_f}{n_{ur} - 1}$$

Where, $n_{ur}$ is the number of use-reports in each category and $n_f$ is the number of use-reports in each category minus 1. The value of $F_{IC}$ ranges between 0 to 1, indicating a high value close to 1 as few species are used by a large number of people and vice versa.

**Results and Discussion**

**Screening of the papers from 2015-2019**

The original studies included in the present review have reported 1,050 ethnomedicinal plant species used against a wide range of ailments/disorders (Table 1). Out of the 20 studies found, 15 studies were based on particular ethnic tribes while the remaining 5 studies were carried out on 2 to 7 ethnic tribes together. Overall, we have recorded 6 studies on Adi (Ali & Ghosh 2006, Doley et al. 2014, Kagyung et al. 2010, Khongsai et al. 2015, Nimasow et al. 2012, Tangjang et al. 2011), 5 on Nyishi (Doley et al. 2014, Khongsai et al. 2015, Murtem & Chaudhry 2016, Tangjang et al. 2011, Tripathi et al. 2017), 4 on Apatani (Ayam 2017, Doley et al. 2014, Kala 2005, Khongsai et al. 2015), 3 each on Galo (Bharali et al. 2016, Murtem & Chaudhry 2016, Wangpan et al. 2019a), Monpa (Doley et al. 2014, Khongsai et al. 2015, Namsa et al. 2011), and Tagin (Goswami et al. 2009, Murtem & Chaudhry 2016, Wangpan et al. 2019a), 2 each on Idu Mishmi (Doley et al. 2014, Khongsai et al. 2015), Khampti (Das & Tag 2006, Sen et al. 2008), and Nocte (Tangjang et al. 2011, Wangpan et al. 2019b), and 1 each on Aka (Nimachow et al. 2011), Membai (Rethy et al. 2010), Singpho, Tangsa (Khongsai et al. 2015), and Wancho tribes (Wangjen et al. 2011). The field survey and analysis methods used in these studies were mostly questionnaires, personal interview, discussion, market survey, and participant observation. With the exception of 6 studies that applied $F_{IC}$, UV and Fidelity Level (FL), no statistical analyses have been used in rest of the studies (Table 1).

**Table 1. Checklist of selected published research papers on ethnomedicinal plants used by the indigenous tribal communities of Arunachal Pradesh, India**

| Ethnic tribes/Area | Number of species | Informant characteristics | Field survey and analysis methods | Authors |
|--------------------|-------------------|---------------------------|----------------------------------|---------|
| Adi, Nocte & Nyishi Eastern Himalayas | 74 | Folk healers (male & female) | Semi-structured questionnaire. Informant consensus factor (ICF) & Fidelity level (FL). | (Tangjang et al. 2011) |
| Khampti Namsai District | 45 | Folk healers & herbal traders | Questionnaire, group interview & market survey. No statistical analysis. | (Das & Tag 2006) |
| Nyishi Papum Pare District | 21 | Folk healers | Questionnaire & personal interview. No statistical analysis. | (Tripathi et al. 2017) |
| Galo & Tagin Arunachal Pradesh | 36 | Folk healers & herbal traders | Questionnaire, group interview & market survey. Use value (UV) & Fidelity level (FL). | (Wangpan et al. 2019a) |
| Galo West Siang District | 45 | Folk healers & herbal traders | Survey & interview. Informants consensus factor (ICF). | (Bharali et al. 2016) |
| Region                        | Population | Type of Informants | Methodology                                                                 | Reference                          |
|------------------------------|------------|--------------------|----------------------------------------------------------------------------|------------------------------------|
| Memba, Upper Siang District  | 88         | Folk healers & herbal traders | Questionnaire & informal discussion. No statistical analysis. | (Rethy et al. 2010)               |
| Apatani, Lower Subansiri District | 158        | Folk healers & herbal traders (male & female) | Literature survey, semi-structured questionnaire, group discussion & participant observation. No statistical analysis. | (Kala 2005)                        |
| Wancho, Tirap District       | 13         | Folk healers        | Open-ended questionnaire & participant interview. No statistical analysis. | (Wangjen et al. 2011)             |
| Adi, Apatani, Idu Mishmi, Monpa, Nyishi, Singpho & Tangsa Arunachal Pradesh | 84         | Folk healers & herbal traders | Discussion & exploration. No statistical analysis. | (Khongsai et al. 2015)            |
| Khampti, Arunachal Pradesh   | 37         | Folk healers & herbal traders | Standard questionnaire & discussion. No statistical analysis. | (Sen et al. 2008)                 |
| Adi, Lower Dibang Valley District | 26         | Folk healers & herbal traders | Field survey, schedules & personal interview. Informants consensus factor (ICF). | (Nimasow et al. 2012)             |
| Aka, West Kameng District    | 18         | Folk healers & herbal traders (men & women) | Ethnobotanical survey & interview. No statistical analysis. | (Nimachow et al. 2011)            |
| Monpa Kalaktang, West Kameng District | 50        | Folk healers & herbal traders | Semi-structured questionnaire & interview. Informants consensus factor (ICF). | (Namsa et al. 2011)               |
| Tagin, Upper Subansiri District | 10         | Folk healers & herbal traders | Semi-structured questionnaire, personal interview & group discussion. No statistical analysis. | (Goswami et al. 2009)             |
| Adi, Apatani, Idu Mishmi, Monpa & Nyishi Arunachal Pradesh | 64         | Folk healers | Pre-structured questionnaire & direct interview. No statistical analysis. | (Doley et al. 2014)               |
| Apatani, Lower Subansiri District | 30         | Folk healers        | Questionnaire, interview & group discussion. No statistical analysis. | (Ayam 2017)                        |
| Nocte, Tirap District        | 48         | Folk healers & herbal traders | Standard questionnaire, group interview & market survey. Use value (UVC) Index. | (Wangpan et al. 2019b)            |
| Galo, Nyishi & Tagin Arunachal Pradesh | 140      | Shaman, Folk healers & Herbal traders | Questionnaire & market survey. No statistical analysis. | (Murtem & Chaudhry 2016)          |
| Adi, Dehang-Debang Biosphere Reserve | 44        | Shaman, folk healers & herbal traders | Modified semi-structured questionnaire & interview. No statistical analysis. | (Kagyung et al. 2010)             |
| Adi, East, West and Upper Siang District | 19        | Shaman, folk healers & herbal traders | General observation & oral investigation. No statistical analysis. | (Ali & Ghosh 2006)               |
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Ethnomedicinal plants, habit, parts used and mode of herbal preparation

We filtered the repetitive and non-medicinal plant species and enlisted only 358 ethnomedicinal plant species belonging to 100 families. The ethnomedicinal plants have been categorized under 10 broad categories of diseases/ailments which include 107 specific types of ailments prevalent and treated among the fourteen ethnic tribes of Arunachal Pradesh. The other minor diseases/ailments and unspecified medicinal terminologies have been excluded in this study. The enlisted ethnomedicinal plants contained the botanical name, family, habit/conservation status, parts used/mode of preparation, therapeutic indications, and name of the ethnic groups (Table 2). About 41% of the medicinal plants reported were herbs, 24% shrubs, 24% trees, 9% climbers, and 1% each of creepers and fronds (Fig. 2). Most of the herbal remedies were prepared from leaves (39.45%) followed by rhizome/root (15.40%), fruit (14.98%), stem (8.23%), bark (7.38%), seed (5.06%), whole plant (4.43%), flower (2.74%) and shoot/twig (2.32%) as shown in Fig. 3. The common uses of herbs as ethnomedicinal sources and the preference of leaves have been also indicated by studies conducted by previous workers (Ayyanar & Ignacimuthu 2005, Bhattarai et al. 2010, Giday et al. 2007, Ragupathy et al. 2007). The remedies were mostly taken in raw form (185 species) followed by paste form (91 species), water decoction (40 species), vegetable (18 species), infusion (12 species), roasted and powder form (8 species) each (Fig. 4). The local and IUCN-based conservation status of the ethnomedicinal plants showed 12 endangered, 6 near threatened, 2 vulnerable, 1 each critically endangered and extinct in wild and rest of the species were data deficient, least concern and not evaluated.

![Figure 2. Habit of medicinal plants](image1)

![Figure 3. Morphological parts of plants used for ethnomedicine preparation](image2)
Table 2. List of ethnomedicinal plants used by the indigenous tribal communities of Arunachal Pradesh

| Botanical name              | Family          | Habit/Ecological status | Parts used/Mode of preparation                          | Therapeutic indications                              | Used by ethnic groups                                                                 |
|-----------------------------|-----------------|-------------------------|--------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------|
| *Abroma augusta* L.         | Sterculiaceae   | Tree/ NT                | Bark & root/powder taken with water                    | Loss of appetite, dysentery, urinal ailments & vomiting | Adi, Khampti & Nyishi (Das & Tag 2006, Kagyung *et al*. 2010, Tripathi *et al*. 2017) |
| *Abrus precatorius* L.      | Fabaceae        | Herb/ NE                | Seed/powder taken with water                           | Snake bite & vomiting                                | Khampti (Das & Tag 2006)                                                               |
| *Acacia caesia* (L.) Willd. | Fabaceae        | Climber/ LC             | Leaf/paste                                            | Killing head lice                                     | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)                                         |
| *Acmelea oleracea* (L.) R.K. | Asteraceae      | Herb/ LC                | Fruit & flower/raw                                    | Toothache                                            | Galo & Tagin (Wangpan *et al*. 2019b)                                                  |
| *Acmelea paniculata* (Wall. ex DC.) R.K. Jansen | Asteraceae | Herb/ LC                | Young shoot & flower/raw                               | Worm infection, leucorrhoea & mouth ulcer            | Galo (Bharali *et al*. 2016)                                                          |
| *Aconitum heterophyllum* Wall. ex Royle | Ranunculaceae | Herb/ EN                | Root & rhizome/raw                                     | Snake bite & wounds                                   | Memb (Rethy *et al*. 2010)                                                             |
| *Acorus calamus* L.         | Acoraceae       | Herb/ LC                | Rhizome/raw                                            | Asthma, bone fracture, bronchitis, cuts, diarrhea, dysentery, skin allergy, snake bite, stomachache & wounds | Adi, Apatani, Galo, Nyishi, Tagin & Wancho (Ayam 2017, Kala 2005, Khongsai *et al*. 2015, Murtem & Chaudhry 2016, Wangjen *et al*. 2011) |
| *Adhatoda vasica* Nees.     | Acanthaceae     | Herb/ LC                | Leaf, bark & root/raw                                  | Anemia, gastric & fever                               | Khampti (Das & Tag 2006)                                                              |
| *Adhatoda zeylanica* Medik. | Acanthaceae     | Shrub/ NE               | Leaf/decoction                                         | Cough & cold, tumour & uterine problems               | Adi, Galo, Nyishi & Tagin (Khongsai *et al*. 2015, Murtem & Chaudhry 2016)            |
| *Aegle marmelos* (L.) Correa | Rutaceae        | Tree/ NT                | Fruit/raw                                              | Indigestion                                           | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)                                         |
| *Aerva sanguinolenta* (L.) Blume | Amaranthaceae | Herb/ LC                | Leaf/paste                                             | Injuries                                              | Khampti (Sen *et al*. 2008)                                                            |
| *Aesculus assamica* Griff.  | Hippocastanacea e | Tree/ LC              | Leaf/paste                                             | Skin allergy & backache                               | Monpa (Khongsai *et al*. 2015)                                                        |
| Plant Name                          | Family     | Type     | Part Used          | Uses                                    | Tribes/References                                                                 |
|-----------------------------------|------------|----------|--------------------|-----------------------------------------|-----------------------------------------------------------------------------------|
| Ageratum conyzoides L.            | Asteraceae | Herb/LC  | Whole part/paste   | Blood coagulant, cuts, diarrhea, dysentery & wounds | Adi, Aka, Apatani, Galo, Idu-Mishmi, Memba, Monpa, Nocte, Singpo, Tagin & Tangsa (Ayam 2017, Bharali et al. 2016, Goswami et al. 2009, Kagyung et al. 2010, Kala 2005, Khongsai et al. 2015, Namsa et al. 2011, Nimachow et al. 2011, Nimasow et al. 2012, Rethy et al. 2010, Tangjang et al. 2011, Wangpan et al. 2019) |
| Ageratum houstonianum Mill.       | Asteraceae | Herb/LC  | Leaf & young twigs/raw | Cuts & blood coagulant               | Galo & Tagin (Wangpan et al. 2019)                                                |
| Allium hookeri Thwaites           | Liliaceae  | Herb/NE  | Leaf, rhizome & bulbs/raw | Bone fracture, cough & cold, skin allergy & wounds | Apatani, Galo, Monpa, Nyishi & Tagin (Kala 2005, Murtem & Chaudhry 2016, Namsa et al. 2011) |
| Allium sativum L.                 | Liliaceae  | Herb/NE  | Leaf & rhizome/paste | Bone fracture, lung disorder & stomachache | Adi, Monpa, Nocte & Nyishi (Kagyung et al. 2010, Namsa et al. 2011, Tangjang et al. 2011) |
| Allium schoenoprasum L.           | Liliaceae  | Herb/LC  | Leaf and root/raw | Body ache, blood circulation, fresh cuts & wounds & indigestion | Apatani (Ayam 2017)                                                               |
| Alocasia fornicata (Roxb.) Schott  | Araceae    | Herb/LC  | Root/paste          | Heel crack                             | Apatani (Kala 2005)                                                               |
| Aloe barbadensis Mill.            | Liliaceae  | Herb/LC  | Leaf & rhizome/paste | Cuts, burns, eczema, stomachache, menstrual disorder, constipation | Nyishi (Khongsai et al. 2015, Tripathi et al. 2017)                                |
| Alpinia galanga (L.) Wild.        | Zingiberaceae | Herb/LC  | Rhizome/raw         | Bone fracture, bacterial infection & constipation | Galo, Khampi & Tagin (Das & Tag 2006, Wangpan et al. 2019)                        |
| Alstonia scholaris (L.) R. Br.     | Apocynaceae | Tree/LC  | Whole part (mostly bark, leaf and root)/raw & decoction | Malaria, snake bite, skin allergy, wounds, headache, stomachache, menstrual disorder, delivery problems & jaundice | Adi, Apatani, Galo, Nocte, Nyishi, Tagin & Wancho (Doley et al. 2014, Kala 2005, Murtem & Chaudhry 2016, Nimasow et al. 2012, Tangjang et al. 2011, Tripathi et al. 2017, Wangjen et al. 2011) |
| Scientific Name                      | Family           | Type     | Part(s) Used                     | Medical Uses                                                                 | Communities/References |
|-------------------------------------|------------------|----------|---------------------------------|------------------------------------------------------------------------------|------------------------|
| *Amaranthus spinosus* L.            | Amaranthaceae    | Herb/ LC | Whole plant (mostly root and leaf) | Vegetable & paste, Skin allergy, gout, snake bite & gonorrhea                | Adi, Khampti, Monpa & Singpho (Ali & Ghosh 2006, Khongsai et al. 2015, Sen et al. 2008) |
| *Amomum aromaticum* Roxb.           | Zingiberaceae    | Herb/ LC | Leaf & seed/raw                  | Fever & abortion                                                             | Apatani (Kala 2005)    |
| *Amorphophallus paeonifolius* (Dennst.) Nicolson | Araceae | Herb/ LC | Corn/infusion                    | Piles                                                                        | Apatani (Kala 2005)    |
| *Amphineuron opulentum* (Kauffman) Hoffmann | Thelyperidaceae | Herb/ EN | Leaf/paste                       | Snake bite & body ache                                                        | Nocte & Nyishi (Tangjang et al. 2011) |
| *Ananas comosus* (L.) Merr.         | Bromeliaceae     | Herb/ LC | Fruit & leaf/raw & decoction     | Cough & cold, urinal ailments & worm infection                                | Khampti, Nocte & Nyishi (Sen et al. 2008, Tangjang et al. 2011) |
| *Andrographis paniculata* (Burm.f) Nees | Acanthaceae   | Herb/ LC | Seed & leaf/paste                | Malaria, jaundice, diabetes, liver disease, snake bite, fever, cough & cold, stomachache & dysentery | Apatani, Galo Khampti, Nyishi & Tagin (Das & Tag 2006, Kala 2005, Khongsai et al. 2015, Murtem & Chaudhry 2016, Sen et al. 2008, Tripathi et al. 2017) |
| *Angiopteris evecta* (G. Forst.) Hoffmann | Marattiaceae   | Herb/ EN | Rhizome & stem/paste             | Inflammation, dysentery & diarrhea                                             | Adi, Apatani & Galo (Bharali et al. 2016, Kalygung et al. 2010, Kala 2005) |
| *Anisomeles indica* (L.) Kuntze     | Lamiaceae        | Herb/ NE | Shoot/raw                        | Body ache                                                                    | Apatani (Kala 2005)    |
| *Anisomeles ovata* R.Br.            | Lamiaceae        | Shrub/ LC | Whole plant/paste                | Body ache                                                                    | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Antidesma acidum* Retz.            | Euphorbiaceae    | Shrub/ LC | Leaf/raw                         | Wounds                                                                       | Apatani (Kala 2005)    |
| *Arenaria orbiculata* Roxby ex Edgew. Hook. f. | Caryophyllaceae | Herb/ NE | Whole plant/ raw                 | Anemia                                                                       | Khampti (Das & Tag 2006) |
| *Argemone mexicana* L.              | Papaveraceae     | Herb/ NE | Shoot/paste                      | Skin allergy                                                                 | Apatani (Kala 2005)    |
| *Argyreia nervosa* (Burm. f.) Bojer | Convolvulaceae   | Shrub/ LC | Leaf & stem/vegetable            | Malaria & body ache                                                           | Adi & Khampti (Das & Tag 2006, Nimasow et al. 2012) |
| *Artemisia dubia* Wall. ex Besser   | Asteraceae       | Herb/ LC | Leaf/decoction & paste            | Ringworm & skin allergy                                                       | Nocte (Wangpan et al. 2019b) |
| *Artemisia indica* Willd.           | Asteraceae       | Herb/ NE | Leaf/raw & paste                  | Cough & cold, menstrual disorder, body ache, headache, nosebleed, skin allergy, asthma & cuts | Apatani, Galo, Nyishi & Tagin (Ayam 2017, Bharali et al. 2016, Kala 2005, Murtem & Chaudhry 2016) |
| *Artemisia nilagirica* (C.B. Clarke) Pamp. | Asteraceae   | Herb, shrub/ NE | Leaf/paste                       | Cough & cold, fever, wounds, inflammation, cuts, scabies, stomachache, sores & body ache | Aka, Apatani, Galo, Monpa, Nyishi & Tagin (Kala 2005, Murtem & Chaudhry 2016, Namsa et al. 2011, Nimachow et al. 2011) |
| Scientific Name                     | Family      | Type                | Part Used                | Uses                                                                 | Authors                                      |
|------------------------------------|-------------|---------------------|--------------------------|----------------------------------------------------------------------|----------------------------------------------|
| Artocarpus heterophyllus Lam.      | Moraceae    | Tree/ NE            | Roots & leaf/infusion    | Fever, skin allergy & dysentery                                       | Galo & Khampti (Bharali et al. 2016, Sen et al. 2008) |
| Asplenium nidus L.                 | Denustaidiaceae | Frond/ NE        | Leaf/paste               | Bone fracture, body ache, dumberness & ulcer                          | Apatani, Khampti & Galo (Bharali et al. 2016, Das & Tag 2006, Kala 2005) |
| Averrhoa carambola L.               | Averrhoeaceae | Tree/ NE            | Leaf, root, bark & fruit/raw | Jaundice                                                            | Khampti (Sen et al. 2008)                     |
| Azadirachta indica A. Juss.        | Meliaceae   | Tree/ LC            | Leaf/ raw                | Skin allergy, stomachache & diarrhea                                | Galo, Monpa, Nyishi & Tagin (Murtem & Chaudhry 2016, Namsa et al. 2011) |
| Bambusa balcooa Roxb.              | Poaceae     | Shrub/ LC           | Bark/paste               | Wounds, cuts & blood coagulant                                       | Galo & Tagin (Bharali et al. 2016, Wangpan et al. 2019a) |
| Bambusa arundinacea Willd.         | Poaceae     | Shrub or tree/ NE   | Bark & leaf/ raw         | Wounds, injuries & urinal ailments                                   | Khampti (Sen et al. 2008)                     |
| Barleria prionitis L.              | Acanthaceae | Shrub/ LC           | Leaf/ raw                | Cough & cold                                                         | Apatani (Kala 2005)                          |
| Bauhinia purpurea L.               | Fabaceae    | Tree/ LC            | Leave & bark/ raw        | Diarrhea & dysentery                                                 | Apatani (Ayam 2017)                          |
| Begibua josephii A. DC.            | Begoniaceae | Herb or shrub/ NE   | Leaf/ raw                | Insect bite                                                          | Membra (Rethy et al. 2010)                   |
| Begonia palmate D. Don             | Begoniaceae | Herb/ LC            | Root/paste               | Diarrhea & dysentery                                                 | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| Begonia roxburghii A. DC.          | Begoniaceae | Herb/ NE            | Stem/paste               | Stomachache, bee bite, constipation, indigestion, diabetes & blood purification | Adi, Apatani, Galo, Nocte & Nyishi (Bharali et al. 2016, Kala 2005, Tangjang et al. 2011) |
| Begonia sp.                        | Begoniaceae | Herb/ LC            | Tender leaf/ raw         | Abscesses                                                            | Aka (Nimachow et al. 2011)                   |
| Begonia tesserarcarpa C.B. Clarke  | Begoniaceae | Herb/ EN            | Leaf/paste               | Body ache                                                            | Nocte & Nyishi (Tangjang et al. 2011)        |
| Berberis aristata DC.              | Berberidaceae | Shrub/ LC           | Root & stem/ raw         | Fever, bacterial infection, fungal infection, diabetes & eye infection | Adi & Apatani (Ayam 2017, Khongsai et al. 2015) |
| Berberis wallichiana DC.           | Berberidaceae | Shrub/ LC           | Fruit & root/ raw        | Indigestion & body ache                                              | Apatani (Kala 2005)                          |
| Bergenia ciliata (Haw.) Sternb.    | Saxifragaceae | Herb/ LC            | Leaf & root/paste        | Cuts & wounds                                                        | Apatani (Kala 2005)                          |
| Bidens pilosa L.                   | Asteraceae  | Herb/ NE            | Leaf & tuber/ decoction  | Ulcer, earache, eye infection, wounds & inflammation                | Apatani & Monpa (Khongsai et al. 2015, Namsa et al. 2011) |
| Bischofia javanica Blume           | Euphorbiaceae | Tree/ LC            | Leaf & bark/ decoction   | Gastric & jaundice                                                   | Nyishi (Doley et al. 2014)                   |
| Blechnum orientale L.              | Blechnaceae | Herb/ LC            | Leaf/paste               | Skin allergy                                                         | Khampti (Das & Tag 2006)                     |
| Blumea balsamifera (L.) DC.         | Asteraceae  | Shrub/ LC           | Leaf/ raw                | Diabetes & body ache                                                 | Khampti (Das & Tag 2006)                     |
| Bonnaya brachiata Link & Otto      | Schropulariaceae | Herb/ LC          | Leaf & roots/ raw        | Urinal ailments & tuberculosis                                       | Khampti (Das & Tag 2006)                     |
| Scientific Name                      | Family               | Life Form | Part Used       | Use                                      | Reference                                      |
|-------------------------------------|----------------------|-----------|-----------------|------------------------------------------|-----------------------------------------------|
| *Brassica campestris* L.            | Brassicaceae         | Herb/ LC  | Seed/oil        | Cough & cold, body ache & fever          | Nocte & Nyishi (Tangjang et al. 2011)         |
| *Brassica juncea* (L.) Czern.       | Brassicaceae         | Herb/ NE  | Seed & young shoot/vegetable | Indigestion, fever & headache | Galo & Tagin (Wangpan et al. 2019a) |
| *Brassica glomerulata* (Blume) Regel | Araliaceae           | Shrub/ EN | Fruit/infusion   | Cough & cold & skin allergy              | Apatani, Galo, Nyishi & Tagin (Kala 2005, Murtem & Chaudhry 2016) |
| *Brugmansia suaveolens* (Humb. & Bonpl. ex Wild.) Bercht. & J. Presl | Solanaceae           | Shrub/ EW | Leaf & stem/paste & raw | Wounds & skin allergy                      | Nocte (Wangpan et al. 2019b) |
| *Bryophyllum calycinum* Salisb.     | Crassulaceae         | Herb/ EN  | Fresh Leaf/raw   | Jaundice, dysentery & gastric            | Adi & Tagin (Goswami et al. 2009, Kagyung et al. 2010) |
| *Buddleja asiatica* Lour.           | Scrophulariaceae     | Herb/ LC  | Leaf & young twigs/raw | Diarrhea, sinusitis & inflammation       | Apatani, Galo, Monpa, Nyishi & Tagin (Kala 2005, Murtem & Chaudhry 2016, Namra et al. 2011) |
| *Caesalpinia coccinea* Roxb.        | Caesalpinaceae       | Tree/ LC  | Leaf & seed/paste | Stomachache & body ache                  | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Calamus erectus* Roxb.             | Arecaceae            | Tree/ LC  | Tender shoots/raw | Dyspepsia                                | Adi (Kagyung et al. 2010)                     |
| *Calamus inermis* T. Anderson       | Arecaceae            | Tree/ NE  | Leaf bud & soft core (pith)/raw | Malaria                           | Adi (Nimasow et al. 2012)                     |
| *Callicarpa arborea* Roxb.          | Verbenaceae          | Tree/ LC  | Bark & leaf/paste | Indigestion, gastric & toothache         | Adi & Nyishi (Doley et al. 2014, Khongsa et al. 2015) |
| *Callicarpa macrophylla* Vahl       | Lamiaceae            | Tree/ LC  | Leaf/raw         | Headache                                 | Apatani (Kala 2005)                           |
| *Callicarpa vestita* Wall. ex C.B. Clarke | Lamiaceae         | Tree/ NE  | Leaf/raw         | Indigestion                              | Apatani (Kala 2005)                           |
| *Calotropis gigantea* (L.) W. T. Aiton | Apocynaceae         | Shrub/ LC  | Root & flower/paste | Dog bite                              | Apatani, Galo, Nyishi & Tagin (Kala 2005, Murtem & Chaudhry 2016) |
| *Calotropis procera* (Aiton) Dryand. | Apocynaceae         | Shrub/ LC  | Leaf/raw         | Dysentery, body ache & burns             | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Camellia sinensis* (L.) Kuntze    | Theaceae             | Herb/ DD  | Leaf/vegetable   | Wounds & stomachache                     | Adi, Nocte & Nyishi (Tangjang et al. 2011)    |
| *Camphora glandulifera* (Wall) Nees | Lauraceae            | Tree/ DD  | Leaf/raw         | Wounds                                   | Nyishi (Doley et al. 2014)                     |
| *Campylandra aurantiaca* Baker      | Liliaceae            | Shrub/ NE  | Whole part/raw   | Indigestion                              | Adi (Nimasow et al. 2012)                     |
| *Canarium bengalense* Roxb.         | Combretaceae         | Tree/ LC  | Bark/paste       | Wounds                                   | Idu-Mishmi (Doley et al. 2014)                 |
| Plant Name                  | Family       | Form     | Part Used   | Uses                                      |
|----------------------------|--------------|----------|-------------|-------------------------------------------|
| *Canarium resiniferum*     | Burseraceae  | Tree/ LC | Fruit/raw   | Urinal ailments                          |
| *Canarium strictum*        | Burseraceae  | Tree/ CR | Bark/raw    | Insect bite                              |
| *Cannabis Sativa*          | Cannabaceae  | Herb/ LC | Leaf/decoction | Dysentery, body ache, diarrhea & stomachache |
| *Capsicum chinense*        | Solanaceae   | Herb/ LC | Fruits/raw  | Worm infection                           |
| *Capsicum frutescens*      | Solanaceae   | Herb/ LC | Fruit/raw   | Wounds & blood coagulant                 |
| Scientific Name                        | Family               | Type          | Part(s) Used            | Uses                                                                 | References |
|---------------------------------------|----------------------|---------------|-------------------------|----------------------------------------------------------------------|------------|
| Christella parasitica (L.) Lev.       | Thelypteridaceae     | Herb/ NE      | Frond/raw               | Cuts & wounds                                                          | Apatani (Kala 2005) |
| Chromolaena odorata (L.) R.M. King & H. Rob. | Asteraceae          | Shrub/ LC     | Leaf/paste              | Headache, fever, blood coagulant, wounds & cuts                       | Apatani, Galo, Nocte & Tagin (Kala 2005, Wangpan et al. 2019a, 2019b) |
| Chrysanthemum indicum L.              | Compositae           | Shrub/ NT     | Leaf/raw                | Backache                                                              | Wancho (Wangjen et al. 2011) |
| Chrysopogon aciculatus (Retz.)Trin.   | Poaceae              | Herb/ NE      | Leaf/decoction          | Tonsillitis                                                           | Adi (Tangjang et al. 2011) |
| Cinnamomum verum J. Presl             | Lauraceae            | Tree/ LC      | Bark & root/vegetable   | Cough & cold, oral infection, indigestion, tuberculosis & vomiting    | Adi, Apatani, Galo, Nyishi & Tagin (Ayam 2017, Kagyung et al. 2010, Murtem & Chaudhry 2016, Tangjang et al. 2011) |
| Cissampelos pareira L.                | Menispermaceae       | Climber/ LC   | Tender leaf & stem/raw  | Abortion                                                              | Khampti (Das & Tag 2006) |
| Citrus limon (L.) Burm. f.             | Rutaceae             | Small tree/ LC | Fruit & leaf            | Paralysis, diarrhea & dysentery                                       | Galo & Khampti (Bharali et al. 2016, Das & Tag 2006) |
| Citrus medica L.                      | Rutaceae             | Shrub/ EN     | Fruit, leaf & seed/ decoction | Indigestion, epilepsy, cough & cold, dandruff & diarrhea            | Khampti, Nyishi & Singpho (Khongsai et al. 2015, Sen et al. 2008, Tangjang et al. 2011) |
| Citrus paradise Macfad.               | Rutaceae             | Small tree/ NE | Leave/raw               | Vomiting                                                              | Nyishi (Dooley et al. 2014) |
| Citrus reticulata Blanco              | Rutaceae             | Tree/ LC      | Fruit/decoction         | Worm infection                                                        | Nyishi (Tangjang et al. 2011) |
| Clerodendrum colebrookianum Walp.     | Lamiaceae            | Shrub/ LC     | Stem & Leaf/ raw        | Blood pressure & stomachache                                          | Galo, Nyishi, Singpho, & Tagin (Khongsai et al. 2015, Murtem & Chaudhry 2016) |
| Clerodendrum glandulosum Lindl.       | Lamiaceae            | Shrub/ LC     | Leaf/raw                | Blood pressure, headache, fever, stomachache & cough & cold          | Apatani, Galo & Tagin (Bharali et al. 2016, Kala 2005, Wangpan et al. 2019a) |
| Clerodendrum infortunatum L.          | Lamiaceae            | Shrub/ LC     | Leaf/vegetable          | Blood pressure                                                        | Nocte & Nyishi (Tangjang et al. 2011) |
| Clerodendron japonicum (Thunb.) Sweet | Lamiaceae            | Shrub/ LC     | Leaf/vegetable          | Blood pressure, hypertension, diarrhea, stomachache, headache & bowel problems | Adi, Aka, Apatani, Galo, Idu-Mishmi, Memba, Monpa, Nocte, Nyishi, & Tagin (Ayam 2017, Khongsai et al. 2015, Murtem & Chaudhry 2016, Namsa et al. 2011, Nimachow et al. 2011, Nimsaw et al. 2012, Rethy et al. 2010, Wangpan et al. 2019b) |
| Clerodendron venosum Wall.            | Lamiaceae            | Herb/ EN      | Leaf/paste              | Body ache                                                              | Nyishi (Tangjang et al. 2011) |
| Plant Name                      | Family       | Type       | Part Used          | Uses                                                                 | References                                                                                       |
|--------------------------------|--------------|------------|--------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Coffea bengalensis Roxb.        | Rubiaceae    | Shrub/ LC  | Young shoots/raw   | Indigestion & stomachache                                            | Adi (Ali & Ghosh 2006, Kagyung et al. 2010)                                                       |
| Coleus forskohlii Briq.         | Lamiaceae    | Herb/ NE   | Leaf & stem/raw    | Knee pain                                                            | Khampti (Das & Tag 2006)                                                                          |
| Colocasia esculenta (L.) Schott.| Araceae      | Herb/ LC   | Shoots, root & tender leaf/paste | Delivery problems & skin allergy                                    | Galo & Nyishi (Bharali et al. 2016, Tangjang et al. 2011)                                       |
| Conocephalus Suaveolens Blume   | Moraceae     | Climbing shrub/ NE | Stem/raw | Eye infection                                                 | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)                                                   |
| Coptis teeta Wall.              | Rahunculaceae| Herb/ EN   | Whole plant (mostly leaf and rhizome)/raw | Dandruff, stomachache, dysentery, diarrhea, cough & cold, gastric, malaria, fever, eye infection, loss of appetite, backache, headache, headache, inflammation & skin allergy | Adi, Galo, Memb, Nyishi & Tagin (Ali & Ghosh 2006, Khongsai et al. 2015, Murtem & Chaudhry 2016, Rethy et al. 2010, Tangjang et al. 2011, Tripathi et al. 2017) |
| Coriandrum sativum L.           | Apiaceae     | Herb/ LC   | Leaf & flower/raw  | Stomachache & cerebral tonic                                        | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)                                                   |
| Crassocephalum crepidioides (Benth.) S.Moore | Asteraceae | Herb/ NE   | Leaf/raw           | Indigestion, headache, stomachache, cuts, injuries & wounds        | Apatani, Galo, Nyishi & Tagin (Kala 2005, Murtem & Chaudhry 2016)                                |
| Croton roxburghii Balakr.       | Euphorbiaceae| Herb, shrub, tree/ LC | Root/raw | Bone pain, cancer & indigestion                                   | Apatani & Khampti (Das & Tag 2006, Kala 2005)                                                   |
| Croton tiglium L.               | Euphorbiaceae| Tree/ LC   | Leaf & flower/raw  | Malaria                                                             | Khampti (Das & Tag 2006)                                                                          |
| Cucumis sativus L.              | Cucurbitaceae| Climber/ LC | Leaf/raw           | Stomachache, worm infection & indigestion                          | Galo, Tagin & Nyishi (Murtem & Chaudhry 2016, Wangpan et al. 2019a)                              |
| Curculigo capitulata (Lour.) Kuntze | Hypoxidaceae| Herb/ NE   | Rhizome/paste      | Blood coagulant                                                    | Nyishi (Tangjang et al. 2011)                                                                     |
| Curcuma aromatica Salisb.       | Zingiberaceae| Herb/ NE   | Rhizome/raw        | Cough & cold                                                        | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)                                                   |
| Curcuma caesia Roxb.            | Zingiberaceae| Herb/ NE   | Collar crushed & rhizome/raw | Stomachache, wounds, injury, pimples, diarrhea, skin allergy & dysentery | Adi, Aka, Galo, Khampti & Monpa (Bharali et al. 2016, Kagyung et al. 2010, Namsa et al. 2011, Nimachow et al. 2011, Sen et al. 2008) |
| Curcuma longa L.                | Zingiberaceae| Herb/ DD   | Rhizome/raw        | Asthma, bone fracture, indigestion, stomachache & muscle pain      | Adi, Galo, Khampti, Nocte, Nyishi & Tagin (Kagyung et al. 2010, Murtem & Chaudhry 2016, Sen et al. 2008, Tangjang et al. 2011) |
| Cyathea spinolusa Wall          | Cyatheaceae  | Herb/ LC   | Leaf & stem/powder  | Rheumatism                                                          | Nyishi (Tangjang et al. 2011)                                                                     |
| Botanical Name | Family | Form | Part Used | Uses | Reference(s) |
|----------------|--------|------|----------|------|--------------|
| Cyclosorus parasiticus (L.) Farw. | Thelypteridaceae | Herb/ LC | Leaf/raw | Body ache | Galo (Bharali et al. 2016) |
| Cyperus flabeliformis Rottb. | Cyperaceae | Tuber/ LC | Root | Bone fracture | Khampti (Das & Tag 2006) |
| Dalbergia pinnata (Lour.) Prain | Fabaceae | Climber/ LC | Leaf/paste | Cuts & wounds | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| Datura innoxia Mill. | Solanaceae | Sub-shrub/ NE | Leaf/paste | Rabies | Khampti (Das & Tag 2006) |
| Datura metel L. | Solanaceae | Herb/ NE | Leaf/raw | Headache | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| Debregeasia longifolia (Burm. f.) Wedd. | Urticaceae | Shrub/ LC | Fruit & leaf/raw & decoction | Stomachache, dysentery & scabies | Nocte (Wangpan et al. 2019b) |
| Dendrocalamus hamiltonii Nees & Arn. ex Munro | Poaceae | Shrub/ NE | Culm & young shoot/raw | Cuts, bee bite & burns | Aka, Galo & Tagin (Nimachow et al. 2011, Wangpan et al. 2019a) |
| Dendrocalamus strictus (Roxb.) Nees | Poaceae | Shrub/ NE | Bark/paste | Cuts & wounds | Adi (Nimasow et al. 2012) |
| Desmodium gyroides (Link) DC. | Fabaceae | Shrub/ LC | Leaf/raw | Sinusitis, leprosy & skin allergy | Galo & Tagin (Wangpan et al. 2019a) |
| Diaplazium esulentum (Retz.) Sw. | Athyriaceae | Frond/ LC | Root & rhizome/ decoction | Fever | Galo (Bharali et al. 2016) |
| Dillenia indica L. | Dilleniaceae | Shrub/ LC | Fruit/raw | Throat infection, cough & cold, fever, indigestion & stomachache | Adi, Apatani & Nyishi (Kagyung et al. 2010, Kala 2005, Khongsai et al. 2015, Nimasow et al. 2012) |
| Dioscorea alata L. | Dioscoreaceae | Climber/ NE | Tuber/raw | Gastric & indigestion | Apatani & Monpa (Kala 2005, Namsa et al. 2011) |
| Dioscorea floribunda M.Martens & Galeotti | Dioscoreaceae | Climber/ LC | Tuber/paste | Dysentery | Adi & Aka (Khongsai et al. 2015, Nimachow et al. 2011) |
| Drymaria cordata (L.) Willd. ex Schult. | Caryophyllaceae | Herb/ LC | Whole part/raw | Headache, skin allergy, scabies, abscesses, sinusitis, jaundice & gastric | Adi, Galo, Khampti & Nocte (Bharali et al. 2016, Kagyung et al. 2010, Sen et al. 2008, Tangjang et al. 2011) |
| Dysphania ambrosioides (L.) Mosyakin & Clemants | Chenopodiaceae | Herb/ LC | Leaf/raw | Toothache | Apatani, Galo, Nyishi & Tagin (Kala 2005, Murtem & Chaudhry 2016) |
| Echinocarpus assamicus Benth. | Elaeocarpaceae | Tree/ NE | Bark & leave/raw | Diarrhea | Nyishi (Doley et al. 2014) |
| Eclipta prostrata (L.) L. | Asteraceae | Herb/ LC | Shoot/raw | Cuts & wounds | Apatani (Kala 2005) |
| Elaeocarpus floribundus Blume | Elaeocarpaceae | Tree/ NE | Fruits/raw | Stomachache & blood pressure | Galo & Nyishi (Bharali et al. 2016, Tripathi et al. 2017) |
| Elatostema platyphyllum Wedd. | Urticaceae | Herb/ NE | Roots/raw | Vomiting | Apatani, Galo, Nyishi & Tagin (Kala 2005, Murtem & Chaudhry 2016) |
| Elsholzia blanda (Benth.) Benth. | Lamiaceae | Herb/ NE | Leaf/raw | Itching | Apatani (Kala 2005) |
| **Embelia ribes** Burm. f. | Myrsinaceae | Creeper shrub/NE | Leaf & fruits/raw | Diarrhea, liver disease & worm infection | Nyishi & Tagin (Goswami et al. 2009, Tripathi et al. 2017) |
|---------------------------|-------------|------------------|-------------------|------------------------------------------|----------------------------------------------------------|
| **Embelia officinalis** Gaerth. | Euphorbiaceae | Tree/LC | Fruit/dried | Diabetes, jaundice, stomachache, heart & liver disease | Adi, Apatani & Nocte (Khongsai et al. 2015, Tangjang et al. 2011) |
| **Emilia sonchifolia** (L.) DC. ex DC. | Asteraceae | Climbing herb/NE | Leaf/ decoction | Eye infection | Gali, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| **Entada persaetha** DC. | Fabaceae | Climber/NE | Stem & leaf/paste | Bone fracture | Gali, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| **Entada rheedii Spreng.** | Fabaceae | Climber/NE | Seed/paste | Scabies, abscesses, skin allergy & pneumonia | Gali (Bharali et al. 2016) |
| **Equisetum arvense** L. | Equisetaceae | Herb/LC | Whole plant/raw | Cough & cold & rheumatism | Apatani (Aryam 2017) |
| **Equisetum diffusum** D. Don. | Equisetaceae | Herb/LC | Whole plant/paste | Bone fracture | Gali, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| **Eranthemum palatiferum** (Wall.) Nees | Acanthaceae | Shrub/NE | Leaf/raw | Stomachache | Khampiti (Das & Tag 2006) |
| **Erigeron bonariensis** L. | Asteraceae | Herb/NE | Leaf/raw | Nasal congestion | Apatani (Kala 2005) |
| **Eryngium foetidum** L. | Apiaceae | Herb/NE | Leaf/raw | Loss of appetite & headache | Adi, Apatani, Gali, Nyishi & Tagin (Kagyung et al. 2010, Kala 2005, Murtem & Chaudhry 2016) |
| **Erythrina indica** Lam. | Fabaceae | Tree/LC | Flowers/paste | Wounds | Adi (Tangjang et al. 2011) |
| **Erythrina stricta** Roxb. | Fabaceae | Tree/LC | Flower & bark/paste | Scorpion bite & headache | Nyishi & Wancho (Doley et al. 2014, Wangjen et al. 2011) |
| **Eupatorium odoratum** L. | Asteraceae | Shrub/NE | Leaf/paste | Blood coagulant, cuts & wounds | Apatani & Nocte (Kala 2005, Tangjang et al. 2011) |
| **Euphorbia hirta** L. | Euphorbiaceae | Herb/NE | Whole plant (leaf)/raw | Bronchitis, asthma, anemia & worm infection | Kampti & Nyishi (Das & Tag 2006, Khongsai et al. 2015) |
| **Euphorbia ligularia** Roxb. ex Buch.-Ham. | Euphorbiaceae | Shrub/NE | Leaf & stem/raw | Delivery problems, bone fracture & stomachache | Gali, Khampiti, Nyishi, Tagin & Wancho (Das & Tag 2006, Murtem & Chaudhry 2016, Wangjen et al. 2011) |
| **Fagopyrum dibotrys** (D. Don) H. Hara | Polygonaceae | Herb/NE | Seed/raw | Cough & cold, cholera & diarrhea | Gali, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| **Ficus benjamina** L. | Moraceae | Tree/LC | Stem/raw | Stomachache | Apatani (Kala 2005) |
| **Ficus glomerata** Roxb. | Moraceae | Tree/NE | Fruits & seeds/raw | Diabetes | Monpa (Namsa et al. 2011) |
| **Ficus hirta** Vahl | Moraceae | Tree/NE | Fruit/raw | Cuts & wounds | Apatani (Kala 2005) |
| Species | Family | Habit | Parts Used | Uses | Authors |
|---------|--------|-------|------------|------|---------|
| *Ficus hispida* L. f. | Moraceae | Tree/ LC | Roots, bark & stem/decoction | Dysentery, tuberculosis & burns | Adi, Khampti & Tagin (Das & Tag 2006, Goswami et al. 2009, Nimasow et al. 2012) |
| *Ficus semicordata* Buch.-Ham. ex Sm. | Moraceae | Tree/ LC | Bark/raw | Toothache & diarrhea | Adi, Nyishi & Monpa (Dooley et al. 2014) |
| *Ficus squamosa* Roxb. | Moraceae | Tree/ NE | Latex/raw | Pimples | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Garcinia cowa* Roxb. ex DC. | Clusiaceae | Tree/ LC | Fruits/raw | Gastric, dysentery & diarrhea | Nyishi (Dooley et al. 2014) |
| *Garcinia lancefolia* Roxb. | Clusiaceae | Tree/ NE | Fruits/raw | Stomachache & fever | Golo (Bharali et al. 2016) |
| *Garcinia pedunculata* Roxb. | Clusiaceae | Tree/ NE | Fruits (pulp)/raw | Cough & cold, diarrhea, dyspepsia, flatulence & dysentery | Adi, Golo, Khampti, Nyishi & Tagin (Bharali et al. 2016, Kagyung et al. 2010, Murtem & Chaudhry 2016, Sen et al. 2008) |
| *Gerbera piloselloides* (L.) Cass. | Asteraceae | Herb/ NE | Leaf/raw | Rheumatism | Apatani, Golo, Nyishi & Tagin (Kala 2005, Murtem & Chaudhry 2016) |
| *Girardinia diversifolia* (Link) Friis | Urticaceae | Shrub/ NE | Leaf/roast | Muscle pain | Golo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Gloriosa superba* L. | Liliaceae | Climbing shrub/ LC | Tuber & leaf/paste | Killing head lice | Golo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Gmelina arborea* Roxb. ex Sm. | Verbenaceae | Tree/ LC | Root, bark & leaf/raw | Blood purification & stomachache | Adi, Apatani, Golo Nyishi & Tagin (Kala 2005, Khongsai et al. 2015, Murtem & Chaudhry 2016) |
| *Grewia tiliaefolia* Vahl | Tiliaceae | Tree/ NE | Fruits/raw | Diarrhea | Adi (Dooley et al. 2014) |
| *Gynocardia odorata* R. Br. | Achariaceae | Tree/ NE | Seed & leaf/paste | Skin allergy | Adi, Golo, Nocte & Tagin (Bharali et al. 2016, Dooley et al. 2014, Goswami et al. 2009, Wangpan et al. 2019b) |
| *Gynura bicolor* (Roxb. ex Willd.) DC. | Asteraceae | Herb/ NE | Leaf/raw | Worm infection | Apatani (Kala 2005) |
| *Gynura crepedioides* Benth. | Asteraceae | Herb/ NE | Leaf & young twigs/raw | Stomachache | Monpa (Namsa et al. 2011) |
| *Hedychium coronarium* J. Koenig | Zingiberaceae | Shrub/ DD | Rhizome/raw | Body ache | Apatani (Kala 2005) |
| *Hedychium dekianum* A.S. Rao & D.M. Verma | Zingiberaceae | Shrub/ NE | Rhizome/raw | Cuts & wounds | Apatani (Kala 2005) |
| Hedyotis scandens Roxb. | Rubiaceae | Climber/ NE | Leaf & young twigs/raw | Diabetes, gastric, stomachache & bladder stone | Adi, Galo, Khampti, Monpa, Nyishi & Tagin (Kagyung et al. 2010, Murtem & Chaudhry 2016, Namsa et al. 2011, Sen et al. 2008) |
|------------------------|-----------|-------------|------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Hemidesmus indicus R. Br. | Apocynaceae | Vine/ EN | Leaf/paste | Bone fracture | Adi (Tangjang et al. 2011) |
| Hibiscus fragans Roxb. | Malvaceae | Shrub/ NE | Leaf & flower/paste | Dandruff | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| Hibiscus rosa-sinensis L. | Malvaceae | Shrub/ NE | Leaf/paste | Blood coagulant & abscesses | Adi & Nocte (Tangjang et al. 2011) |
| Homalomena aromatica Linn. | Araceae | Herb/ LC | Rhizomes/raw | Diabetes | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| Houttuynia cordata Thunb. | Saururaceae | Herb/ LC | Leaf & stem/vegetable | Dysentery, measles, indigestion diarrhea, headache, gonorrhea, tonsillitis, skin allergy, cough & cold, toothache, jaundice, stomachache & blood coagulant | Adi, Apatani, Galo, Khampti, Monpa, Nocte & Singpo (Ayam 2017, Bharali et al. 2016, Das & Tag 2006, Kagyung et al. 2010, Khongsai et al. 2015, Namsa et al. 2011, Nimasow et al. 2012, Tangjang et al. 2011, Wangpan et al. 2019b) |
| Hydrocotyle javanica Thunb. | Araliaceae | Creeper/ LC | Leaf/decoction, raw & paste | Fever, snake bite, wounds, abscesses & menstrual disorder | Galo, Nocte, Nyishi & Tagin (Murtem & Chaudhry 2016, Wangpan et al. 2019b) |
| Hypericum japonicum Thunb. | Hypericaceae | Herb/ LC | Stem/raw | Cuts & wounds | Apatani (Kala 2005) |
| Hyptis suaveolens (L.) Poit. | Lamiaceae | Herb/ NE | Leaf/paste & decoction | Itching & cough & cold | Apatani (Kala 2005) |
| Imperata cylindrica (L.) Raesusch. | Poaceae | Herb/ LC | Fruits/raw | Blood coagulant | Galo & Tagin (Wangpan et al. 2019a) |
| Ipomea aquatica Forsk. | Convolvulaceae | Herb/ NE | Leaf/raw | Asthma & loss of appetite | Khampti (Das & Tag 2006) |
| Ixora acuminata | Rubiaceae | Shrub/ NE | Tender leaf/infusion | Fever | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| Ixora sp. | Rubiaceae | Tree/ NE | Leaf/raw | Stomachache | Adi (Nimasow et al. 2012) |
| Jatropha curcas L. | Euphorbiaceae | Tree/ NE | Stem & leaf/paste | Toothache & scabies | Adi, Galo, Nyishi & Tagin (Murtem & Chaudhry 2016, Tangjang et al. 2011) |
| Justicia gendarussa Burm. f. | Acanthaceae | Shrub/ NE | Leaf/raw | Bone fracture & muscle pain | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| Kaempferia galanga L. | Zingiberaceae | Herb/ DD | Rhizome & leaf/raw | Flatulence | Khampti (Das & Tag 2006) |
| Kalanchoe pinnata (Lam.) Pers. | Crassulaceae | Shrub/ NE | Leaf/paste | Bladder stone, bone fracture, fever & constipation | Adi, Khampti & Nocte (Sen et al. 2008, Tangjang et al. 2011) |
| Plant Name | Family | Habit | Part | Use | Tribe/Source |
|------------|--------|-------|------|-----|--------------|
| *Lagenaria siceraria* (Molina) Standl. | Cucurbitaceae | Herb/ NE | Fruit/paste | Burns | Apatani (Kala 2005) |
| *Laggera pterodonta* (DC.) Sch. Bip. ex Oliv. | Asteraceae | Herb/ NE | Leaf/paste | Inflammation | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Laportea crenulata* Gaud. | Urticaceae | Shrub/ NE | Young shoots/raw | Gastric | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Lasia spinosa* (L.) Thwaites | Araceae | Herb/ LC | Stem/raw | Worm infection | Galo (Bharali et al. 2016) |
| *Leucas aspera* (Wild.) Link | Lamiaceae | Herb/ NE | Leaf & roots decoction | Sinusitis, migraine, cuts, wounds, inflammation, piles, nosebleed, indigestion, snake bite, earache & menstrual disorder | Adi, Khampti, Monpa, Nocte & Nyishi (Das & Tag 2006, Namsa et al. 2011, Tangjang et al. 2011, Tripathi et al. 2017, Wangpan et al. 2019b) |
| *Lindera neesiana* (Wall. ex Nees) Kurz | Lauraceae | Tree/ LC | Fruits & seeds/raw | Diarrhea & scabies | Monpa (Namsa et al. 2011) |
| *Lindernia cordifolia* (Colsm.) Merr. | Scrophulariaceae | Herb/ LC | Leaf/raw | Headache & body ache | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Litsea cubeba* (Lour.) Pers. | Lauraceae | Tree/ NE | Fruits/raw | Eczema, heart disease, cough & cold & stomachache | Golo & Monpa (Bharali et al. 2016, Namsa et al. 2011) |
| *Litsea monopetala* (Roxb.) Pers. | Lauraceae | Shrub/ LC | Bark/ infusion | Diabetes & gastric | Idu Mishmi (Dooley et al. 2014) |
| *Litsea polyantha* Juss. | Lauraceae | Tree/ LC | Stem/paste | Blood coagulant | Wancho (Wangjen et al. 2011) |
| *Litsea salicifolia* (Roxb. ex Nees) Hook. f. | Lauraceae | Tree/ LC | Bark/raw | Bone fracture | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Lobelia chinesis* Lour. | Campanulaceae | Herb/ NE | Leaf/raw | Diabetes | Khampti (Sen et al. 2008) |
| *Lobelia montana* Reinw. ex Blume | Campanulaceae | Creeping herb/ NE | Leaf/raw | Stomachache | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Luffa acutangula* (L.) Roxb. | Cucurbitaceae | Creeper or climber/ NE | Leaf/ decoction | Hyperlactation | Khampti (Sen et al. 2008) |
| *Lycopersicon lycopersicum* L. | Solanaceae | Herb/ NE | Fruits/raw | Cancer | Apatani (Ayam 2017) |
| *Lycopodium sp.* | Lycopodiaceae | Herb/ LC | Whole plant/ raw | Cancer | Apatani (Ayam 2017) |
| *Macaranga denticulata* (Blume) Müll.-Arg. | Euphorbiaceae | Small tree/ LC | Latex/raw | Burns | Aka (Nimachow et al. 2011) |
| *Maesa indica* (Roxb.) A. DC. | Myrsinaceae | Shrub/ LC | Fruit/ raw | Hyperthermia | Nyishi (Khongsai et al. 2015) |
| *Magnolia hodgsonii* (Hook.f. & Thomson) H. Keng | Magnoliaceae | Tree/ LC | Fruit/raw | Toothache | Nocte (Wangpan et al. 2019b) |
| Scientific Name                      | Family            | Type/ Region | Part(s) Used                  | Uses                                                      | References                               |
|-------------------------------------|-------------------|--------------|--------------------------------|-----------------------------------------------------------|------------------------------------------|
| *Mahonia nepaulensis* DC.           | Berberidaceae     | Shrub/ NE    | Stem & bark/raw                | Stomachache, oral infection & toothache                   | Apatani (Ayam 2017)                     |
| *Mastersia assamica* Benth.         | Fabaceae          | Climber/ NE  | Stem/paste                     | Cuts & wounds                                             | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Mazus pumillus* (Burm. f.) Steenis | Mazaceae          | Herb/ NE     | Leaf/paste                     | Blood coagulant                                           | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Melastoma malabathricum* L.        | Melastomaceae     | Shrub/ NE    | Leaf, flowers & fruits/infusion | Stomachache, jaundice, diarrhea, dysentery & toothache   | Adi, Apatani, Galo (Ayam 2017, Bharali *et al*. 2016, Kagyung *et al*. 2010) |
| *Melia azedarach* L.                | Meliaceae         | Tree/ LC     | Leaf & bark/ decoction         | Inflammation, malaria & killing head lice                 | Apatani, Galo, Nyishi & Tagin (Kongsai *et al*. 2015, Murtem & Chaudhry 2016) |
| *Mentha arvensis* L.                | Lamiaceae         | Herb/ LC     | Leaf/raw                       | Stomachache & influenza                                   | Apatani*                                |
| *Mentha piperita* L.                | Lamiaceae         | Herb/ LC     | Leaf/raw                       | Knee pain, cough & cold & gastric                          | Khampti, Galo, Nyishi & Tagin (Das & Tag 2006, Murtem & Chaudhry 2016) |
| *Mentha spicata* L.                 | Lamiaceae         | Herb/ LC     | Leaf/raw                       | Gastric & acidity                                         | Galo (Bharali *et al*. 2016)            |
| *Mesua ferrea* L.                   | Calophyllaceae    | Tree/ NE     | Sap soaked/ decoction          | Eye infection                                             | Khampti (Sen *et al*. 2008)             |
| *Meyna laxiflora* Robyns            | Rubiaceae         | Shrub/ NE    | Fruit/raw                      | Abortion                                                  | Galo (Bharali *et al*. 2016)            |
| *Michelia champaca* L.              | Magnoliaceae      | Tree/ NE     | Fruit/raw                      | Stomachache, constipation & indigestion                   | Apatani (Ayam 2017)                     |
| *Microsorum punctatum* (L.) Copel.   | Polygonaceae      | Frond/ NE    | Leaf/paste                     | Inflammation                                              | Galo & Tagin (Wangpan *et al*. 2019a)  |
| *Mikania micrantha* Kunth           | Asteraceae        | climber/ LC  | Leaf/paste                     | Wounds, cuts, skin allergy, itching, fever, dysentery & diarrhea | Adi, Apatani, Galo (Ayam 2017, Bharali *et al*. 2016, Kagyung *et al*. 2010) |
| *Mikania scandens* (L.) Wild.       | Asteraceae        | Climber/ NE  | Leaf/paste                     | Blood coagulant, diarrhea, cuts & wounds                  | Adi, Galo, Nocte, Nyishi, Tagin & Tangsa (Kongsai *et al*. 2015, Murtem & Chaudhry 2016, Tangjang *et al*. 2011) |
| *Millingtonia hortensis* L. f.      | Bignoniaceae      | Tree/ NE     | Leaf & flowers/ raw            | Chest pain & jaundice                                     | Khampti (Das & Tag 2006)                |
| *Mimosa pudica* L.                  | Fabaceae          | Creeper/ LC  | Root/ decoction                | Piles, skin allergy, toothache & worm infection           | Apatani, Nocte & Singpo (Ayam 2017, Kongsai *et al*. 2015, Tangiang *et al*. 2011) |
| Plant Name                          | Family           | Form     | Part(s)                | Use(S)                                      | Reference(s)                                      |
|------------------------------------|------------------|----------|------------------------|---------------------------------------------|--------------------------------------------------|
| Mollugo disticha Ser.              | Molluginaceae    | Herb/ NE | Root/rootroast         | Muscle pain                                 | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)     |
| Mollugo pentaphylla L.             | Molluginaceae    | Herb/ NE | Leaf & stem/vegetable  | Dehydration                                 | Khampiti (Das & Tag 2006)                         |
| Momordica charantia L.             | Cucurbitaceae    | Climber/ NE | Fruits/seed          | Diabetes, stomachache & blood pressure      | Galo, Monpa, Nyishi & Tagin (Murtem & Chaudhry 2016, Namsa et al 2011) |
| Moringa oleifera Lam.              | Moringaceae      | Shrub/tree/ LC | Leaf & fruit/ decoction | Anemia                                      | Adi (Tangjang et al 2011)                        |
| Morus laevigata Wall.              | Moraceae         | Tree/ NE | Stem & bark/ raw       | Abscesses, itching & wounds                 | Adi, Galo, Mema, Nyishi & Tagin (Kagyung et al 2010, Murtem & Chaudhry 2016, Rethy et al 2010) |
| Mosla dianthera (Buch.-Ham. ex Roxb.) Maxim. | Lamiaceae   | Herb/ NE | Leaf/paste             | Skin allergy                                | Khampiti (Das & Tag 2006)                         |
| Mucuna macrocarpa Wall.            | Fabaceae         | Climber/ NE | Stem/ decoction       | Eye infection                               | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)     |
| Musa balbisiana Colla              | Musaceae         | Herb/ LC | Hearth (inner core/ cooked | Dysentery, diarrhea & stomachache            | Adi & Galo (Bharali et al 2016, Nimasow et al 2012) |
| Musa paradisiaca L.                | Musaceae         | Herb/ NE | Fruits, roots & root/ powder | Backache, fever, worm infection, dysentery, indigestion, diarrhea, vomiting & urinal ailments | Adi, Apatani, Galo, Idu-Mishmi & Khampiti (Bharali et al 2016, Kagyum et al 2010, Kaly 2005, Khongsa et al 2015, Nimasow et al 2012, Sen et al 2008, Tangjang et al 2011) |
| Musa velutina H. Wendl. & Drude    | Musaceae         | Shrub/ NE | Inflorescence/ raw     | Stomachache                                 | Galo (Bharali et al 2016)                         |
| Mussaenda roxburghii Hook.f.       | Rubiaceae        | Shrub/ LC | Leaf/paste             | Blood coagulant                             | Galo & Tagin (Wangpan et al 2019a)                |
| Ocimum americanum L.               | Lamiaceae        | Herb/ NE | whole plant/ raw       | Cough & cold                                | Khampiti (Sen et al 2008)                        |
| Ocimum basilicum L.                | Lamiaceae        | Shrub/ NE | Leaf & seed/ powder    | Cough & cold                                | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)     |
| Ocimum sanctum L.                  | Lamiaceae        | Shrub/ NE | Leaf & seed/ decoction | Cough & cold, bronchitis, skin allergy, fever, stomachache, diarrhea, inflammation, wounds & cuts | Apatani, Monpa, Nocte, Nyishi (Khongsa et al 2015, Namsa et al 2011, Tangjang et al 2011) |
| Ormosia robusta Baker              | Fabaceae         | Tree/ NE | Leaf/paste             | Abscesses                                   | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)     |
| Plant Name                        | Family       | Type       | Part Used                      | Uses                                         | Groups                                      |
|----------------------------------|--------------|------------|--------------------------------|----------------------------------------------|---------------------------------------------|
| *Oroxylum indicum* (L.) Kurz      | Bignoniaceae | Tree/ EN   | Leaf, bark & root/decoction    | Liver disease, stomachache, cancer, itching, inflammation, tuberculosis, diarrhea, rheumatism, jaundice & heart disease | Adi, Galo, Monpa, Nyishi, Tagin & Wancho (Khongsai et al. 2015, Murtem & Chaudhry 2016, Tangjang et al. 2011, Tripathi et al. 2017) |
| *Oxalis acetosella* L.           | Oxalidaceae  | Herb/ NE   | Whole plant/raw                | Cuts & wounds                                | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Oxalis corniculata* L.          | Oxalidaceae  | Herb/ NE   | Whole plant (leaf)/raw         | Burns, diarrhea, blood coagulant, indigestion, dysentery, scurvy, headache & loss of appetite | Adi, Apatani, Galo, Kampti, Nyishi & Tagin (Ali & Ghosh 2006, Ayam 2017, Das & Tag 2006, Kagyung et al. 2010, Murtem & Chaudhry 2016) |
| *Oxalis debilis var. corymbosa* (DC.) Lourteig | Oxalidaceae | Herb/ NE   | Whole plant/decoction          | Cuts, injuries & burns                        | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Oxalis triangularis* A. St. Hill.| Oxalidaceae  | Herb/ LC   | Leaf/vegetable                 | Stomachache & diarrhea                       | Adi & Nocte (Tangjang et al. 2011)          |
| *Paederia foetida* L.            | Rubiaceae    | Climber/ NE| Leaf & tuber/decoction         | Body ache, gastric, stomachache, diarrhea, burns, toothache, urinal ailments, dysentery & indigestion | Adi, Aka, Apatani, Galo, Khampti, Nyishi & Tagin (Bharali et al. 2016, Goswami et al. 2009, Kagyung et al. 2010, Khongsai et al. 2015, Nimachow et al. 2011, Ninasow et al. 2012, Sen et al. 2008, Tangjang et al. 2011) |
| *Papaver somniferum* L.          | Papaveraceae | Herb/ LC   | Capsule/alkaloid               | Body ache                                    | Adi & Nocte (Tangjang et al. 2011)          |
| *Paris polyphylla* Sm.           | Melanthiaceae| Herb/ VU   | Rhizome/ decoction             | Flatulence                                   | Nocte (Wangpan et al. 2019b)                |
| *Parkia tumoriana* (DC.) Merr.   | Fabaceae     | Tree/ LC   | Fruit/ raw                     | Indigestion                                  | Nyishi (Doley et al. 2014)                  |
| *Pedaliium murex* L.             | Pedaliaceae  | Herb/ NE   | Whole plant/crushed            | Wounds                                       | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Pennisetum macrostachyum* (Brongn.) Trin. | Poaceae | Herb/ NE   | Leaf & root/raw                | Urinal ailments & worm infection             | Khampti (Das & Tag 2006)                    |
| *Perilla frutescens* (L.) Britton| Lamiaceae    | Herb/ LC   | Seed/infusion                  | Headache & fever                             | Apatani, Galo, Nyishi & Tagin (Kala 2005, Murtem & Chaudhry 2016) |
| *Persicaria chinensis* (L.) H. Gross | Polygonaceae | Herb/ LC | Leaf & flower/raw              | Urinal ailments                              | Galo (Bharali et al. 2016)                 |
| *Phlogacanthus thyrsiformis* (Roxb. ex Hardw.) Mabb. | Acanthaceae | Shrub/ NE | Leaf/decoction                 | Cheek crack, pimples, scabies, stomachache, dysentery & malaria | Adi, Memba, Nocte & Wancho (Rethy et al. 2010, Tangjang et al. 2011, Wangjen et al. 2011) |
| *Phoebe cooperiana* P.C. Kanj. & Das | Lauraceae | Tree/ NE | Bark/raw                       | Itching                                      | Adi, Apatani & Nyishi (Doley et al. 2014)   |
| **Phyllanthus emblica** L. | **Phyllanthaceae** | **Tree/ LC** | **Fruit/raw** | **Loss of appetite** | **Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)** |
|--------------------------|-------------------|--------------|---------------|---------------------|-------------------------------------------------|
| **Physalis peruviana** L. | **Solanaceae**    | **Herb/ LC** | **Fruit/raw** | **Gastric**         | **Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)** |
| **Physalis angulata** L. | **Solanaceae**    | **Herb/ LC** | **Fruit/raw** | **Gastric**         | **Apatani (Kala 2005)** |
| **Picrorhiza kurrooa** Royle | **Scrophulariaceae** | **Herb/ EN** | **Whole plant/infusion** | **Stomachache & malaria** | **Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)** |
| **Physalis peruviana** L. | **Solanaceae**    | **Herb/ LC** | **Fruit & raw** | **Gastric**         | **Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)** |
| **Physalis angulata** L. | **Solanaceae**    | **Herb/ LC** | **Fruit & raw** | **Gastric**         | **Apatani (Kala 2005)** |
| **Picrorhiza kurrooa** Royle | **Scrophulariaceae** | **Herb/ EN** | **Whole plant/infusion** | **Stomachache & malaria** | **Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)** |
| **Pilea trineria** Wight | **Urticaceae**    | **Shrub/ NE** | **Leaf & bark/paste** | **Muscle pain**     | **Khampti (Das & Tag 2006)** |
| **Pinus roxburghii** Sarg. | **Pinaceae**     | **Tree/ LC** | **Seed/raw** | **Indigestion**     | **Apatani (Kala 2005)** |
| **Piper longum** L. | **Piperaceae**    | **Climber/ NE** | **Fruit & root/raw** | **Cough & cold, asthma & dysentery** | **Apatani (Ayam 2017)** |
| **Piper mullesua** Buch.-Ham. ex D. Don | **Piperaceae** | **Climber/ NE** | **Whole plant/paste** | **Rheumatism, cough & cold, body ache, mouth ulcer & bronchitis** | **Adi, Galo, Khampti, Nyishi, Singpo, Tagin & Tangsa (Bharali et al. 2016, Das & Tag 2006, Khongsai et al. 2015, Murtem & Chaudhry 2016, Tangjang et al. 2011)** |
| **Piper nigrum** L. | **Piperaceae**    | **Climber/ NE** | **Seed, fruit & leaf/raw** | **Cough & cold, bronchitis, killing head lice & tonsillitis** | **Adi, Galo, Idu-Mishmi, Nyishi, Singpo, Tagin & Tangsa (Khongsai et al. 2015, Murtem & Chaudhry 2016)** |
| **Piper pedicellatum** C. DC. | **Piperaceae** | **Climber/ VU** | **Leaf/raw** | **Scabies, abscesses & skin allergy** | **Galo (Bharali et al. 2016)** |
| **Piper peepuloides** Roxb. | **Piperaceae** | **Climber/ NE** | **Fruit/raw** | **Cough & cold** | **Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)** |
| **Plantago erosa** Wall. | **Plantaginaceae** | **Herb/ NE** | **Leaf/paste** | **Cuts & wounds** | **Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)** |
| **Plantago major** L. | **Plantaginaceae** | **Herb/ LC** | **Whole plant/paste** | **Wounds & inflammation** | **Monpa (Namsa et al. 2011)** |
| **Plumbago indica** L. | **Plumbaginaceae** | **Herb/ shrub/ NE** | **Whole plant/raw** | **Bone pain & mouth ulcer** | **Khampti (Das & Tag 2006, Sen et al. 2008)** |
| **Pogostemon benghalensis** (Burm. f.) Kuntze | **Lamiaceae** | **Herb/ NE** | **Whole plant/paste** | **Vomiting, muscle pain, body ache & stomachache** | **Khampti, Galo, Nyishi & Tagin (Murtem & Chaudhry 2016, Sen et al. 2008)** |
| **Polygonum chinense** L. | **Polygonaceae** | **Climber/ NE** | **Leaf/boiled** | **Urinal ailments** | **Galo & Tagin (Wangpan et al. 2019a)** |
| **Pothos cathcartii** Schott | **Acoraceae** | **Shrub/ NE** | **Whole plant/raw** | **Bone fracture** | **Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)** |
| **Potssia laxiflora** (Blume) Kuntze | **Apocynaceae** | **Climber/ NE** | **Leaf/paste** | **Bee bite** | **Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)** |
| **Species** | **Family** | **Plant Type** | **Parts Used** | **Uses** | **References** |
|------------|------------|----------------|---------------|---------|----------------|
| *Pouzolzia bennetiana* var. *gardneri* (Wight) Hook. f. | Urticaceae | Climber/ NE | Leaf/raw | Constipation & stomachache | Galo, Monpa, Nyishi & Tagin (Murtem & Chaudhry 2016, Namsa et al. 2011) |
| *Pouzolzia viminea* Wedd. | Urticaceae | Shrub/ NE | Leaf & stem/paste | Blood coagulant & sores | Adi (Nimasow et al. 2012) |
| *Prunus persica* (L.) Stokes | Rosaceae | Tree/ NE | Leaf/paste | Worm infection | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Psidium guajava* L. | Myrtaceae | Shrub or small tree/ LC | Root & leaf/decoction | Diarrhea, cough & cold & dysentery | Adi, Galo, Khampti, Monpa, Nocte, Nyishi & Tagin (Bharali et al. 2016, Kagyung et al. 2010, Murtem & Chaudhry 2016, Namsa et al. 2011, Sen et al. 2008, Tangjang et al. 2011) |
| *Punica granatum* L. | Lythraceae | Shrub/ LC | Tender leaf/raw | Dysentery, stomachache & diarrhea | Khampti & Monpa (Namsa et al. 2011, Sen et al. 2008) |
| *Pyllanthus acidus* (L.) Skeels | Phyllanthaceae | Shrub or tree/ NE | Fruit/raw | Vomiting | Khampti (Sen et al. 2008) |
| *Quercus serrata* Thunb. | Fagaceae | Tree/ LC | Bark and fruit/raw | Tonsillitis | Idu-Mishmi (Dooley et al. 2014) |
| *Ranunculus diffusus* DC. | Ranunculaceae | Shrub/ NE | Stem & root/raw | Toothache & oral infection | Apatani (Ayam 2017) |
| *Rauwolfia serpentina* (L.) Benth. ex Kurz | Apocynaceae | Shrub/ EN | Bud, shoot & fruit/raw | Stomachache, snake bite, vomiting, malaria, fever & blood pressure | Khampti & Nyishi (Sen et al. 2008, Tripathi et al. 2017) |
| *Rhaphidophora decursiva* (Roxb.) Schott. | Araceae | Climber/ NE | Stem/paste | Wounds & burns | Galo & Tagin (Wangpan et al. 2019a) |
| *Rhododendron arboreum* Sm. | Ericaceae | Tree/ LC | Flower/decoction | Dysentery, diarrhea & throat infection | Monpa (Namsa et al. 2011) |
| *Rhus javanica* Linn. | Anacardiaceae | Herb/ NE | Fruits/raw | Dysentery | Aka (Nimachow et al. 2011) |
| *Ricinus communis* L. | Euphorbiaceae | Shrub/ NE | Leaf/paste | Bone fracture, abortion & stomachache | Aka, Galo, Nyishi & Tagin (Murtem & Chaudhry 2016, Nimachow et al. 2011) |
| *Rotheca serrata* (L.) Steane & Mabb. | Lamiaceae | Shrub/ LC | Fresh tender leaf/raw | Blood pressure | Tagin (Goswami et al. 2009) |
| *Rubia cordifolia* L. | Rubiaceae | Climber herb/ NE | Root/paste | Headache | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Rubus calycinus* Wall. ex D. Don | Rosaceae | Herb/ NE | Fruit/raw | Stomachache | Apatani (Kala 2005) |
| *Rubus ellipticus* Sm. | Rosaceae | Herb/ LC | Fruit/raw | Indigestion, cough, fever & sores | Apatani (Ayam 2017, Kala 2005) |
| *Rubus paniculatus* Sm. | Rosaceae | Climber/ NE | Fruit/raw | Stomachache | Apatani (Kala 2005) |
| *Rumex nepalensis* Spreng. | Polygonaceae | Herb/ NE | Leaf/powder | Snake bite | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| Plant Name                        | Family      | Type     | Part Used          | Uses                                                                 | Reference(s)                                                                 |
|---------------------------------|-------------|----------|--------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------|
| Saccharum officinarum L.        | Poaceae     | Shrub/ NE| Stem/water decoction| Jaundice                                                             | Galo, Monpa, Nocte, Nyishi & Tagin (Murtem & Chaudhry 2016, Namsa et al. 2011, Tangjang et al. 2011) |
| Sarcochlamy pulcherrima Gaudich.| Urticaceae   | Tree/ NE | Leaf/decoction     | Indigestion, constipation, cuts & wounds                            | Adi, Galo & Tagin (Doley et al. 2014, Wangpan et al. 2019a)                  |
| Saurauia armata Kurz             | Actinidiaceae| Tree/ LC  | Leaf/paste         | Cuts & wounds                                                        | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)                                 |
| Schima wallichii (DC.) Korth.    | Theaceae     | Tree/ LC  | Seed/decoction     | Stomachache                                                          | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)                                 |
| Sarcochlamys pulcherrima        | Urticaceae   | Tree/ NE | Leaf/decoction     | Indigestion, constipation, cuts & wounds                            | Adi, Galo & Tagin (Doley et al. 2014, Wangpan et al. 2019a)                  |
| Saurauia armata Kurz             | Actinidiaceae| Tree/ LC  | Leaf/paste         | Cuts & wounds                                                        | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)                                 |
| Scirpularia lindernia (Linn.)   | Scrophulariaceae| Herb/ NE| Whole plant (leaf/paste) | Piles, malaria, abscesses, blood coagulant & jaundice                   | Adi, Galo, Nocte, Nyishi, Tagin & Wancho (Murtem & Chaudhry 2016, Tangjang et al. 2011, Wangjen et al. 2011, Wangpan et al. 2019b) |
| Sida acuta Burm. f.              | Malvaceae    | Herb/ NE | Leaf & roots/vegetables | Pneumonia                                            | Khampti (Das & Tag 2006)                                                      |
| Solanum aculeatissimum Jacq.    | Solanaceae   | Shrub/ NE| Fruit/raw & vegetable | Toothache                                                                 | Galo (Bharali et al. 2016)                                                  |
| Solanum indicum L.              | Solanaceae   | Shrub/ NE| Dried fruit/vegetable | Toothache, constipation, diabetes & stomachache                     | Adi, Apatani, Monpa, Nocte & Tangsa (Ayam 2017, Khongsai et al. 2015, Namsa et al. 2011, Tangjang et al. 2011) |
| Solanum khasianum C.B. Clarke   | Solanaceae   | Herb/ NE | Fruit & seed/roast | Toothache & gum problem                                             | Apatani, Galo, Nyishi & Tagin (Ayam 2017, Khongsai et al. 2015, Murtem & Chaudhry 2016) |
| Solanum kurzii Brace ex Prain   | Solanaceae   | Shrub/ NE| Fruit/raw & boil   | Stomachache                                                          | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)                                 |
| Solanum nigrum L.               | Solanaceae   | Shrub/ NE| Whole part/raw & vegetable | Indigestion, liver disease, malaria, gastric, stomachache, constipation, dysentery, toothache, loss of appetite & blood pressure | Adi, Apatani, Galo, Nyishi & Tagin (Kala 2005, Murtem & Chaudhry 2016, Nimsow et al. 2012, Wangpan et al. 2019a) |
| Solanum spirale Roxb.           | Solanaceae   | Shrub/ NE| Fruits & leaf/decoction | Stomachache, fresh cuts & wounds, toothache & jaundice               | Adi & Nyishi (Ali & Ghosh 2006, Kagyung et al. 2010, Nimsow et al. 2012, Tangjang et al. 2011) |
| Botanical Name | Family     | Life Form | Part(s) Used | Medicinal Uses                                      | Comments/References                                                                                                                                 |
|----------------|------------|-----------|--------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Solanum surattense Burm. f. | Solanaceae | Herb or shrub/NE | Fruits & seed/roast | Rabies & stomachache | Khampti (Das & Tag 2006)                                                                                                                          |
| Solanum torvum Sw. | Solanaceae | Shrub/ NE | Roots, leaf & fruit seed/roast & boiled | Indigestion, itching, blood pressure, malaria, stomachache, oral infection & toothache | Adi, Galo, Khampti, Memba, Monpa, Nyishi & Tagin (Das & Tag 2006, Khongsai et al. 2015, Murtem & Chaudhry 2016, Namsa et al. 2011, Rethy et al. 2010) |
| Solanum viarum Dunal | Solanaceae | Shrub/ LC | Fruit/roast | Toothache | Galo & Tagin (Wangpan et al. 2019a)                                                            |
| Sonchus sp. | Asteraceae | Herb/ NE | Leaf/raw | Flatulence & body ache | Adi (Kagyung et al. 2010, Nimasow et al. 2012)                                                    |
| Spermacoce hispida L. | Rubiaceae | Herb/ NE | Leaf/raw | Vomiting, food poisoning & delivery problem | Khampti (Sen et al. 2008)                                                                                                                                 |
| Spilanthes acmella L. Murray | Asteraceae | Herb/ NE | Flower & root/raw | Toothache | Apatani & Monpa (Khongsai et al. 2015)                                                             |
| Spilanthes oleracea L. | Asteraceae | Herb/ NE | Leaf and young twig/raw & paste | Blood coagulant, skin allergy & gastric | Monpa (Namsa et al. 2011)                                                                                                                               |
| Spilanthes paniculata Wall. ex DC. | Asteraceae | Herb/ NE | Flower, fruit, stem & tender leaf/raw | Toothache, fever, cough & cold, body ache, mouth ulcer, constipation & worm infection | Adi, Apatani, Idu-Mishmi, Khampti, Memba, Nocte & Nyishi (Ali & Ghosh 2006, Ayam 2017, Khongsai et al. 2015, Namsa et al. 2012, Rethy et al. 2010, Sen et al. 2008, Tangjang et al. 2011, Tripathi et al. 2017) |
| Stachytarpheta dichotoma Vahl | Verbenaceae | Herb/ NE | Leaf & bark/raw | Cancer | Khampti (Das & Tag 2006)                                                                                                                                  |
| Stellaria media (Linn.) Vill | Caryophyllaceae | Herb/ NE | Whole plant/paste | Blood coagulant | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016)                                                                                                          |
| Stemona tuberosa Lour. | Stemonaceae | Climber/ NE | Rhizome/infusion | Burns | Galo (Bharali et al. 2016)                                                                                                                                  |
| Stephania japonica (Thunb.) Miers | Menispermaceae | Climber/ NE | Tubers/infusion | Malaria & body ache | Khampti (Das & Tag 2006)                                                                                                                                |
| Stereospermum chelonoides (L. fil.) DC. | Bignoniaceae | Tree/ NE | Bark/infusion | Gastric | Monpa (Doley et al. 2014)                                                                                                                                |
| Stereospermum colais (Buch.-Ham. ex Dillwyn) Mabb. | Bignoniaceae | Tree/ NE | Young twigs/paste | Backache | Galo & Tagin (Wangpan et al. 2019a)                                                                |
| Syzygium cumini (L.) Skeels | Myrtaceae | Tree/ LC | Fruit/raw | Stomachache, diarrhea & dysentery | Adi (Khongsai et al. 2015)                                                                                                                                |
| Plant Name          | Family     | Form        | Part          | Use                                    | Tribe                               |
|---------------------|------------|-------------|---------------|----------------------------------------|-------------------------------------|
| *Tacca integrifolia* Ker Gawl. | Taccaceae  | Herb/ NE    | Rhizome & berry/raw | Wounds, diarrhea, stomachache & dysentery | Adi, Galo, Nyishi & Tagin (Kagyung et al. 2010, Murtem & Chaudhry 2016) |
| *Tamarindus indica* L. | Fabaceae   | Tree/ LC    | Leaf/decoction | Menstrual disorder                      | Galo (Bharali et al. 2016)          |
| *Terminalia arjuna* (Roxb.) Wight & Arn. | Combretaceae | Tree/ NE    | Bark/raw      | Jaundice & diabetes                     | Adi, Idu-Mishmis & Monpa (Doley et al. 2014) |
| *Terminalia bellerica* (Gaertn.) Roxb. | Combretaceae | Tree/ NE    | Leaf & fruit/raw | Cough & cold, constipation, dyspepsia, piles, abscesses, diarrhea, headache & fever | Adi & Nyishi (Nimasow et al. 2012, Tripathi et al. 2017) |
| *Terminalia chebula* Retz. | Combretaceae | Tree/ LC    | Fruit/powder  | Dehydration, stomachache, constipation, chest pain, gastric, cough & cold, heart disease, ulcer & malaria | Adi, Apatani, Galo, Khampti, Nyishi & Tagin (Das & Tag 2006, Khongsai et al. 2015, Murtem & Chaudhry 2016, Tangjang et al. 2011, Tripathi et al. 2017) |
| *Terminalia citrina* (Gaertn.) Roxb. ex Flem. | Combretaceae | Tree/ LC    | Fruit/raw     | Gastric and Constipation               | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Tetragastris serratum* (Roxb.) Planch. | Vitaceae    | Herb/ NE    | Leaf/paste    | Burns                                 | Wancho (Wangjen et al. 2011)         |
| *Thunbergia coccinea* Wall. | Acanthaceae | Climber/ NE | Root/raw      | Scabies, abscesses & skin allergy      | Galo (Bharali et al. 2016)          |
| *Tinospora cordifolia* (Wild.) Miers | Menispermaceae | Climber/ NE | Leaf & stem/raw | Scabies, skin allergy & gastric       | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Torenia asiatica* L. | Scrophulariaceae | Herb/ NE    | Leaf/raw      | Stomatache                            | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Torenia diffusa* D. Don | Scrophulariaceae | Herb/ NE    | Leaf/raw      | Stomatache                            | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Torenia parviflora* Buch.-Ham. & Benth. | Scrophulariaceae | Herb/ NE    | Leaf/raw      | Gastric                               | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Trichosanthes tricuspidata* Lour. | Cucurbitaceae | Climber/ NE | Fruit & stem/raw & paste | Burns, asthma & pneumonia              | Aka & Galo (Bharali et al. 2016, Nimachow et al. 2011) |
| *Tupistra aurantiaca* (Baker) Wall. ex Hook. f. | Asparagaceae | Shrub/ NE   | Stem/dried & boiled | Malaria & stomachache              | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Urena lobata* L. | Malvaceae   | Shrub/ LC   | Root/paste    | Malaria & pneumonia                   | Galo & Tagin (Wangpan et al. 2019a) |
| *Urginea indica* (Roxb.) Kunth | Asparagaceae | Herb/ NE    | Latex/raw     | Asthma & bronchitis                   | Khampti (Sen et al. 2008)           |
| *Urtica dioica* L. | Urticaceae  | Herb/ LC    | Leaf/paste    | Bone fracture                         | Apatani (Kala 2005)                 |
| *Urtica magellanica* (Juss.) ex Poir. | Urticaceae  | Herb/ NE    | Inner bark/paste | Rheumatisim                          | Adi (Tangjang et al. 2011)         |
| Species                          | Family               | Use                  | Part Used          | Application                          | Reference                                    |
|---------------------------------|----------------------|----------------------|--------------------|---------------------------------------|----------------------------------------------|
| *Urtica palme* Forssk.          | Urticaceae           | Herb/ NE             | Leaf/decoction     | Itching                               | Galo & Tagin (Wangpan *et al.* 2019a)         |
| *Urtica parviflora* Roxb.       | Urticaceae           | Herb/ NE             | Leaf/roasted       | Muscle pain                           | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Urtica pulcherrima* Gaud.      | Urticaceae           | Shrub/ NE            | Leaf/decoction     | Constipation                          | Galo & Tagin (Wangpan *et al.* 2019a)         |
| *Vernonia cinerea* (L.) Less.    | Asteraceae           | Shrub/ NE            | Leaf/raw           | Indigestion                           | Apatani (Kala 2005)                          |
| *Vernonia volkameneufolia* DC.  | Asteraceae           | Tree/ LC             | Leaf/dried paste   | Burns                                 | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Viburnum colebrookianum*       | Caprifoliaceae       | Shrub/ NE            | Leaf/pounded       | Sores                                 | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Villebrunea frutescens* (Thunb.) Blume | Urticaceae               | Tree/ NE             | Leaf/vegetable     | Wounds                                | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Vincia rosea* L.               | Apocynaceae          | Shrub/ NE            | Roots/paste        | Diabetes                              | Khampti (Sen *et al.* 2008)                  |
| *Wedantia scarab* Kurz.         | Vitaceae             | Shrub/ NE            | Roots/paste        | Dysentery & cholera                    | Galo, Nyishi & Tagin (Murtem & Chaudhry 2016) |
| *Zanthoxyllum armatum* DC.      | Rutaceae             | Tree/ LC             | Dried fruits, leaf & stem/raw | Cough & cold, bronchitis, throat infection, killing head lice, fever, loss of appetite, toothache & stomachache | Adi, Apatani, Galo, Nocte, Nyshi & Tangs (Ayam 2017, Bharali *et al.* 2016, Kaygung *et al.* 2010, Khongsai *et al.* 2015, Wangpan *et al.* 2019b) |
| *Zanthoxyllum rhetsa* (Roxb.) DC. | Rutaceae             | Tree/ LC             | Leaf & fruit/vegetable | Jaundice, diarrhea, gastric, skin allergy, diabetes & dandruff | Adi, Aka & Nocte (Ali & Ghosh 2006, Nimachow *et al.* 2011, Nimaow *et al.* 2012, Tangjang *et al.* 2011, Wangpan *et al.* 2019b) |
| *Zanthoxyllum acanthopodium* DC. | Rutaceae             | Shrub or tree/ LC    | Leaf, bark & fruit/dried infusion | Stomachache & dysentery | Apatani & Khampti (Das & Tag 2006, Kala 2005) |
| *Zanthoxyllum hamiltonianum* Wall. | Rutaceae             | Tree/ NE             | Tubers & leaf/raw  | Malaria                               | Adi (Ali & Ghosh 2006, Nimaow *et al.* 2012) |
| *Zanthoxyllum oxyphyllum* Edgew. | Rutaceae             | Tree/ NE             | Fruit/paste        | Stomachache                           | Apatani (Kala 2005)                          |
| *Zanthoxyllum piperatum* Benn.   | Rutaceae             | Tree/ NE             | Fruits/paste       | Delivery problems                     | Aka (Nimachow *et al.* 2011)                 |
| *Zea mays* L.                   | Poaceae              | Grass or herb/ LC    | Corn/decoction     | Urinal ailments                       | Adi (Tangjang *et al.* 2011)                |
### Zingiber officinale Roscoe

**Family:** Zingiberaceae  
**Plant Part:** Herb/ DD  
**Preparation:** Rhizome/paste  
**Uses:** Cough & cold, bronchitis, fever, influenza, throat infection, inflammation, stomachache, itching, blood purification & delivery pain  
**Native Populations:** Adi, Apatani, Galo, Khampti, Monpa, Nocte & Tagin (Ayam 2017, Kagyung et al. 2010, Kala 2005, Khongsai et al. 2015, Namsa et al. 2011, Sen et al. 2008, Tangjang et al. 2011, Wangpan et al. 2019a)

### Zingiber zerumbet (L.) Roscoe ex Sm.

**Family:** Zingiberaceae  
**Plant Part:** Shrub/ DD  
**Preparation:** Leaf/raw  
**Uses:** Cough & cold, stomachache, vomiting & diarrhea  
**Native Population:** Adi (Nimasow et al. 2012)

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*NE: not evaluated, DD: data deficient, LC: least concern, NT: near threatened, VU: vulnerable, EN: endangered, CR: critically endangered, EW: Extinct in the wild.*

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**Figure 4. Mode of ethnomedicine preparation**
The use reports of the ethnomedicinal plants have been explained and compared with the studies conducted by previous workers to ascertain the indicated curative properties of the plants against specific ailments.

**Cardiovascular disorders**
The common cardiovascular ailments are related to the heart muscle, strokes, heart failure, and high blood pressure (Olurunnisoa et al. 2011). Anaemia, blood circulation, blood pressure, blood purification, diabetes, heart disease, and hypertension are included in this category. Under cardiovascular ailment category, 50 use reports and 38 species were found, and out of which 14 species are used for the treatment of diabetes and 12 species are used for blood pressure. *Begonia roxburghii*, *Emblica officinalis* and *Momordica charantia* were found to use in more than two cardiovascular ailments. The use of *B. roxburghii* against diabetes and blood purification among the Adi, Nocte and Nyishi (Tangjang et al. 2011), *E. officinalis* against diabetes and heart disease by the Apatani (Khongsai et al. 2015) and *M. charantia* against diabetes and blood pressure among the Galo, Monpa, Nyishi and Tagin tribes (Murtem & Chaudhry 2016, Namsa et al. 2011) were found. The use report of *Centella asiatica*, *M. charantia*, and *Clerodendrum glandulosum* in the treatment of cardiovascular ailments have also been found in other parts of the world (Maruthupandian et al. 2011, Menetrier et al. 2020, Sharma et al. 2001, Uddin et al. 2019).

**Dermatological disorders**
Dermatological disorders are one of the most common ailments among the rural people (Policepatel & Manikrao 2013). The medicinal plants reported under dermatological ailment category includes those medicinal species commonly used for the treatment of abscesses, bacterial infection, burns, cheek crack, cuts, dandruff, eczema, fungal infection, gout, heel crack, inflammation, injuries, itching, leprosy, pimples, ringworm, scabies, skin allergy and wounds. A total of 117 plant species and 171 use reports were found under the dermatological disorder category, while 46 species are found to be used for the treatment of wounds, 33 species for cut wounds, and 32 for skin allergy. *Artemisia nilagirica*, *Centella asiatica*, *Curcuma caesia*, *Dymaria cordata* and *Mikania micrantha* showed higher use reports. *A. nilagirica* is used against cuts, wounds and inflammation by Monpa (Namsa et al. 2011), *C. asiatica* against cuts, wounds, inflammation, ringworm and leprosy by Adi, Apatani, Galo, Monpa and Tagin (Khongsai et al. 2015, Namsa et al. 2011, Tangjang et al. 2011, Wangpan et al. 2019a), *C. caesia* against wounds, injuries, pimples and skin allergy by Galo, Khampi and Monpa (Bharali et al. 2016, Namsa et al. 2011, Sen et al. 2008), *D. cordata* against abscesses, scabies and skin allergy by Galo and Nocte (Bharali et al. 2016, Tangjang et al. 2011) and *M. micrantha* against cuts, wounds, itching and skin allergy by Apatani and Galo (Ayam 2017, Bharali et al. 2016). Similar use reports of these plants under dermatological ailments category were also found in other studies (Jyothilakshmi et al. 2015, Kalita et al. 2019, Nonn et al. 2014, Suresh et al. 2011).

**Gastrointestinal disorders**
Gastrointestinal related ailments (disorders) substantially contributed towards larger number of human morbidity and mortality rates worldwide (Maman et al. 2017). So ethnomedicinal plants have been reported as good alternatives for treatment of such ailments. The highest number of plant species (163) and use reports (277) were found under gastrointestinal ailment category. Acidity, loss of appetite, bowel problems, cholera, constipation, worm infection, diarrhea, dysentery, dyspepsia, flatulence, gastric, indigestion, piles, stomachache, and ulcer falls within gastrointestinal ailment category. Out of the total 163 plant species reported, 73 species are found to be used for the treatment of stomachache, 49 species in diarrhea, and 37 species in dysentery. *Centella asiatica*, *Coptis teetta*, and *Terminalia chebula* have more than five use reports under gastrointestinal ailments (disorders) category. *C. asiatica* is used against stomachache, dysentery, indigestion ulcer, cerebral disorder, constipation and gastric by Adi, Aka, Apatani, Khampi, Monpa and Wanco (Ayam 2017, Kagyung et al. 2010, Kala 2005, Khongsai et al. 2015, Namsa et al. 2011, Nimachow et al. 2011, Sen et al. 2008, Wangjen et al. 2011), *C. teetta* against stomachache, dysentery, diarrhea, gastric and loss of appetite by Adi, Galo, Membga, Nyishi and Tagin (Ali & Ghosh 2006, Khongsai et al. 2015, Murtem & Chaudhry 2016, Rethy et al. 2010, Tangjang et al. 2011, Tripathi et al. 2017) and *T. chebula* against stomachache, constipation, gastric and ulcer by Apatani, Galo, Khampi, Nyishi and Tagin (Das & Tag 2006, Khongsai et al. 2015, Murtem & Chaudhry 2016, Tripathi et al. 2017). Similar uses of these plants in gastrointestinal disorders have been reported previously by various workers (Arora et al. 2002, Mukherjee & Chakraborty 2019, Rathinamoorthy & Thilagavathi 2014).

**Gynaecological disorders**
Gynaecological disorders are the leading cause of morbidity and health care expenditures in women (Mishra et al. 2013). Due to the social stigma associated with sexual diseases, most of the womenfolk in the rural localities primarily rely on traditional medicinal herbal healers for their ultimate treatments. The gynaecological disorders included in the present report are abortion, delivery problems, leucorrhoea, menstrual disorder, and uterine...
problems. Various ethnic tribes of Arunachal Pradesh use 18 plant species in 5 types of gynaecological disorders (Table 3), and out of which 5 species are reported to be used in delivery problems and 4 species are used in the traditional abortion and birth control practices. *Alstonia scholaris* has two use reports and the rest of the species has single-use reports. In the present review, *A. scholaris* was found to be used in menstrual disorder and delivery problems by Apatani and Nyishi tribes (Kala 2005, Tripathi *et al.* 2017) while it was previously reported to be used in abortion (Ayyanar & Ignacimuthu 2005) and pain during child delivery (Sharma & Kumar 2011).

Table 3. Major and specific types of ailments/disorders under each broad category

| Major categories                  | Specific types of ailments/disorders                                                                 | No. of ailments |
|-----------------------------------|-----------------------------------------------------------------------------------------------------|-----------------|
| Category 1: Cardiovascular disorders | Anemia, blood circulation, blood pressure, blood purification, diabetes, heart disease and hypertension. | 07              |
| Category 2: Dermatological disorders | Abscesses, bacterial infection, burns, cheek crack, cuts, dandruff, eczema, fungal infection, gout, heel crack, inflammation, injures, itching, leprosy, pimples, ringworm, skin allergy, scabies, and wounds. | 19              |
| Category 3: Gastrointestinal disorders | Acidity, bowel problems, cholera, constipation, worm infection, diarrhea, dysentery, dyspepsia, flatulence, gastric, indigestion, loss of appetite, piles, stomachache, and ulcer. | 15              |
| Category 4: General health         | Bee bite, blood coagulant, cancer, cerebral tonic, chest pain, cough & cold, dehydration, dog bite, dizziness, earache, epilepsy, eye infection, fever, food poisoning, fresh cuts & wounds, gonorrhea, headache, hyperlactation, hyperthermia, influenza, insect bite, jaundice, killing head lice, liver disease, malaria, measles, migraine, nosebleed, paralysis, rashes, scorpion bite, scurry, snake bite, tuberculosis, tumor and vomiting. | 36              |
| Category 5: Gynecological disorders | Abortion, delivery problems, leucorrhoea, menstrual disorder, and uterine problems. | 05              |
| Category 6: Musculoskeletal disorders | Backache, body ache and muscle pain. | 03              |
| Category 7: Odontological disorders | Cavity, gum problem, mouth ulcer, oral infection, and toothache. | 05              |
| Category 8: Orthopedic disorders   | Bone fracture, bone pain, joint pain, knee pain and rheumatism. | 05              |
| Category 9: Respiratory disorders  | Airway obstruction, asthma, bronchitis, lung disorder, nasal congestion, pneumonia, sinusitis, sores, tonsillitis, and throat infection. | 10              |
| Category 10: Urological disorders  | Bladder stone and urinal ailments. | 02              |
| **Total**                          |                                                                                                   | 107             |

**Musculoskeletal disorders**

Musculoskeletal disorders like arthritis and back pain affect more than 1.7 billion communities worldwide and are reported as the 4th greatest influence on the complete fitness of the world populations, causing both disability and death (Hignett & Fray 2010). Musculoskeletal disorders include backache, body ache, and muscle pain and 35 plant species were reported under this category for the treatment (Table 3). Out of these, 26 plant species were used for body ache and 7 species for muscle pain. *Pogostemon benghalensis* have two use reports (muscle and body pains) by Galo, Nyishi and Tagintribes (Murtem & Chaudhry 2016) while the rest of the species has single-use reports. The leaves of *P. benghalensis* have also been reported by Das *et al.* (2003) in alleviating body pains.

**Odontological disorders**

Medicinal plants confer considerable antibacterial activity against various microorganisms including bacteria responsible for dental caries (Anushri *et al.* 2015). Cavity, gum problem, mouth ulcer, oral infection, and toothache are included in this category. The study reported 29 plant species used for the treatment of 5 types of odontological problems (Table 3). Out of which, 21 species are reported to be used for the treatment of toothache and 3 species for mouth ulcers. *Solanum torvum*, *Solanium khasianum*, and *Spilanthes paniculata* have two use reports each.
Khongsai & cold, malaria, jaundice, liver disease, snake bite and fever by Centella asiatica and malaria, and 11 species against vomiting & emetic tendency. General health disorder category which are used for the treatment of 36 types of ailments include bone fracture, bone pain, joint pain, knee pain, and rheumatism. Orthopaedic disorders recorded 28 plant species with 30 use reports, and out of which 17 species were used in bone fracture and 6 species in rheumatism. All the plant species have single-use reports. Some of the important plants used for the treatment of bone fracture are Acorus calamus by Apatani, (Kala 2005) and Ricinus communis by Aka (Nimachow et al. 2011) while Oroxyllum indicum by Adi tribe (Khongsai et al. 2015) and Piper mulliesua by Singhpo tribe (Khongsai et al. 2015) are reportedly used to treat rheumatism. Similar use reports of A. calamus, R. communis, and O. indicum for orthopaedic disorders have been previously reported by Burkill (1966), Imam et al. (2013) and Scarpa & Guerci (1982).

Orthopaedic disorders
Bone lesions are an important health problem, causing social and financial burdens (Loi et al. 2016). It is estimated that, with the increase in the elderly population in the world, the incidence of fractures increases even more in the next years (Rosberg & Dahlin 2018). Hence, the natural products, biomaterials, and their derivatives are promising alternatives to minimize side effects, reduce costs, and promote a fast and efficient treatment of orthopaedic disorders (Patel et al. 2015). This category of diseases includes bone fracture, bone pain, joint pain, knee pain, and rheumatism. Orthopaedic disorders recorded 28 plant species with 30 use reports, and out of which 17 species were used in bone fracture and 6 species in rheumatism. All the plant species have single-use reports. Some of the important plants used for the treatment of bone fracture are Acorus calamus by Apatani, (Kala 2005) and Ricinus communis by Aka (Nimachow et al. 2011) while Oroxyllum indicum by Adi tribe (Khongsai et al. 2015) and Piper mulliesua by Singhpo tribe (Khongsai et al. 2015) are reportedly used to treat rheumatism. Similar use reports of A. calamus, R. communis, and O. indicum for orthopaedic disorders have been previously reported by Burkill (1966), Imam et al. (2013) and Scarpa & Guerci (1982).

Respiratory disorders
A large number of people suffer from respiratory diseases worldwide (WHO 2008). Respiratory disorders are on the rise due to many reasons including poor air quality, especially in urban areas (D’Amato et al. 2014). In 2013, air pollution caused about 1.4 million deaths in India (Biswas & Hartley 2016). Despite advancements in medical sciences, rural people in developing countries still use traditional medicines as the first safety measure in healthcare (Bhasin 2008). Airway obstruction, asthma, bronchitis, lung disorder, nasal congestion, pneumonia, sinusitis, sores, tonsillitis, and throat infection falls under respiratory ailments category. The present review has found 44 plant species used for the treatment of 10 types of respiratory ailments (Table 3), and out of these, 8 species each were used for the treatment of asthma and bronchitis. Acorus calamus has two use reports by Adi, Galo, Nyishi, Tagin (Khongsai et al. 2015, Murtem & Chaudhry 2016) while the rest of the species has single-use reports. The uses of A. calamus in respiratory disorders have been also reported by Balakumbahan et al. (2010), Kala (2020) and Kayani et al. (2014).

Urological disorders
Nephrolithiasis is one of the most common urological conditions (Ziembio & Matlaga 2017). Globally, 12 % of the population suffers from the problem of nephrolithiasis with its recurrence rate higher in males than the female (Tiwari et al. 2012). Bladder stones and urinary ailments were included in this category. This review has reported 17 plant species used in the treatment of 2 types of urological disorders (Table 3), and out of which 13 species were used for urinary ailments and 4 species for the treatment of gall bladder stones. All the plant species have single-use reports. Cheilocostus speciosus, Paederia foetida, and Zea mays are mostly used in urinary ailments by Adi, Galo, and Singhpo (Bharali et al. 2016, Khongsai et al. 2015, Tangjang et al. 2011). The use of C. speciosus and Z. mays in urological disorders has also been previously reported (Hasanudin et al. 2012, Srivastava et al. 2011).

General health disorders
The common diseases general in nature like swelling due to bee/wasp sting, blood coagulant, cancer, cerebral tonic, chest pain, colic disorder, cough & cold, dehydration, dog bite, dizziness, earache, epilepsy, eye infection, fever, food poisoning, fresh cuts & wounds, gonorrhoea, headache, hyperlactation, hyperthermia, influenza, insect bite, jaundice, killing head lice, liver disease, malaria, measles, nosebleed, paralysis, rabies, scorpion bite, snake bite, tuberculosis, tumour and vomiting were included in this category. We have recorded 133 plant species under the general health disorder category which are used for the treatment of 36 types of ailments (Table 3), and out of which 34 plant species were used against cough & cold, 27 species against fever, 18 species each against jaundice and malaria, and 11 species against vomiting & emetic tendency. Andrographis paniculata, Coptis teetta and Centella asiatica showed higher uses in general health disorder category. A. paniculata is used against cough & cold, malaria, jaundice, liver disease, snake bite and fever by Galo Khampi, Nyishi and Tagin (Das & Tag 2006, Khongsai et al. 2015, Murtem & Chaudhry 2016, Sen et al. 2008, Tripathi et al. 2017), C. teetta against cough & cold,
malaria, fever, headache and eye infection by Adi, Galo, Memba, Nyishi and Tagin (Ali & Ghosh 2006, Khongsai et al 2015, Murtem & Chaudhry 2016, Rethy et al. 2010, Tangjang et al. 2011, Tripathi et al. 2017) and C. asiatica against jaundice, cerebral disorder and tuberculosis by Aka and Apatani tribes (Ayam 2017, Khongsai et al. 2015, Nimachow et al. 2011).

**Family use value (UVf)**

The plant families with the highest use reports were Asteraceae (27 species with 86 use reports), Solanaceae (18 species with 48 use reports), and Lamiaceae (18 species with 45 use reports). The statistical analysis shows the predominance of Acanthaceae, Asteraceae, Berberidaceae, and Lamiaceae with UVf of 4.90, 4.78, 4.50, and 4.00 respectively. Apocynaceae, Euphorbiaceae, Scrophulariaceae, and Solanaceae recorded the next higher UVf of more than 3 while Myrtaceae, Chenopodiaceae, and Achariaceae recorded the lowest UVf of 0.86, 0.50, and 0.25 respectively (Table 4).

Table 4. Family use values of the ethnomedicinal plants reported to be used by the tribal communities of Arunachal Pradesh

| Family name       | Number of species | Use reports / family | Number of informants / family | UVf |
|-------------------|-------------------|----------------------|-------------------------------|-----|
| Acanthaceae       | 8                 | 49                   | 10                            | 4.90|
| Achariaceae       | 1                 | 1                    | 4                             | 0.25|
| Acoraceae         | 2                 | 11                   | 5                             | 2.20|
| Actinidiaceae     | 1                 | 1                    | 1                             | 1.00|
| Amaranthaceae     | 2                 | 5                    | 3                             | 1.67|
| Anacardiaceae     | 1                 | 1                    | 1                             | 1.00|
| Apiceae           | 3                 | 20                   | 11                            | 1.82|
| Apocynaceae       | 7                 | 24                   | 7                             | 3.43|
| Araceae           | 6                 | 8                    | 5                             | 1.60|
| Araliaceae        | 2                 | 7                    | 3                             | 2.33|
| Arecaceae         | 2                 | 2                    | 2                             | 1.00|
| Asparaguselaceae  | 2                 | 4                    | 2                             | 2.00|
| Asteraceae        | 27                | 86                   | 18                            | 4.78|
| Athyriaceae       | 1                 | 1                    | 1                             | 1.00|
| Avenhoeaaceae     | 1                 | 1                    | 1                             | 1.00|
| Begoniaceae       | 5                 | 11                   | 6                             | 1.83|
| Berberidaceae     | 3                 | 12                   | 3                             | 4.00|
| Bignoniaceae      | 4                 | 14                   | 8                             | 1.75|
| Blechnaceae       | 1                 | 1                    | 1                             | 1.00|
| Brassicaceae      | 2                 | 6                    | 2                             | 3.00|
| Bromeliaceae      | 1                 | 3                    | 2                             | 1.50|
| Burseraceae       | 2                 | 2                    | 2                             | 1.00|
| Caesalpinaceae    | 4                 | 9                    | 3                             | 3.00|
| Calophyllaceae    | 1                 | 1                    | 1                             | 1.00|
| Campanulaceae     | 2                 | 2                    | 2                             | 1.00|
| Cannabaceae       | 1                 | 4                    | 2                             | 2.00|
| Caprifoliaceae    | 1                 | 1                    | 1                             | 1.00|
| Caricaceae        | 1                 | 9                    | 5                             | 1.80|
| Caryophyllaceae   | 3                 | 11                   | 6                             | 1.83|
| Chenopodiaceae    | 1                 | 1                    | 2                             | 0.50|
| Clusiaceae        | 3                 | 6                    | 5                             | 1.20|
| Combretaceae      | 5                 | 22                   | 7                             | 3.14|
| Compositae        | 1                 | 1                    | 1                             | 1.00|
| Convolulaceae     | 2                 | 4                    | 2                             | 2.00|
| Costaceae         | 1                 | 8                    | 4                             | 2.00|
| Crassulaceae      | 2                 | 7                    | 4                             | 1.75|
| Cucurbitaceae     | 5                 | 12                   | 8                             | 1.50|
| Cyatheaceae       | 1                 | 1                    | 1                             | 1.00|
| Cyperaceae        | 1                 | 1                    | 1                             | 1.00|
| Denustaidiaceae   | 1                 | 4                    | 3                             | 1.33|
| Dilleniaceae      | 1                 | 5                    | 4                             | 1.25|
| Dioscoreaceae     | 2                 | 4                    | 4                             | 1.00|
| Elaeocarpaceae    | 2                 | 3                    | 3                             | 1.00|
| Equisetaceae      | 2                 | 4                    | 2                             | 2.00|
| Eriaceae          | 1                 | 3                    | 1                             | 3.00|
| Euphorbiaceae     | 10                | 28                   | 8                             | 3.50|
| Fabaccae     | 13 | 23 | 10 | 2.30 |
|-------------|----|----|----|------|
| Fagaceae    | 1  | 1  | 1  | 1.00 |
| Hippocastanaceae | 1  | 2  | 1  | 2.00 |
| Hypericaceae | 1  | 2  | 1  | 2.00 |
| Hypoxidaceae | 1  | 1  | 1  | 1.00 |
| Lamiaceae   | 18 | 45 | 10 | 4.50 |
| Lauraceae   | 8  | 18 | 8  | 2.25 |
| Leguminosae | 1  | 2  | 2  | 1.00 |
| Liliaceae   | 6  | 21 | 9  | 2.33 |
| Lycopodiaceae | 1  | 1  | 1  | 1.00 |
| Lythraceae  | 1  | 3  | 2  | 1.50 |
| Magnoliaceae | 2  | 5  | 2  | 2.50 |
| Malvaceae   | 4  | 7  | 4  | 1.75 |
| Marattiaaceae | 1  | 4  | 3  | 1.33 |
| Mazaceae    | 1  | 1  | 1  | 1.00 |
| Melanthiaceae | 1  | 1  | 1  | 1.00 |
| Melastomaceae | 1  | 5  | 3  | 1.67 |
| Melliaceae  | 2  | 6  | 3  | 2.00 |
| Menispermacneae | 3  | 5  | 3  | 1.67 |
| Mimosaceae  | 2  | 2  | 1  | 2.00 |
| Molluginaceae | 2  | 2  | 2  | 1.00 |
| Moraceae    | 9  | 18 | 11 | 1.64 |
| Moringaceae | 1  | 1  | 1  | 1.00 |
| Musaceae    | 3  | 12 | 7  | 1.71 |
| Myrsinaceae | 2  | 4  | 3  | 1.33 |
| Myrtaceae   | 2  | 6  | 7  | 0.86 |
| Oxalidaceae | 4  | 15 | 6  | 2.50 |
| Papaveraceae | 2  | 2  | 2  | 1.00 |
| Pedaliaceae | 1  | 1  | 1  | 1.00 |
| Phyllanthaceae | 2  | 3  | 2  | 1.50 |
| Pinaceae    | 1  | 1  | 1  | 1.00 |
| Piperaceae  | 5  | 17 | 6  | 2.83 |
| Plantaginiaceae | 3  | 9  | 5  | 1.80 |
| Plumbaginaceae | 1  | 2  | 2  | 1.00 |
| Poaceae     | 9  | 18 | 9  | 2.00 |
| Polygonaceae | 5  | 7  | 3  | 2.33 |
| Ranunculaceae | 3  | 18 | 7  | 2.57 |
| Rosaceae    | 4  | 7  | 3  | 2.33 |
| Rubiaceae   | 9  | 25 | 12 | 2.08 |
| Rutaceae    | 11 | 29 | 14 | 2.07 |
| Saururaceae | 1  | 13 | 9  | 1.44 |
| Saxifragaceae | 1  | 2  | 1  | 2.00 |
| Schrophulariaeae | 7  | 16 | 5  | 3.20 |
| Solanaceae  | 18 | 48 | 14 | 3.43 |
| Stemonaceae | 1  | 1  | 1  | 1.00 |
| Sterculiaceae | 1  | 4  | 3  | 1.33 |
| Taccaceae   | 1  | 4  | 2  | 2.00 |
| Theaceae    | 2  | 3  | 2  | 1.50 |
| Thelyperidaceae | 3  | 5  | 3  | 1.67 |
| Tiliaceae   | 1  | 1  | 1  | 1.00 |
| Urticaceae  | 14 | 21 | 9  | 2.33 |
| Verbenaceae | 9  | 22 | 15 | 1.47 |
| Vitaceae    | 2  | 3  | 2  | 1.50 |
| Zingiberaceae | 10 | 36 | 13 | 2.77 |

Informant consensus factor ($F_C$)

Gastrointestinal disorders emerged as the most frequently treated ailments among the tribal communities with a total of 163 plant species, 277 use reports and $F_C$ 0.41 followed by General health (133 species, 194 use reports, and $F_C$ 0.32) and Dermatological disorders (117 species, 171 use reports and $F_C$ 0.32). The Odontological disorders with a higher number of use reports also recorded 0.32 $F_C$. The lowest $F_C$ was found in Gynaecological and Orthopaedic disorders with 0.06 each. The $F_C$ of Cardiovascular, Musculoskeletal, Respiratory, and Urological disorders ranged between 0.08 to 0.25 (Table 5).
Table 5. Informant consensus factor ($F_{IC}$) with number of species used and number of use reports of the ethnomedicinal plants reported against different ailment categories

| Category of ailments/disorders | Number of species | Number of use reports | $F_{IC}$ |
|-------------------------------|-------------------|-----------------------|---------|
| Category 1: Cardiovascular disorders | 38 | 50 | 0.25 |
| Category 2: Dermatological disorders | 117 | 171 | 0.32 |
| Category 3: Gastrointestinal disorders | 163 | 277 | 0.41 |
| Category 4: General health | 133 | 194 | 0.32 |
| Category 5: Gynaecological disorders | 18 | 19 | 0.06 |
| Category 6: Musculoskeletal disorders | 35 | 38 | 0.08 |
| Category 7: Odontological disorders | 29 | 42 | 0.32 |
| Category 8: Orthopedic disorders | 28 | 30 | 0.06 |
| Category 9: Respiratory disorders | 44 | 49 | 0.10 |
| Category 10: Urological disorders | 17 | 19 | 0.11 |

**Conclusion**

The present qualitative and quantitative review revealed 358 species of ethnomedicinal plants (100 families) widely used by the fourteen indigenous tribal communities of Arunachal Pradesh for treatment of 10 broad categories of ailments and 107 specific types of ailments. Some plant species reported have ethnobotanical novelties which are reported for the first time against treatment of various diseases. This indicates that the tribal communities of Arunachal Pradesh are still largely dependent on ethnomedicinal plants for their healthcare system. However, the ethnomedicinal practices are based on oral communications with no written convention. Hence, with the increasing influence of modernization and lack of interest among the younger generations, the ethnomedicinal practices are declining rapidly in the semi-urban areas. Therefore, sincere efforts to create public awareness on promotion of such important and rare traditional healing practices are need of the time. The highest number of species (163) and use report (277) were recorded under gastrointestinal disorders with $F_{IC}$ 0.41. The ethnomedicinal plants with higher Informant Consensus Factor ($F_{IC}$) would help in prioritization for a further study focusing on potent bioactive secondary metabolites as novel phytomedicines useful against the effective treatment of the target ailments.

**Declarations**

**List of abbreviations:**
- $F_{IC}$ – Informant consensus factor;
- UV – Family use value;
- WHO – World Health Organization

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**Literature cited**

Achuta NS, Sharad S, Rawat AKS. 2010. An ethnobotanical study of medicinal plants of Rewa district, Madhya Pradesh. Indian Journal of Traditional Knowledge 9(1):191-202.

Ali N, Ghosh B. 2006. Ethnomedicinal plants in Arunachal Pradesh: Some tacit prospects. ENVIS Bulletin Himalayan Ecology 14(2):1-6.
Anushri M, Yashoda R, Puranik MP. 2015. Herbs: A good alternatives to current treatments for oral health problems. International Journal of Advanced Health Sciences 1(12):26-32.

Anyinam C. 1995. Ecology and ethnomedicine: Exploring links between current environmental crisis and indigenous medical practices. Social Science & Medicine 40(3):321-329.

Arora D, Kumar M, Dubey SD. 2002. *Centella asiatica* - A review of its medicinal uses and pharmacological effects. Journal of Natural Medicines 2(2):143-149.

Ayam VS. 2017. Ethnomedicines of wild plants of Ziro, Arunachal Pradesh. International Journal of Research Studies in Biosciences 5(7):1-12.

Ayyanan M, Ignacimuthu S. 2005. Traditional knowledge of Kani tribals in Kouthalai of Tirunelveli hills, Tamil Nadu, India. Journal of Ethnopharmacology 102:245-255.

Balachumbhan R, Rajamani K, Kumaknan K. 2010. *Acorus calamus*: An overview. Journal of Medicinal Plants Research 4(25):2740-2745.

Bharali P, Binary S, Chaman LS. 2016. Ethnomedicinal knowledge of Galo tribe from Arunachal Pradesh, India. International Journal of Current Research in Biosciences and Plant Biology 3(6):139-148.

Bhasin V. 2007. Medical anthropology: A review. Studies on Ethno-Medicine 1(1):1-20.

Bhasin V. 2008. Gaddi's folk medicine: A source of healing. Studies on Ethno-Medicine 2(1):1-27.

Bhattarai S, Chaudhary RP, Cassandra LQ, Robin SLT. 2010. Traditional knowledge of medicinal plants in the trans-himalayan arid zone of Mustang district, Nepal. Journal of Ethnobiology & Ethnomedicine 6:14.

Biswas AK, Hartley K. 2016. Foul odour of failure: Why some Asian countries manage air pollution very well while others fall crippling short. https://timesofindia.indiatimes.com/blogs/toi-edit-page/foul-odour-of-failure-why-some-asian-countries-manage-air-pollution-very-well-while-others-fall-crippingly-short. (Accessed 26/06/2021).

Burkill IH. 1966. A dictionary of economic products of Malay Peninsula. Ministry of Agriculture and Cooperatives, Kuala Lumpur, Malaysia.

D’Amato G, Cecchi L, D’Amato M, Annesi Maesano I. 2014. Climate change and respiratory diseases. European Respiratory Review 23(132):161-169.

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

Das S, Dash SK, Padhy SN. 2003. Ethno-medicinal informations from Orissa state, India, a review. Journal of Human Ecology 14:165-227.

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 Plants Research 8(24):857-863.

Foster GM, Anderson BG. 1978. Medical anthropology. John Wiley & Sons, Inc., New York, U.S.A.

Giday M, Teklehaimanot T, Animut A, Mekonnen Y. 2007. Medicinal plants of the Shinasha, Agew-Awi and Amhara peoples in northwest Ethiopia. Journal of Ethnopharmacology 110:516-525.

Goswami P, Soki D, Jaishi A, Das M, Sarma HN. 2009. Traditional healthcare practices among the Tagin tribe of Arunachal Pradesh. Indian Journal of Traditional Knowledge 8(1):127-130.

Haridasan K, Anupam S, Bhuyan LR, Bisht NS. 2003. Medicinal plants sector in Arunachal Pradesh: An overview. Indian Forester 129:37-47.

Hasanudin K, Hashim P, Mustafa S. 2012. Corn silk (*Stigma maydis*) in healthcare: A phytochemical and pharmacological review. Molecules 17(8):9697-9715.

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.

Heinrich M, Gibbons S. 2001. Ethnopharmacology in drug discovery: An analysis of its role and potential contribution. Journal of Pharmacy and Pharmacology 53(4):425-432.
Hignett S, Fray M. 2010. Manual handling in healthcare. Proceedings of the 1st Conference of the Federation of the European Ergonomics Societies (FEES), 10-12th October, 2010, Bruges, Belgium.

Imam H, Riaz Z, Azhar M, Sofi G, Hussain A. 2013. Sweet flag (*Acorus calamus* Linn.): An incredible medicinal herb. International Journal of Green Pharmacy 7:288-96.

Jaiswal BS. 2012. *Solanum torvum*. A review of its traditional uses, phytochemistry and pharmacology. International Journal of Pharma and Bio Sciences 3(4):104-111.

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.

Jyothilakshmi M, Jyothis M, Latha MS. 2015. Antidermatophytic activity of *Mikania micrantha* Kunth: An invasive weed. Pharmacognosy Research 7(Suppl 1):S20-S25.

Kagyung R, Gajurel PR, Rethy P, Singh B. 2010. Ethnomedicinal plants used for gastrointestinal diseases by Adi tribes of Dehang-Debang Biosphere Reserve of 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. https://doi.org/10.1186/1746-4269-1-1

Kala CP. 2020. Medicinal plants used for the treatment of respiratory diseases in Uttarakhand state of India. Studies on Ethno-Medicine 14(1-2):1-8.

Kalita V, Pegu P, Chetia P. 2019. Phytochemical screening and evaluation of antioxidant, anti-microbial and anti-inflammatory activity of *Curcuma caesia*. International Journal of Pharmaceutical Science and Research 10(2):846-855.

Kayani S, Ahmad M, Zafar M, Sultana S, Khan MPZ, Ashraf MA, Hussain J, Yaseen G. 2014. Ethnobotanical uses of medicinal plants for respiratory disorders among the inhabitants of Gallies – Abbottabad, Northern Pakistan. Journal of Ethnopharmacology 156:47-60.

Kleinman A. 1980. Patients and healers in the context of culture: An exploration of the borderland between anthropology, medicine and psychiatry. University of California Press, Berkeley, U.S.A.

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

Loi F, Córdova LA, Pajarinen J, Lin TH, Yao Z, Goodman SB. 2016. Inflammation, fracture and bone repair. Bone 86:119-130.

Manna SS, Mishra SP. 2018. Ethnomedicinal survey of plants used by tribal in Lalgarh forest range, W.B., India. The Journal of Phytopharmacology 7(2):199-202.

Maruthupandian A, Mohan VR, Kottamimuthu R. 2011. Ethnomedicinal plants used for the treatment of diabetes and jaundice by Palliyar tribals in Sirumalai hills, Western Ghats, Tamil Nadu, India. Indian Journal of Natural Products and Resources 2(4):493-497.

Menetrier JV, Bonkoski VR, Medeiros KA, Estevan DA, Palozzi RAC, dos Reis Livero FA, Velasquez LG, Lourenço ELB, Gasparotto AJ. 2020. Ethnomedicinal plants used for the treatment of cardiovascular diseases by healers in the southwestern state of Paraná, Brazil, and their validation based on scientific pharmacological data. Journal of Religion and Health 59:3004-3036.

Mishra D, Singh RK, Srivastava RK, Dubey SR. 2013. Ethnomedicinal plants used to cure the gynaecological disorders by ethnic populace of Sitapur district, Uttar Pradesh, India. Medicinal Plants - International Journal of Phytomedicines and Related Industries 5(4):238-2245.

Mukherjee D, Chakraborty S. 2019. *Coptis teeta*: conservation and cultivation practice - A rare medicinal plant on earth. Current Investigations in Agriculture and Current Research 6(4):845-851.
Murtem G, Pradeep C. 2016. An ethnobotanical note on wild edible plants of Upper Eastern Himalaya, India. Brazilian Journal of Biological Sciences 3(5):63-81.

Namsa DN, Manadendra M, Tangjiang S, Mandal SC. 2011. Ethnobotany of the Monpa ethnic group at Arunachal Pradesh, India. Journal of Ethnobiology and Ethnomedicine 7:31. http://www.ethnobiomed.com/content/7/1/31

Namsa DN, 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. https://doi.org/10.1016/j.jep.2009.07.004

Neumann AK, Lauro P. 1982. Ethnomedicine and biomedicine linking. Social Science & Medicine 16(21):1817-1824.

Nichter M. 1991. Ethnomedicine: diverse trends, common linkages. Medical Anthropology 13(1-2):137-171.

Nimasow G, Ringu N, Nimasow OD. 2012. Ethnomedicinal knowledge among the Adi tribes of Lower Dibang Valley district of Arunachal Pradesh, India. International Research Journal of Pharmacy 3(6):223-229.

Nimo NR, Nzowa KL, Barboni L, Tapondjou AL. 2014. Drymaria cordata (Linn.) Willd (Caryophyllaceae): Ethnobotany, Pharmacology and Phytochemistry. Advances in Biological Chemistry 4:160-167.

Olorunnisola OS, Bradley G, Afolayan AJ. 2011. Ethnobotanical information on plants used for the management of cardiovascular diseases in Nkonkobe Municipality, South Africa. Journal of Medicinal Plants Research 5(17):4256-4260.

Pandey AK, Tripathi YC. 2017. Ethnobotany and its relevance in contemporary research. Journal of Medicinal Plants Studies 5(3):123-129.

Patel C, Ayaz RM, Parikh P. 2015. Studies on the osteoprotective and antidiabetic activities of Moringa oleifera plant extract. IOSR Journal of Pharmacy and Biological Sciences 5:19-22.

Paul A, Khan ML, Arunachalam A, Arunachalam K. 2005. Biodiversity and conservation of Rhododendrons in Arunachal Pradesh in the Indo-Burma biodiversity hotspot. Current Science 89(4):623-634.

Phillips O, Gentry A. 1993. The useful plants of Tambopata, Peru: I. Statistical hypotheses tests with a new quantitative technique. Economic Botany 47(1):15-32.

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.

Pieroni A, Price LL, Vandeboek I. 2005. Welcome to Journal of Ethnobiology and Ethnomedicine. Journal of Ethnobiology and Ethnomedicine 1:1. https://doi.org/10.1186/1746-4269-1-1

Policepatel SS, Manikrao VG. 2013. Ethnomedicinal plants used in the treatment of skin diseases in Hyderabad Karnataka region, Karnataka, India. Asian Pacific Journal of Tropical Biomedicine 3(11):882-886.

POWO (Plants of the World Online). Hosted by Royal Botanic Garden, Kew, U.K. http://www.plantsoftheworldonline.org (Accessed 20/06/2021).

Prusti AB, Behera KK. 2007. Ethnobotanical exploration of Malkangiri district of Orissa, India. Ethnobotanical Leaflets 11:122-140.

Pushpangadan P, George V. 2010. Ethnomedical practices of rural and tribal populations of India with special reference to the mother and childcare. Indian Journal of Traditional Knowledge 9(1):9-17.

Raghuvanshi D, Dhalaria R, Sharma A, Kumar D, Kumar H, Valis M, Kuča K, Verma R, Puri S. 2021. Ethnomedicinal plants traditionally used for the treatment of Jaundice (Icterus) in Himachal Pradesh in Western Himalaya-A Review. Plants 10(2):232. https://doi.org/10.3390/plants10020232

Ragupathy S, Newmaster GS, Murugesan M, Balasubramaniam V, Muneer MU. 2008. Consensus of the ‘Malasars’ traditional aboriginal knowledge of medicinal plants in the Velliangiri holy hills, India. Journal of Ethnobiology & Ethnomedicine 4:8.
Rathinamoorthy R, Thilagavathi G. 2014. *Terminalia chebula* - Review on pharmacological and biochemical studies. International Journal of PharmTech Research 6(1):97-116.

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

Rosberg HE, Dahlin LB. 2018. An increasing number of hand injuries in an elderly population - A retrospective study over a 30-year period. BMC Geriatrics 18(1):68. https://doi.org/10.1186/s12877-018-0758-7

Sajem AL, Gosai K. 2006. Traditional use of medicinal plants by the Jaintia tribes in North Cachar Hills district of Assam, Northeast India. Journal of Ethnobotany and Ethnomedicine 2:33. https://doi.org/10.1186/1746-4269-2-33

Scarpa A, Guerci A. 1982. Various uses of the castor oil plant (*Ricinus communis* L.) a review. Journal of Ethnopharmacology 5(2):117-137.

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

Sharma H, Kumar A. 2011. Ethnobotanical studies on medicinal plants of Rajasthan (India): A review. Journal of Medicinal Plants Research 5(7):1107-1112.

Sharma HK, Chhangte L, Dolui AK. 2001. Traditional medicinal plants in Mizoram, India. Fitoterapia 72(2):146-161.

Srivastava S, Singh P, Mishra G, Jha KK, Khosa RL. 2011. *Costus speciosus* (Keukand): A review. Der Pharmacia Sinica 2:118-128.

Suresh J, Mahesh NM, Ahuja J, Santilna KS. 2011. Review on *Artemisia nilagirica* (Clarke) Pamp. Journal of Biologically Active Products from Nature 1(2):97-104.

Tag H. 2007. *A systematic study of plants of ethnomedicinal importance used by the Kampti tribe of Arunachal Pradesh*. PhD thesis submitted to Department of Botany, Rajiv Gandhi University, Rono Hills, Doimukh (unpublished).

Tangjang S, Namsa DN, Chocha A, Anggu L. 2011. An ethnobotanical survey of medicinal plants in the Eastern Himalayan zone of Arunachal Pradesh, India. Journal of Ethnopharmacology 134(1):18-25.

Tardio 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.

The Plants List, Version 1.1. Working list of all plant species. Created and hosted by Royal Botanic Gardens, Kew, U.K. and Missouri Botanical Garden, U.S.A. http://www.thepantlist.org (Accessed 20/06/2021).

Tiwari A, Soni V, Londhe V, Bandarkar A, Bandawane D, Nipate S. 2012. An overview on potent indigenous herbs for urinary tract infirmity: Urolithiasis. Asian Journal of Pharmaceutical and Clinical Research 5(1):7-12.

Tripathi AK, Limasenla, Rama S. 2017. Ethno-Medicinal plants used by *Nyishi* tribe of Arunachal Pradesh, India. World Journal of Pharmacy and Pharmaceutical Sciences 6(5):246-1253.

Tripathi R, Mishra, RP, Singh AR, Dwivedi SN. 2011. Folklore use of some medicinal plants in the treatment of UTI infections. International Journal of Drug Discovery & Herbal Research 1:58-60.

Uddin MZ, Rifat AB, Mitu FY, Haque T. 2019. Ethnomedicinal plants for prevention of cardiovascular diseases in Bangladesh. Bangladesh Journal of Plant Taxonomy 26(1):83-95.

Wangjen K, Shivaji C, Satish CA, Samal PK. 2011. A preliminary investigation on ethnomedicinal plants used by Wancho tribes of Arunachal Pradesh, India. Journal of Non-Timber Forest Products 18(2):129-132.

Wangpan T, Jumpee T, Tapi T, Gentu G, Pongam T, Tangjang S. 2019a. Traditional use of plants as medicine and poison by Tagin and Galo Tribe of Arunachal Pradesh. Journal of Applied Pharmaceutical Science 9(9):98-104.

Wangpan T, Nonya C, Chatam L, Tapi T, Jentu G, Phongam T, Tangjang S. 2019b. Ethnobotanically important plants used by the Nocte tribe of Eastern Himalaya. Journal of Bioresources 6(1):36-45.

WFO (World Flora Online). Published on internet. http://www.worldfloraonline.org (Accessed 20/06/2021).
WHO, 2002. Traditional medicine strategy 2002-2005. World Health Organization, Geneva, Switzerland. (document reference WHO/EDM/TRM/2002.1). http://apps.who.int/iris/bitstream/handle/10665/67163/WHO_EDM_TRM_2002.1.pdf?sequence=1 (Accessed 22/07/2021).

WHO, 2008. Global alliance against chronic respiratory diseases. Action Plan 2008-2013. World Health Organization, Geneva, Switzerland. https://www.who.int/gard/publications/GARD_actionplan_FINAL.pdf?ua=1 (Accessed 25/06/2021).

Ziemba JB, Matlaga BR. 2017. Epidemiology and economics of nephrolithiasis. Investigative and Clinical Urology 58(5):299-306.