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Ethno-medicinal anti-diabetics plants of Northeast India: A review

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Abstract
With its large population, lifestyle and socio-economic transition due to urbanization, India is becoming the epicentre for diabetes. Diabetes is one of the leading reasons for world economic loss. Abnormal production of lipids and proteins and oxidative stress in the body are the primary etiology of diabetes. With the high cost of treatments and relatively large side effects, many patients are suffering. Utilizing and properly addressing herbal medicinal plants have thus become the need of the hour. Plants contain various compounds which are effective in increasing the performance of insulin secretion as well as reducing glucose levels in the human body. People of the northeast have been depending on herbal treatment for various diseases since time immemorial. Documenting and studying of ethnic expertise of medicinal plants of northeast India will be a new dimension in managing diabetes. This review aims to compile all published works from North East India on using various ethnomedicinal plants as anti-diabetes.

Keywords: Anti-diabetic plants, diabetes, ethnomedicinal plants, tribes, Nagaland, North East India

1. Introduction
Diabetes is a disorder with various metabolic impairments known to humankind for ages. However, still, it is one of the most challenging medical conditions which need to be adequately addressed medically for better treatment of patients with diabetes. Around 62 million people have been affected by diabetes in India only [1]. As per WHO 2014 report, about 422 million people globally are affected by diabetes [2]. Diabetes is described as the state of disequilibrium of glucose in body metabolism due to defects in insulin secretion or glucose metabolism.

1.1 Types of Diabetes
Insulin-dependent diabetes mellitus, also known as Type 1, is characterized by the absolute deficiency of insulin [3]. The blood has an unusually high sugar level due to the loss of pancreatic β-cell. The T-cell of the body destructs the β-cell, leading to the loss of insulin. Islets targeting autoantibodies, 65kDa glutamic acid decarboxylase, zinc transporter 8, insulinoma associated protein 2 are biomarkers associated with Type1diabetes, and it is known to be found in the body system even before the body shows symptoms like polyuria and thirst [4]. Other than genetic roles in the etiology of Type 1 diabetes, environmental factors also contribute to its development. Exposure to a group of viruses called Enterovirus induces the destruction of β-cell, and early exposure to dietary cow's milk protein contributes to the development of Type 1 diabetes [5]. It is more common in children than in adults. The patient needs lifelong insulin administration [6]. There is no cure for Type1 diabetes, but targeting T-cells, inducing β-cell tolerance, and β-cell replacement are some strategies for controlling and preventing Type1 diabetes [7].
While noninsulin diabetes mellitus, also known as Type 2, is characterisedbyimpaired insulin secretionorresistance to insulin or both [8]. Environmental factors such as lack of physical exercise, irregular diet, obesity, and genetic factors are the leading cause of Type 2 diabetes [9]. The pancreas's β-cell is impaired with insulin production. The patient is first affected by prediabetes characterized by impaired fasting glucose levels, glucose tolerance, or increased haemoglobin HbA1c levels [8]. Type 2 diabetes increases the chance of microvascular complications like neuropathy and retinopathy and macrovascular complications such as heart attack, blindness, amputations, renal failure etc. It can develop other deadly conditions, chronic liver disease, cancer, accelerated arthritis etc [10]. Lifestyle interventions to decrease weight, increasing physical activities, proper diet care, and a definitive study of molecular etiology are practical tools in fighting Type2 diabetes [11].

The effect on the functioning of different organs relating to Type 2 diabetes is associated with an elevated level of blood concentration of C-reactive protein, interleukin-6 (IL-6) and tumour necrosis factor (TNF) [12]. Available treatment for Type 2 diabetes includes the use of metformin drug, thiazolidinediones, insulin, alpha-glucosidase inhibitors, dipeptidyl peptidase-IV inhibitors, insulin-releasing glucokinase activators [13].

Other than these two types of diabetes, abnormal glucose tolerance is also found in pregnant women, known as gestational diabetes (GD).Women with GD areata higher risk of developing diabetes when they are not pregnant [14]. It is usually asymptomatic and resolves after the pregnancy. Birth canal lacerations, fetal overgrowth, jaundice, perinatal mortality, delivery through operation, and shoulder dystocia are the complications caused by gestational diabetes [15]. Women withahistory of GD are at high risk of kidney, liver, cardiovascular and retinal disease and type 2 diabetes [16]. To reduce its risk, maintaining a proper diet and physical activity before the fifteenth gestational week proveseffective [17]. Treatment with insulin and metformin drugs is the primary remedy for managing GD. Regular screening for diabetes, encouraging breastfeeding, and lifestyle intervention are the regime that should be continued after the delivery [14].

1.2 Treatment/Management of Diabetes

For glycemic control, anti-diabetic drugs are obligatory, but they increase the risk of bone fracture in exposed patients; Osteoclastogenesis is the negative effect of thiazolidinediones [18]. Even with the advancement in the treatment of diabetes, the drugs are still fragile in holding their accountant and are inconsistent [19]. Treatment cost, frequency of medicine, gastrointestinal effect, weight gain, injection site reactions, hypoglycemia, water retention, increased risk of heart attack etc. are the main burdens associated with diabetes treatment [20].

2. Phytomedicines and Diabetes

2.1 In the Treatment of Diabetes in India

In developing countries like India, diabetes patients are suffering from the burden of the cost of treatment. There is increasing sugar consumption in India, traditionally and culturally, and the use of sugar-sweetened beverages [21]. With urbanization, transition in socio-economic conditions, and lifestyle disorders, India is becoming the epicenter for diabetes, with 73 million diabetes patients by 2014 and estimated to reach 134 million by 2045 [22]. Along with modern medicines available, using medicinal plants to treat diabetes is also a years-old practice in India. But all medicinal plants used as anti-diabetes are not adequately evaluated as per modern therapeutic systems [23]. Indian Ayurveda medicines use different herbal medicinal plants as they are readily available, cheap, and have fewer side effects. Many of these plants have been in the diet of Indians [24]. Since the 6th Century BC, indigenous plants have been used to treat diabetes in India [25]. Plants that contain carotenoids, terpenoids, flavonoids, alkaloids, tannins, and phenolics are effective as anti-diabetic because they can increase the performance of pancreatic tissue by increasing insulin secretion. These compounds in plants reduce the glucose level and are anti-hyperglycemic [26]. Thus, the plant kingdom is the powerhouse of active compounds valuable for synthesizing medicinal drugs. Quinine, metformin, and opium alkaloids are all derived from plants, and herbal medicines can slow down diabetic complications and reform body metabolism [27]. Out of 36 biodiversity hotspots in the world, India is the home of 4 biodiversity hotspots: the Himalayas, Western Ghats, Indo-Myanmar region and Sunderland. Enjoying the varied climate, these hotspots in India support many herbal medicines. Out of the four hotspots, the Himalayan areas are extended in the northeast region of India. With its lower population density than other parts of the country, flora and fauna are less disturbed, and the area is enriched with medicinal plants [28].

2.2 Phytomedicines in the Treatment of Diabetes in North East India

North East India covers Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim. Northeast India is hilly, primarily mountainous, with aplain area surrounding less than 35% of the total geographical location. The region has a predominantly humid climate with severe monsoons and mild winters supporting diverse flora and fauna. Northeast India is a part of the Indo-Burma hotspot, the second largest hotspot in the world and home to the country's most endangered floral species. It has around 22 national parks and wildlife sanctuaries and is blessed with exotic flora and fauna. The diverse flora and fauna are managed and conserved by ethnic communities with various religious practices. Agriculture is the primary source of the economy, and different indigenous people still practice Jhum cultivation, terrace farming etc. The population distribution throughout the region is irregular, with 397 persons per km square in Assam to 17 persons per km square in Arunachal Pradesh. The area is endowed with 209 tribes, 192 languages, and diverse races and cultures fuse into a composite culture that enriches northeast India. The different tribes of the region have the specific knowledge of utilising biodiversity for their healthcare, food, shelter etc. Several sacred grooves are maintained concerning cultural practices, and cutting trees is not allowed in such areas. Most cuisines and delicacies are all-natural ingredients and herbs found in the area. All these practices help in conserving biodiversity as well as a healthy lifestyle. Local healers have been practising and using various plants to treat various ailments. This knowledge is passed on from generation to generation. Thus extensive exploration of medicinal plants used by the local healers by the indigenous people of NE India is always an aspect for Scientists to develop drugs and conserve their medicinal values [28]. The various ethnic tribes of NE India have a vast knowledge of identification and traditional ways of using herbal medicinal plants. For adding a new dimension to the management of the disease with phytomedicines, documentation and study of ethnic expertise arecritical [29].

Many research papers have been published on the use of ethnomedicinal plants in treating different types of diabetes in states of the North Eastern region of India. To document the ethnic knowledge about the uses of plants for treating diabetes, thorough research studies were done. Here we present the compilation of all published research findings on using plant/ plant products to treat diabetes. This review brings a new emphasis on aggregating available indigenous literature, studying ethnic knowledge and conserving them for further scientific validation.

3. Materials and Methods

The primary methodology used was studying electronic databases to screen related articles and apply associated reports. This review is carried out with extensive searching of different research articles from different journals from Google

Scholar, NCBI/ Pubmed, Science Direct etc., research articles of scientifically validated plants which are having antidiabetic property are also collected. The details of the plants, family, local name, plant part used and mode of use in different states of the region are given in table 1. To avoid repetition of plants name, only the accepted names of plant species are used.

Table 1: Details of ethnomedicinal plants used for the treatment and management of diabetes in North East India

Sl. No.	*Scientific Name*	Family	Local Name	Part Used for Anti-diabetic	Method of use	Reference (s)
			Arunachal Pradesh			
1	*Aconitum ferox* Wall. Ex Ser	Ranunculaceae	Bikhumma	Rhizome	Decoction	[31]
2	*Allium cepa* L.	Amaryllidaceae	Piyaz	Rhizome	Rhizome paste taken with honey	[32]
3	*Allium sativum* L.	Amaryllidaceae	Losun	Bulb	Fresh juice of bulb	[32]
4	*Aloe vera* (L.) Burm.f.	Xanthorrhoeaceae	Aloe vera	Leaf pulp	Leaf juice	[32]
5	*Azadirachta indica* A. Juss	Meliaceae	Neem	Leaves, seeds	Leaf decoction, seed powder	[32]
6	*Begonia roxburghii* A.DC.	Begoniaceae	Bekhoo, Lukhu	Leaves	Decoction	[32]
7	*Beta vulgaris* L.	Chenopodiaceae	Beet	Root	Root juice taken orally	[32]
8	*Brassica juncea* (L.) Czern.	Brassicaceae	Giiyan	Leaves, seeds	Decoction and powder	[32]
9	*Biophytum sensativum* (L.) DC.	Oxalidaceae	Lajalu	Leaves	Decoction of leaves	[30]
10	*Calamus tenuis* Roxb.	Arecaceae	Ojo tar	Leaves	Extract of leaves	[37]
11	*Callicarpa arborea* Roxb.	Lamiaceae	Tato	Bark and stem	Infusion of grinded stem and bark	[37]
12	*Callicarpa tomentosa* (L.) L.	Lamiaceae	Tato, yalu, Yahorin	Bark	Decoction of dried powder of bark	[32]
13	*Cannabis sativa* Linn.	Cannabinaceae	Ganja	Leaves, flower, resin	Smoked seed powder, Powder of parts are also taken with milk	[32]
14	*Cassia alata* L.	Caesalpiniaceae	Khatri pan	Leaves	Decoction of leaves taken orally twice for 6-8 weeks.	[30]
15	*Cassia occidentalis* L.	Caesalpiniaceae	-	Bark	50 g bark is used to make infusion and is given orally daily, for 8-10 weeks.	[30]
16	*Catharanthus roseus* (L.) G. Don	Apocynaceae	Donyiphu	Leaves	Two to four leaves chewed every early morning in empty stomach	[35]
17	*Centella asiatica* (Linn.)	Apiaceae	Ngiilyangakhohamang	Whole plant	Whole plant parts crushed and decoction	[32]
18	*Chrysanthemum indicum* L.	Compositae	Halakalran gkak	Whole plant	Decoction	[33]
19	*Cinnamomum tamala* T. Nees & Eberm.	Lauraceae	Tej pat	Leaves	The powder is made from dried leaves and 5 g per day is taken orally for 5-6 weeks	[30]
20	*Clerodendrum serratum*	Lamiaceae	Bortapipik	Whole plants	Boil leaves	[33]
21	*Coccinia grandis* (L.) Voigt	Cucurbitaceae	Jojuru	Fruits and root	Decoction	[32]
22	*Coptis teeta* Wall	Ranunculaceae	-	Rhizome	Decoction	[39]
23	*Crassocephalum crepidioides* (Benth.) S. Moore	Asteraceae	Gendahamang	Leaves	Boiled leaf	[32]
24	*Cucumis melo* L.	Cucurbitaceae	Tape	Seeds	Seed powder is used	[32]
25	*Cuscuta reflexa* Roxb.	Convolvulaceae	-	Whole plant part	Decoction of the plant along with coconut water	[37]
26	*Dillenia indica* L.	Dilleniaceae	Embuk	Flower	Flower extract	[37]
27	*Diplazium esculentum* (Retz.) Sw.	Athyraceae	Hiikahamang	Young fruit	Extract	[32]
28	*Emblica officinalis* Gaertn.	Euphorbiaceae	Amloki	Fruits, seed	Juice	[33]
29	*Eryngium foetidum* L.	Apiaceae	Hariyo	Leaves, seed	Decoction	[33]
30	*Fagopyrum esculantum* Moench	Polygonaceae	Amintatek	Whole plant	Cooked, tender leaves used as vegetable	[33]
31	*Ficus glomerata* Roxb.	Moraceae	Takuk kukcho	Seeds and fruits	Boiled extract of fruit along with *Centella asiatica* and *Parkia roxburghii* bark	[36]
32	*Glycine max* (L.) Merr.	Fabaceae	Ammiiperung	Seeds	Decoction	[32]
33	*Homalomena aromitica* Linn.	Araceae	Eng Namnen	Rhizome	Decoction	[34]
34	*Ichnocarpus frutescens* (L.) R. Br.	Apocynaceae	-	Roots	The root powder 1 or 2 gm is administered along with milk and also; root decoction .is taken orally, daily once, for 4-6 weeks	[30]
35	*Ipomoea batatas* (L.) Lam.	Convolvulaceae	MithaAloo	Aerial part	The juice of the aerial part of the plant (25–30 ml) taken two times daily for 3–4 weeks	[32]
36	*Lactuca gracilis* Wall.	Compositae	-	Leaves	Decoction	[37]
37	*Millingtonia hortensis* L. fil.	Bigoniaceae	-	Leaves	Decoction	[37]
38	*Mangiferaindica* Linn.	Anacardiaceae	Aam ahi	Tender leaves	Dry kernel powder is taken with milk	[32]
39	*Melothria heterophylla* Cogn.	Cucurbitaceae	Kabomako	Roots	The decoction is prepared from roots and consumed orally once daily, for 6-8 weeks	[30]
40	*Mimosa pudica* L.	Leguminosae	Haniang	Whole plant	Extract of whole plant	[32]

41	*Momordica charantia* L.	Cucurbitaceae	Karela/kairu	Fruits	2-3 fruits are cooked and consumed, and also raw fruit juice of 50 ml is taken orally once a day for 5-6 weeks	[30]
42	*Momordica dioica* Roxb. ex Willd.	Cucurbitaceae	Bhat kerala	Fruits	Fruits is taken as vegetables1	[32]
43	*Musa sapientum* Linn.	Musaceae	Nyoro- kopa	Fruits and leaves	Boiled unripe fruits	[33]
44	*Mussaenda roxburghii* Hook.f.	Rubiaceae	Taksap	Shoots	As food	[38]
45	*Ocimum tenuiflorum* L.	Lamiaceae	Tulsi/Eulochi	Leaves	Leaf decoction	[32]
46	*Oxalis griffithii* Edgew. & Hook.f.	Oxalidaceae	Amrul	Leaves	Decoction	[37]
47	*Panax pseudoginseng* Wall.	Araliaceae	-	Roots and berry	Dried rhizome powder (0.5–1 g) taken one time daily with warm milk	[32]
48	*Phrynium capitatum* Willd.	Marantaceae	Ekkam	Leaves	Decoction	[33]
49	*Phyllanthus emblica* L.	Euphorbiaceae	Amloki	Tender leaves	Juice	[32]
50	*Plantago major* L.	Plantaginaceae	Mepihamang	Root, leaves stem	Juice of parts	[32]
51	*Psidium guajava* L.	Myrtaceae	Muduri	Leaves	Extract of leaf,, fruit eaten raw	[32]
52	*Saccharum spontaneum* L.	Poaceae	Tapi	Young shoots	Decoction	[32]
53	*Scoparia dulcis* L.	Plantaginaceae	Mithipatti	Roots, leaves, all parts	Decoction	[33]
54	*Solanum viarum* Dunal	Solanaceae	Bengela tang	Fruits	Juice	[32]
55	*Syzgium cumini* (L.) Skeels.	Myrtaceae	Jamun	Fruit and bark	Bark juice is consumed every early morning in empty stomach for its better result	[35]
56	*Tinospora cordifolia* (Willd.) Hook.f. & Thomson	Menispermaceae	Golancha	Stem	Aqueous and alcoholic extract of dry stem is orally taken and also decoction of stem is taken orally once a day for 45-50 days	[30]
57	*Trichosanthes dioica* Roxb.	Cucurbitaceae	Potol	Fruits and roots	Decoction	[32]
58	*Zanthoxylum alatum* Roxb	Rutaceae	Yorkhung	Fruit / leaves	Crushed decoction of root, leaves, it is also chewed freshly	[32]
			Assam			
1	*Aechmea fasciata* (Lindl.) Baker	Bromeliaceae	Aechmea	Whole plant	Decoction	[57]
2	*Aegle marmelos* (L.) Corr Roxb	Rutaceae	Bael	Leaves, fruits	Leaf powder is taken with cow's milk daily	[42, 43, 45, 48, 49, 50, 51, 52, 55, 57]
3	*Acacia arabica* L.	Fabaceae	Taruwakadam	Bark	Bark powder is used	[55]
4	*Adhatoda vasica* Ness.	Acantheceae	Vasak Pata	Root, leaves, flowers	Extract of fresh leaf, root and flower	[40, 45, 47, 48, 50, 51, 55, 57]
5	*Abelmoschus esculentus* (L.) Moench	Malvaceae	Bhendi	Vegetable	Vegetable is taken raw and cooked.	[43, 46]
6	*Albizia procera* (Roxb)	Mimosaceae	Koroi	Leaf, Flower, Bark	Leave is diluted with water	[42, 46, 51, 57]
7	*Allium cepa* L.	Liliaceae	Piyaz	Rhizome	Rhizome paste taken with honey	[42, 45, 48, 51]
8	*Allium sativam* L.	Liliaceae	Nohuru	Bulb	Fresh juice of bulb	[48, 51]
9	*Aloe barbadensis* Miller	Xanthorrhoeaceae	Chal-kunwari	Leaves	Leaves paste is used	[55]
10	*Aloe veratournex* Linn	Liliaceae	Ghrita kumari	Leaves	Leaf juice	[44, 57]
11	*Alocasia indica* (Roxb)	Aracaceae	Mankachu	Rhizome	Juice of shade dried rhizome	[40, 51, 50]
12	*Alpinia galanga* (L.) Willd	Zingiberaceae	Bogi-tora	Tuber, rhizome	Taken raw	[51]
13	*Alstonia scholaris* (Linn)	Apocyanaceae	Chattim	Whole plant	Paste of leave, extract of bark	[40, 42, 45]
14	*Amomum linguiforme* Benth.	Zingiberacea	Karpur	Rhizome, herb	Boiled rhizome	[51]
15	*Ananas comosus* (L.) Merr.	Bromeliaceae	Ananash	Whole plant	Decoction of parts of plants	[40, 51, 57]
16	*Andrographis paniculata* Brum.f. Nees	Acanthaceae	Kalmegh	Leaves, stem	Hot water extract of dried leaves and stem	[40, 45, 48, 51, 55, 59]
17	*Angiopteris evecta* (Forst.) Hoffm.	Angioteridaceae	Tree fern	Petiole	Decoction	[40]
18	*Annona reticulata* L.	Annonaceae	Atlosh, Atephal	Leaves	Young Leaf juice	[42, 45, 55]
19	*Annona squamosa* Linn	Annonaceae	Seethaphal	Leaves	Hot water extract of dried leaves powder	[40, 43, 48, 51, 59]
20	*Areca catechu* Linn	Arecaceae	Supari	Nuts	Powdered of dried nuts	[40, 43, 45, 57]
21	*Argyreia speciosa* Linn. F.	Convulaceae	Takoria alu	Stem, leaves	Stem, Leaf paste is used	[42, 45]
22	*Antides maacidum* Retz	Euphorbiaceae	Nikhutenga	Leaves	Decoction of leaves	[52, 57]
23	*Artocarpus heterophyllus* Lamk	Moraceae	Kothal	Leaves	Decoction of leaves	[40, 43, 51]
24	*Artocarpus lokoocha* Roxb.	Moraceae	Diwatenga	Bark	Extract of powder bark	[46, 58]
25	*Averrhoa carambola* Linn	Oxalidaceae	Kardoi	Fruits	The fruit is taken raw as well as after cooking	[44, 57]
26	*Azadirachta indica* Juss	Meliaceae	Neem	Leaves, seeds	Extract of leaf and powdered seed	[40, 42, 43, 45,

						48, 59]
27	*Bacopa monnieri* L.	Scrophulariaceae	Brahmi	Whole plant	Extract of whole plant	[45, 47, 48]
28	*Beta vulgaris* L.	Chenopodiaceae	Beet	Root	Root juice taken orally	[42, 45, 51]
29	*Bombax ceiba*.L.	Bombaceae	Shimul	Flowers and bark	Decoction	[40, 50, 51]
30	*Bonnaya reptans* (Roxb.) Spreng	Linderniaceae	Kausidarya	Leaves	Roasted leaves powder	[51]
31	*Bouganvillea spectabilis* Willd.	Nyctaginaceae	Kagaz phul	Leaves	Leaf paste is antidiabetic but not used by human	[42, 57]
32	*Brassica juncea* (L) Czern.	Brassicaceae	Sorioh	Leaves, seed	Seed powder with milk taken orally	[42, 45, 47]
33	*Bryophyllum pinnatum* (Lam.) Oken	Crassulaceae	Dupoor-tenga	Leaves, herb	Juice of boiled leaves	[50, 51]
34	*Butea monosperma* (Lam.) Taubert.	Fabaceae	Polash	Fruit, Leaves	Fruit, Leaf paste is taken	[42, 45]
35	*Caesalpinia crista* Linn.	Caesalpiniaceae	Lataguti	Seeds	Decoction of seed	[51, 57]
36	*Cajanus cajan* (L.) Millsp.	Fabaceae	Rahar-Mah	Leaf, herb	Decoction obtained from 10 to 12 leaves	[43, 48, 51, 55, 57]
37	*Calotropis gigantea* (L) W. Aiton.	Asclepiadaceae	Akon	Leaves	Leaf, Flower paste is used	[42, 45, 51]
38	*Canna indica* Linn	Cannaceae	Sarbajaya	Leaves, aerial parts	Decoction	[40, 57]
39	*Cannabis sativa* L.	Cannabinaceae	Ganja	Flowers, leaves, resins	Powders of parts are taken with milk	[40, 43, 45, 49, 54, 57]
40	*Carrica papaya* L.	Caricaceae	Papaya	Seeds	Extract of dried seed powder	[40, 43, 45, 49, 51, 57]
41	*Cassia angustifolia* Linn	Caesalpiniaceae	Channa	Leaves	Extract of leaf.	[57]
42	*Cassia fistula* Linn	Caesalpinaceae	Bandarlathi	Flower, seed, stem bark	Extract pulp of seed, flower and bark	[40, 42, 43, 48, 58]
43	*Cassia occidentalis* L.	Caesalpinaceae	Kalkashundu	Bark	Infusion of bark	[40, 58]
44	*Cassia sophera* L.	Caesalpinaceae	Kalkasunda	Seeds and stem bark	Decoction	[40, 57]
45	*Cassia tora* L.	Caesalpinaceae	Panevar	Seeds	Seed paste is consumed with curry	[40, 45, 57]
46	*Catharanthus roseus* G. Don	Apocyanaceae	Nayantara	Leaves	Leaf decoction	[40, 42, 43, 45, 47, 48, 51]
47	*Centella asiatica* (L.) Urban	Apiaceae	Thunkuni	Whole plant	Whole plant juice is taken in empty stomach	[40, 42, 43, 46, 49, 51, 57, 59]
48	*Chromolaena odorata* (L.)	Asteraceae	Motmoti	Leaves	Juice of leaf paste	[43]
49	*Cicer acida* L.	Euphorbiaceae	Holfoli	Leaves	Decoction of leaf	[40, 51, 57]
50	*Cinnamomum tamala* Nees & Eberm	Lauraceae	Tezpata	Stem, bark and root	Extract of dried powdered stem bark and root	[40, 43, 45, 48, 49, 55, 57]
51	*Citrullus colocynthis* (L.) Schrad	Cucurbitaceae	Kuwa baturi	Fruit	Powder of dried fruit is mixed with water and drink in the morning	[60]
52	*Citrus aurantifolia* L.	Rutaceae	Nemu	Fruit	Crushed fruit	[48, 51, 57]
53	*Citrus auramtium* Linn	Rutaceae	Khatta	Fruit	Decoction of fruit	[40, 58]
54	*Citrous reticulate* Blanco	Rutaceae	Kamala	Roots, fruits	Roots and fruits	[40]
55	*Citrullus vulgaris* Schrad.	Curcurbitaceae	Tarmuj	Fruit, seed	The juice extract of the fresh fruits and seeds are taken	[57]
56	*Clerodendrum viscosum* Vent	Verbenaceae	Basavanapada	Whole plant	Boiled leaf	40]
57	*Coccinia indica* Wight & Arn.	Cucurbitaceae	Kundali	Fruit, root, leaves	Fruits are used as vegetable. Juice of root and leaves	[47, 48, 55, 57]
58	*Cocos nucifera* L.	Arecaceae	Dab	Fruits, flower	Oil is taken and consumed	[40, 42, 45, 51, 57]
59	*Colocasia esculenta* (L.) Schott	Araceae	KolaKachu	Root, herb	Root extract	[45, 46, 51, 52]
60	*Cordia dichotoma* Forst	Boraginaceae	Bahubara	Leaf and fruits	Decoction	[40, 57]
61	*Coriandrum sativum* L.	Apiaceae	Dhonia	Leaf, herb	Boiled solution of leaves	[51, 57]
62	*Coptis teeta* Wall	Rununculacaeae	Mishmi tita	Root, leaves	Decoction of root and leaves	[51]
63	*Costus pictus* D. Don	Costaceae	Leteki	Aerial part of plants	Decoction	[41]
64	*Costus speciosus* (Koeing). Smith.	Zingiberaceae	Jamlakhati	Rhizome	Rhizome paste taken orally	[42, 48]
65	*Cucumis melo* Roxb.	Cucurbitaceae	Sal kumura	Seed	Seed powder is used	[42, 48]
66	*Cucumis sativus* L.	cucurbitaceae	telakuchh	Leaves	Paste of leaf and the juice is also taken	[43]
67	*Cucumis trigonus* Roxb.	Cucurbitaceae	Gorokhia tioh	Fruit	Fruit juice is taken	[42, 45]
68	*Curcuma aromatic* Salisb	Zingiberaceae	BonoriaHalodhi	Rhizome	Fresh rhizome is taken.	[49, 51, 57]
69	*Curcuma domestica* Valeton	Zingiberaceae	Haldi	Leaf, rhizome	Fresh rhizome or powder of leaf and rhizome	[40, 57]
70	*Cynodon dectylon* (Linn)	Poaceae	Durba	Whole plant	Whole Plant juice is taken	[40, 43, 45, 51, 55, 57]
71	*Cyperus iria* Linn	Cyperaceae	-	Whole plant	Boiled extract	[40]
72	*Dalbergia sissoo* L.	Fabaceae	Sisu	Pods	Pods taken directly	[45]
73	*Daucas carota* Linn	Apiaceae	Gajor	Root	Infusion	[57]
74	*Dendrocalamus hamiltonii* Nees &	Bambusaceae	Kako Banh	Tender stem	Water extract of the tender stem.	[48]

	Arn. ex Munro					
75	*Dillenia indica* L.	Dilleniaceae	Outenga	Flower, tree	Flower extract	[45, 47, 48, 49, 51, 52, 55, 57, 58, 59]
76	*Dillenia pentagyna* Roxb	Dilleniaceae	Okshi	Ripe fruit	Juice	[51]
77	*Dioscorea alata* Linn	Dioscoreaceae	Chupri alu	Rhizome	Decoction of rhizome	[40, 57]
78	*Dioscorea bulbifera* Linn	Dioscoreaceae	Gaichaalu	Leafs and twigs	Raw	[40]
79	*Eleusine coracana* Gaertn.	Poaceae	Ragi	Stem base	As food	[57]
80	*Elettaria cardamomum* (L.) Maton	Zingiberaceae	Elaichi	Fruit, seed & leaf	Fruit and decoction, seed powder	[51]
81	*Emblica officinalis* Gaertn	Euphorbiaceae	Amlokhi	Fruit	Juice of fruit	[48, 51]
82	*Enhydra fluctuans* Lour.	Asteraceae	Rodali	Leaf, herb	Crushed leaves extract.	[45, 46, 48, 57]
83	*Erythairina indica* Linn	Papilionaceae	Moder	Root	Decoction of root	[57, 59]
84	*Eugenia jambolana* Lam.	Myrtaceae	Kala jamu	Fruit, stem bark, seed	Ripe fruits are eaten; seed powder	[55, 57]
85	*Euphorbia hirta* L.	Euphorbiaceae	Baro-kheruie	Whole plant	Decoction of whole plant	[40, 48, 57]
86	*Ficus benghalensis* Linn	Moraceae	Bar	Stem bark, sap	Decoction	[40, 42, 43, 51, 55, 57]
87	*Ficus glomerata* Roxb	Moraceae	Jangyadimoru	Leaf, fruit	Extract of leaf, fruit	[48, 51, 47]
88	*Ficus heterophylla* L.f	Moraceae	Dimaru	Fruit	Fruits are used as vegetable.	[55, 57]
89	*Ficus hispida* L.f	Moraceae	Dumur	Hypanthodium fruits	Extract of fruit	[40, 59]
90	*Ficus racemosa* Linn	Moraceae	Jagna dumur	Fruit, bark	Decoction of fruit and bark	[40, 47, 55]
91	*Ficus religiosa* L	Moraceae	Aswatha	Leaf, fruit	Leaf and fruit are taken 1orally	[42, 43, 45, 51, 55, 57]
92	*Garcinia pedunculata* Roxb. Ex Buch.-Ham.	Clusiaceae	Borthekera	Fruit pulp, tree	A paste of fleshy fruit pulps (50 g) is soaked overnight in water	[45, 48, 51, 55, 57]
93	*Gloriosa superba* Linn	Liliaceae	Ulatchandal.	Whole plant	Decoction	[40, 57]
94	*Glycine max* Merr	Papilionaceae	Soyabeen	Seed	Decoction	[51]
95	*Gmelia arborea* Roxb.	Verbenaceae	Gamari	Leaf stem and fruit	Decoction	[40, 43, 51, 57]
96	*Grewia abutelifolia* Juss	Tiliaceae	Petuk	Fruit	Boiled extract of fruit	57]
97	*Gymnema sylvestre* R. Br.	Asclepiadaceae	Gurmar	Leaf	Leaves are eaten once a day	[49, 55]
98	*Heliotropium indicum* Linn.	Boraginaceae	Hatishur	Aerial parts	Aerial parts are eaten	[40, 48, 57]
99	*Hemidesmus indicus* L.	Apocynaceae	Anantamul	Root	Decoction	[51]
100	*Hibiscus syriacus* L.	Malvaceae	Jobaphoo	Flower, leaf	Water extract of leaf and flowers are consumed orally	[55]
101	*Hodgsonia heteroclite* (Roxb.)	Cucurbitacea	*Thebaulata*	Fruit	Extract of fruit	[59]
102	*Holarrhena pubescens* (Buch-Ham)	Apocyanaceae	Khurchi	Bark and fruits	Seed powder, bark decoction	[40]
103	*Holoptelia integrifolia* Planc	Ulmaceae	Holoptelia	Bark	Decoction	[57]
104	*Holorrhena antidysenterica* Wall	Apocyanaceae	Kutaz	Bark, fruit	Decoction	[51, 57]
105	*Hydrocotyle rolundifolia* Roxb	Apiaceae	Soru manimuni	Whole plant	Decoction	[57]
106	*Hydrolea zeylanica* (Linn.)	Hydrophyllaceae	Kasschra	Leaf and twigs	Extract	[40, 57]
107	*Hygrophila auriculata* Schumach	Acanthaceae	Kulekhara	Leaves	Leaves are taken cooked and raw	[43]
108	*Ichnocarpus frutescens* R. Bn.	Apocyanaceae	Syamalota	Root	Root extract	[52, 57]
109	*Imperata cyllindrica* (Linn)	Poaceae	Ulu	Root	Decoction	[40, 57]
110	*Ipomoea aquatica* Forsk.	Convolvulaceae	Kalmisak	Leaf and twigs	Extract of leaf and twigs	[40, 42, 45, 48, 51, 57]
111	*Ipomoea batata* (L) Lam	Convulaceae	Mitha alu	Leaves	Leaf boiled and juice taken orally	[42, 45, 55]
112	*Jatropha curcas* Linn.	Euphorbiaceae	Lalbherenda	Leaf and twigs	Sun dried powder of leaf and twig, freshly as vegetables	[40, 57]
113	*Kalanchoe pinnata* Pers	Crassulaceae	Kophpata or patharkuchi	Whole plant	Fresh juice	[40, 43, 51, 59]
114	*Kayea assamica* Prain.	Clusiaceae	Sia-Nahar	Bark	Extract of bark.	[44]
115	*Lantana camara* L.	Verbenaceae	Guphul	Leaves	Leaf consumed raw	[42, 45]
116	*Lawsonia inermis* L.	Lythraceae	Jetuka	Leaves	Leaf juice mixed with cow's milk taken once in a week	[42, 45]
117	*Leucas aspera* Spreng.	Lamiaceae	Doron	Whole plant	Whole plant extract is taken in empty stomach alongwith Monopterus cuchia fish	[42, 43, 45, 55, 59]
118	*Litsea glutinosa* (Lour)	Lauraceae	Jongol Pat	Leaf, tree	Boiled leaves	[57]
119	*Madhuka indica* Gmel	Sapotaceae	Mohua	Bark, seed	Decoction	[57]
120	*Mangifera indica* L.	Anacardiaceae	Am	Tender leaves	Dry kernel powder is taken with milk	[40, 42, 43, 45, 51, 57]
121	*Manihot esculenta* Crantz	Euphorbiaceae	Simolualu	Tuberous roots, tender leaf	Eaten by cooking	[47]
122	*Melastoma malabathricum* (L.)	Melastomataceae	Putukola	Tender shoot	Decoction of tender shoot	[48]

	Smith					
123	*Melia azadirachta* Linn	Meliaceae	Mohaneem	Leaf	Decoction	[57]
124	*Meliosma pinnata* Roxb	Sabiaceae	Mamoi	Leaf	Taken as vegetables	[47]
125	*Mikania micrantha* Kunth	Asteraceae	Kemlota	Leaves	The leaf of this plant is chewed raw	[43]
126	*Mimosa pudica* L.	Mimosaceae	Lajjabati	Whole plant	Extract of whole plant	[40, 45, 49, 51, 57]
127	*Mirabilis jalapa* L.	Nyctaginaceae	Gopal godhuli	Root	Root juice is taken	[42, 45]
128	*Momordica charantia* Linn	Cucurbitaceae	Korola	Whole plant	Eaten as vegetables	[40, 48, 49, 51, 57, 59]
129	*Moringa oleifera* Lam.	Moringaceae	Sajina	Leaves	Leaf juice is used	[42, 43, 45, 48, 49, 57]
130	*Morus alba* Linn.	Moraceae	Nuni	Fruit	Ripe fruits are eaten	[45, 55]
131	*Mucuna pruriens* DC	Papillionaceae	Bandarkakura	Seed	Powder of seed	[48, 57]
132	*Murraya koeningii* (L) Spreng.	Rutaceae	Norosingha	Leaves	Leave paste is taken	[42, 43, 45, 48, 57, 59]
133	*Musa Paradisica* L.	Musacaceae	Kola	Flower and fruits	Juice decoction	[40, 49, 55, 57]
134	*Musa sapientum* Linn	Musacaceae	Monohorkol	Inflorescences	Extract of water soaked smashed inflorescence	[57]
135	*Nelum bonucifera* Gaertn	Nelambaceae	Podumful	Tender leaf	Extract obtained by boiling the tender shoot along with *Phyllanthus fraturnus*	[55, 57]
136	*Nyctanthes arbor tristis* Linn	Oleaceae	Sewali	Leaf, flower	Young leaf juice, paste of flower	[40, 42, 43, 45, 47, 51, 55]
137	*Nymphaea alba* L.	Nymphaeaceae	Baga vet	Root, rhizome	Roots and rhizomes juice is used orally	[55]
138	*Nymphaea rubra* Roxb.	Nymphaeaceae	Ranga vet	Root, Rhizome	Rhizome paste taken orally	[51, 55]
139	*Ocimum americanum* Linn	Lemiaceae	Kola tulosi	Peteole	Ash of the petiole mixed with honey	[57]
140	*Ocimum sanctum* L.	Lamiaceae	Tulsi	Leaves	Leaf powder taken with honey	[42, 45, 48, 51]
141	*Osbeckia nepalensis* Hook	Melastomaceae	Photkola	Tender shoot	Boiled extract of the tender shoot	[57]
142	*Oxalis corniculata* L.	Oxalidaceae	Amrul	Leaf	Consumed with fish	[40, 42, 45, 57]
143	*Paspalum fimbriatum* Kunth	Poaceae	Koya bon	Whole plant	Decoction	[51]
144	*Piper betle* Linn.	Piperaceae	Paan	Leaves	Leaf powder and paste directly consumed	[45]
145	*Phlogocanthus thyrsiflorus* Nees	Acanthaceae	Titaphul	Flower	Cooked flower	[48, 51]
146	*Phyllanthus emblica* Linn	Euphorbiaceae	Amla	Fruits	Juice of fruit	[40, 43, 45, 51, 55, 57, 59]
147	*Phyllanthus niruri* Linn	Euphorbiaceae	Bonamlokhi	Wholeplant	Decoction	[46]
148	*Plumeriam acuminata* W.T. Aiton	Apocyanaceae	Sun champa	Bark	Bark extract	[51, 57]
149	*Portulaca oleracea* L.	Portulacaceae	Malbhug Khutora	Leaf	Taken as vegetables	[48]
150	*Premnam latifolia* Roxb	Verbenaceae	Agnimantha	Leaf, bark	Decoction	[57]
151	*Psidium gujava* L.	Myrtaceae	Madhuri	Fruit, leaf	Extract of leaf, fruit eaten raw	[48, 51, 57]
152	*Rauwolfia tetraphylla* L.	Apocynaceae	Helash	Root	Decoction	[51]
153	*Riccinus communis* L.	Euphorbiaceae	Era gos	Seeds	Seed powder consumed with milk	[45]
154	*Rosa alba* L.	Rosaceae	Golapphul	Flower	Infusion	[51]
155	*Rubus fruticosus* L.	Rosaceae	Nuni phol	Bark	Dried bark is soaked overnight and water is taken	[59]
156	*Salacia reticulata* Wight	Celastraceae	Xeora	Leaves	The leaf of this plant is pasted, and the juice is taken	[43]
157	*Saraca indica* Linn	Caesalpiniaceae	Ashok	Fruit, flower	Fresh flower and fruit are eaten	[48, 51, 57]
158	*Scoparia dulcis* L.	Plantaginaceae	Bon-dhonia	Leaves	Fresh leaves are eaten	[59]
159	*Sesbenia aegyptiaca* L.	Fabaceae	Bog phul	Leaves, root	Extract of tender leaves and root powder	[48]
160	*Sesbania sesban* Merill	Papilionaceae	Jayanti	Leaf, tender stem	Decoction	[51, 57]
161	*Solanum indicum* L.	Solanaceae	Tita bekuri	Fruit	Fruits are eaten raw	[57]
162	*Solanum melongena* L.	Solanaceae	Bengena	Fruit	Decoction of fruits	[47]
163	*Solanum nigrum* L.	Solanaceae	Los kochi	Tender shoot	Decoction of shoot	[48]
164	*Solanum tuberosum* Linn	Solanaceae	Alu	Tuber	Decoction	[57]
165	*Spinacia oleracea* Linn.	Amaranthaceae	Paleng saak	Leaves	Boiled leaves	[59]
166	*Spondias Mangifera* Wild.	Anacardiaceae	Amara	Root	Boiled extract of the root	[48, 55, 57]
167	*Stellaria media* (L.) Vill	Caryophyllaceae	Morolya	Whole plant	Extract of whole plant	[59]
168	*Sterculia villosa* Roxb	Sterculiaceae	Dukundu	Fruit, herb	Fruit powder mixed with about 50 ml water	[57]

169	*Streblus asper* Lour	Moraceae	Rupashi	Bark	Extract of bark	[40, 48, 57]
170	*Swertia chirata* L.	Gentianaceae	Chirata	Whole plant	Whole plant extract is consumed	[42, 45, 48, 51, 55, 57]
171	*Syzygium aromaticum* L.	Myrtaceae	Long	Flower bud	Decoction	[51]
172	*Syzygium cumini* (Linn.) Skeels	Myrtaceae	Kala jam	Bark, fruit and seeds	Extract of fresh fruit, seed, bark	[40, 43, 48, 51, 53, 54, 59]
173	*Tabernaemontana divaricata* (L.) R. Br	Apocynaceae	Kothana-phool	Leaf	Boiled leaves	[51, 57]
174	*Terminalia arjuna* Linn	Combretaceae	Arjun	Bark	Infusion	[43, 51]
175	*Terminalia catapa* Linn.	Combretaceae	Badam (desi)	Fruit, seeds	Extract	[51, 57]
176	*Terminalia chebula* Retz	Combretaceae	Hortokhi	Fruits	Dried powder of fruits	[40, 46, 49, 52, 58]
177	*Tinospora cordifolia* (Willd)	Menispermacea	Golancha	Leaf and bark	Extract of leaf, bark	[40, 43, 48, 55]
178	*Tinospora crista* Miers	Menispermaceae	Saguni lata	Leaf, root	Decoction	[57]
179	*Thevetia peruviana* (pers)Merill	Apocyanaceae	Halodhiakorobi	Bark	Bark extract	[51, 57]
180	*Trichosanthes cucumerina* L.	Curcubitaceae	Dhunduli	Fruit	Juice of fruit	[60]
181	*Trigonella foenum graecum* L.	Fabaceae	Mithi	Seeds	Powdered seeds are mixed with boiling water and consumed orally in empty stomach	[45, 48 57]
182	*Vigna mungo* L.	Fabaceae	Matimah	Seeds	Overnight soaked seeds are taken	[59]
183	*Vinca rosea* Linn	Apocyanaceae	Nayantora	Leaf	Extract of leaf	[57]
184	*Vitex negundo* L.	Lamiacea	Posotia	Leaf	Extract of leaf	[48]
185	*Withania somnifera* (L.) Dunal	Solanaceae	Ashwagandha	Leaf	Extract of leaf	[48]
186	*Zingiber officinale* Roscoe	Zingiberaceae	Ada	Rhizome	Boiled rhizome is given	[48, 55]
187	*Zizyphus jujuba* Mill.	Rahamnaceae	Bogari	Leaves	Grind paste of leaf	[48]
			Manipur			
1	*Abelmoschus esculentus* (L.) Moench	Malvaceae	Bhelendri	Young fruits	Juice of young fruits	[2]
2	*Acacia arabica* Linn.	Mimosaceae	Chigonglei	Seeds	Powdered of seed 2, 3, 4 gm/kg body weight.	[73]
3	*Adiantrum capillus – veneri* L.	Polypodiaceae	Mayor pambi	Leaf and stem	Extract of leaves and stem	[71]
4	*Andrographis paniculate* (Burm. F.) Wall. ex Nees	Acanthaceae	Bhubati	Leaves	Powdered of leaves	[61, 63, 71]
5	*Aegle marmelos* (L.) Corr Roxb	Rutaceae	Heiri khagok	Root bark, leaf	Aqueous decoction of root bark, aqueous leaf extract orally	[63, 2, 66, 71, 73]
6	*Allium cepa* L.	Liliaceae	Tilhou	Bulb	Fractions of its bulb orally	[73]
7	*Allium hookerii* Thwaites	Liliaceae	Napakpi	Whole plant	Fresh whole plant as vegetable	[81]
8	*Aloe vera* (L.) Burm.f.	Liliaceae	Aloe vera	Leaf gum	Extract of aloe gum orally	[73]
9	*Allium sativum* L.	Liliaceae	Chanam	Bulb	Extract of bulb	[63, 73]
10	*Alocasia indica* Roxb	Araceae	Hong-ngoo	Rhizome	Crushed extract of rhizome	[63, 71]
11	*Alpinia galanga* (L.) Willd	Zingiberaceae	Kanghoo	Tuber, rhizome	Taken raw	[69]
12	*Alocasia indica* Roxb	Araceae	Yendem	Whole plant	Taken by cooking	[71]
13	*Amaranthus spinosus* L.	Amaranthaceae	Chengkruk tingkhang panba	Tender leaves	As vegetable	[2]
14	*Annanas comosus* Linn	Bromeliaceae	Keehom	Fruit	Eaten raw	[63,2]
15	*Antidesma diandrum* (Roxb.) B. heyne ex Roth	euphorbiaceae	Ching yensil	Leaf	Boiled extract of leaves	[2, 66, 80]
16	*Ardisia colorata* Roxb.	Myrsinaceae	Uthum	Leaf	Boiled leaf extract of leaf	[76]
17	*Artimisia martitima* L.	Asteraceae	Ching laibakngou	Leaf	Fresh leaf extract	[66]
18	*Artemisia pallens* Wall. ex DC	Asteraceae	Laibakngou	Aerial part	Extract of aerial part of plant	[73, 80]
19	*Artocarpus lakoocha* Roxb.	Moraceae	Hari-kokthong	Bark	Boiled extract of bark with common salt	[66]
20	*Areca catechu* Linn.	Arecaceae	Kwa pambi	Betal	Chewing of betal	[63, 2, 66, 73]
21	*Arundo donax* L.	Poaceae	Yengthou	Tender rhizomes	Extract of tender rhizome	[2]
22	*Averrhoa carambola* Linn.	Averrhoaceae	Heinoujom	Bark, leaves,	Boiled extract of bark and leaves	[61, 2]
23	*Azadirachta indica* Linn.	Meliaceae	Neem	Leaf	Eating fresh leaves	[63, 64, 73]
24	*Barleria albostellata* C.B. Clarke	Acanthaceae	Hanu khutlam	Fresh leaves	Fresh leaves boiled in water	[2]
25	*Benincasa hispida* Thomb. Cogn.	Cucurbitaceae	Torbot	Fruit	Decoction as well as boiled extract of fruit	[61, 63, 2, 72]
26	*Beta vulgaris* L.	Chenopodiaceae	Beet root	Root	Eating fresh root	[73]
27	*Biophytum sensitivum* (L.) DC.	Oxalidaceae	-	Leaf	Leaf extract	[73]
28	*Bombax ceiba* L.	Bambacaceae	Tera	Leaf	Leaf extract	[63, 71, 73]
29	*Brassica juncea* (L)Czern.	Brassicaceae	Hangam	Leaf	Cooking the leaves	[73]
30	*Brucea javanica* Linn	Simaroubaceae	Heining	Fruit	Dried fruits	[63, 71, 79]
31	*Caesalpinia bonducella* (L.) Roxb.	Caesalpiniaceae	Tinsibi	Seed	Powder of seed	[73]
32	*Canna indica* Linn	Cannaceae	Laphurit	Leaf, aerial parts	Decoction of leaf, aerial parts	[63]
33	*Cannabis sativa* Linn	Cannabinaceae	Gunja	Leaf, flower, resins	Decoction and boiled	[63, 75]

34	*Carica papaya* Linn	Caricaceae	Awathabi	Fruit	Raw fruit	[63]
35	*Capparis decidua* Edgew (Forssk.)	Capparaceae		Fruit	Powder of fruit	[2]
36	*Cajanus cajan* (L.) Millsp.	Fabaceae	Mairongbi	Seeds	Cooking of fresh seed	[73]
37	*Catharanthus roseus* G. Don	Apocynaceae	Sahib lei	Leaf	Extract of leaf	[61, 66]
38	*Cassia alata* L.	Caesalpiniaceae	Daopata	Leaf	Extract of leaf	[66, 71, 76]
39	*Cassia auriculata* Linn	Caesalpinaceae	Chahui	Flower, stem, bark, seed	Extract of bark, leaf, seed, flower	[63]
40	*Centella asiatica* (Linn.)	Apiaceae	Peruk	Whole plant	As vegetables	[2, 66, 70]
41	*Cinchona officinalis* L.	Rubiaceae	Khasii	Bark	Decoction of bark	[78]
42	*Cinnamomum tamala* Nees & Ebern	Lauraceae	Tejpat	Stem, bark, root	Decoction of stem, bark, root	[63, 82]
43	*Cinnamomum zeylanicum* Breyn	Lauraceae	Ushingsa	Bark, root, flower, fruit	Boile extract of plants parts	[63, 77]
44	*Citrus aurantifolia* Linn	Rutaceae	Champra	Fruit	Raw fruit	[63]
45	*Citrullus colocynthis* (L.) Schrad	Cucurbitaceae	Tayal	Seeds	Sun dried seed	[73]
46	*Citrullus vulgaris* Schrad.	Cucurbitaceae	Turbuz	Fruit	Raw fruit	[63]
47	*Citrus reticulata* Blanco	Rutaceae	Komla	Fruit and root	Raw	[63]
48	*Coccinia indica* Wight & Arn.	Cucurbitaceae	Kwakthabi	Fruits and leaves	Extract of leaves and fruits	[73]
49	*Coccinia grandis* (L.) Voigt	Cucurbitaceae	Warak tayal	Fruits	Decoction of the fruits	[2, 76]
50	*Coix lacrymajobi* Linn	Poaceae	Chaning angouba	Roots	Crushed extract of root	[63, 2, 66]
51	*Commelina benghalensis* L.	Commelinaceae	Wangden khoibi	Whole aerial part	Fresh juice	[61, 2]
52	*Costus speciosus* (J. Konig) Sm.	zingiberaceae	Khongban takhellei	Rhizomes	Extract of rhizome	[66]
53	*Clerodendrum indicum* (L.) Kuntze	Verbenaceae	Charoidong	Leaves	Boil leaves	[66, 68]
54	*Clerodendrum viscosum* Vent	Verbenaceae	Kuthap ukabi	Leaves	Extract of leaves	[2, 66, 71, 76]
55	*Curcuma caesia* Roxb.	Zingiberaceae	Yaipal	Rhizomes	Boiled water extract of rhizome	[2, 73]
56	*Curcuma longa* Linn	Zingiberaceae	Yaingang	Leaf, Rhizome	Crushed decoction of rhizome and leaves	[63]
57	*Cuscuta reflexa* Roxb	Convolvulaceae	Uri sanamachu	Whole plant	Decoction or boiled extract of the whole plant	[2, 64]
58	*Cycas pectinata* Griff	Cycadaceae	Yen-dang	Fruit	Extract of fruit	[67]
59	*Cynodon dactylon* Pers	Poaceae	Tingthou	Whole plant	Crushed decoction of whole plant	[63, 2, 64]
60	*Cyperus dubius* Rottb	Cyperaceae	Chumthang namthibi	Whole aerial plant	Fresh juice of the whole aerial portion along with a little honey	[2]
61	*Cyperus esculentus* L.	Cyperaceae	Kaothum	Rhizome	Boiled extract of rhizome	[63, 66, 80]
62	*Cyperus rotundus* Linn	Cyperaceae	Sembang Kaothum	Whole plant with rhizome	Boiled extract of whole plant and rhizome	[63]
63	*Datura stramonium L*	Solanaceae	Sangoidak amuba	Seeds	Dried powder of seed	[2]
64	*Debregeasia longifolia* (Burm.f.) Wedd.	Urticaceae	U-khajing	Root	Boiled extract of root	[66]
65	*Dioscorea alata* Linn	Dioscoreaeceae	Ha	Rhizome	Boiled extract of rhizome	[63]
66	*Drymaria cordata* subsp. *diandra* (Blume) J.A. Duke	Caryophyllaceae	Tandan mana	Whole aerial plant	Whole aerial plants cooked with *Channa orientalis* Bloch & Schneider	[2]
67	*Eclipta prostrata (*L.) L.	Compositae	Uchi sumbal	Whole aerial plant	Fresh juice extracted from the whole aerial plant	[61, 2]
68	*Enhydra fluctuans* Lour	Asteraceae	Komprek tujombi	Whole plants	Boiled extract of whole plant	[2, 66]
69	*Eryngium foetidum* L.	Apiaceae	Awa fadigom	Leaves	Extract of leaves	[61, 69]
70	*Equisetum debile* Roxb. ex Vauch	Equisetaceae	Lai utong	Whole plant	Boiled extract of plant along with root extract of male *Carica papaya*	[63, 66]
71	*Euccalyptus globulus* Labill.	Myrtaceae	Nasik	Leaves	Aqueous extract of leaves	[73]
72	*Euryale ferox* Salisb	Nymphaeaceae	Thangjing	Tender leaf, fruit, seed, petioles	Consumes as food	[2, 76, 80]
73	*Eugenia jambolana* Lam.	Myrtaceae	Gulamchat	Fruits	Fresh fruits	[2, 64, 66, 73, 75]
74	*Eupatorium birmanicum* DC.	Asteraceae	Langthrei	Leaves	Fresh leaves	[2, 73]
75	*Eugenia uniflora* L.	Myrtaceae	Brazil cherry	Leaves	Decoction of leaves	[73]
76	*Fagopyrum esculentum* Moench	Polygonaceae	Wakha Yendem	Tender leaves	Cooked tender leaves used as vegetable	[2, 76]
77	*Ficus bengalenesis* Linn	Moraceae	Sanakhongnang	Bark	Extract of bark	[63, 2, 73]
78	*Ficus cunia* Buch.-Ham. Ex Roxb.	Moraceae	Heirit	Fruit	Consumed fruit	[76, 80]
79	*Ficus hispida* Linn.	Moraceae	Ashi heibong	Bark	Extract of bark	[63, 2, 66, 73]
80	*Ficus glomerata* Roxb	Moraceae	Heibong	Fruits	Boiled extract of fruits along with *Centella asiatica* and *Parkia roxburghii* bark	[63, 2, 64, [66]
81	*Ficus palmata* Forssk	Moraceae	Heiban mana	Fruits	The juice extracted from fresh	[2]

					fruits with a little common salt	
82	*Ficus pomifera* Wall. ex King	Moraceae	Heiba	Leaves and fruit	Boiled extract of leaves and fruit	[66]
83	*Flacourtia jangomas* (Lour.) Raeusch	Flacourtiaceae	Heitroi	Fruits	Eat the raw fruit	[2, 64, 66, 76]
84	*Glycine max* (Linn.) Merrill	Fabaceae	Nung hawai	Seeds	Dry seed powder, water soaked sprout of seed	[63, 66]
85	*Grewia abutilifolia*, Vent ex Juss	Tiliaceae	Ching boroi	Fruit	Boiled extract of fruit	[66]
86	*Gymnema sylvestre* R. Br.	Asclepedaceae	Gurmur	Leaves	Extract of leaves	[73]
87	*Hedychium coronarium* J. Koenig	Zingiberaceae	Takhellei	Rhizomes	The fresh extract of the rhizomes	[2]
88	*Hibiscus syriacus* Linn	Malvaceae	Juba kusum angouba	Leaf	Decoction of leaves	[66]
89	*Hygrophila phlomoides* Nees	Acanthaceae	Ising langthrei	Whole plant	Boiled extract of whole plant	[2]
90	*Imperata cylindrical* (Linn.) P. Beauv	Poaceae	Imom	Root	Extract obtained by boiling the root along with the leaf of *Citrus aurantium*	[63, 66]
91	*Ipomea aquatica* Forssk	Convolvulaceae	Kolamni	Tender shoot	Boiled of tender shoot	[63, 66]
92	*Jatropha curcas* Linn	Euphorbiaceae	Awa-Kege	Leaf, twigs	Sun dried powder of leaf and twig, freshly as vegetables	[63]
93	*Jussieua repens* Linn	Onagraceae	Ishing-kundo	Whole plant	Boiled extract of plant	[66]
94	*Justicia adhatoda* Linn	Acanthaceae	Nongmangkha angouba	Leaves	Boiled extract of leaves	[63, 66]
95	*Kaempferia rotunda* L.	Zingiberaceae	Leibak lei	Rhizome	Boiled extract of rhizome	[2, 80]
96	*Kalanchoe pinnata* (Lam.) Pers	Crassulaceae	Mana hidak	Leaves	Fresh juice of the leaves	[2]
97	*Kigelia pinnata* DC	Bignoniaceae	U-sebot	Fruits	Extract of fruits	[2, 73]
98	*Kyllinga triceps* Rottb	Cyperaceae	Chumthang namthibi	Whole plant	Boiled extract of whole plant	[66]
99	*Lantana camara* Linn.	Verbenaceae	Nongbanlei	Leaves	Decoction of leaves	[71, 77]
100	*Lemanea australis* Alkins	Rhodophyceae	Nungsham	Whole plant	Boiled extract of whole plant	[63]
101	*Leucaena leucocephala* (lam.) de Wit	Fabaceae	Chingonglei angouba	Leaves	Decoction of leaf	[2, 66, 80]
102	*Litsea monopetala* (Roxb. Ex Baker) Pers.	Lauraceae	Tumitla	Tender leaf	Leaf are directly consumed	[80]
103	*Ludwigia octovalvis* (Jacq.) Raven	Onagraceae	Kabo khaji	Whole plant	Boiled extract of whole plant	[66]
104	*Lysimachia obovate* Buch.-Ham. Ex Wall.	Primulaceae	Kengoi	Whole plant	Consumed directly by cooking	[76, 80]
105	*Magnolia campbellii* Hook. f. & Thomson	Magnoliaceae	Uthambal	Leaves	7-9 leaves cut into small pieces boiled in 2.5litre of water	[2]
106	*Mangifera indica* Linn	Anacardiaceae	Heinou	Tender leaves	Decoction of tender leaves	[63, 77, 79]
107	*Mentha arvensis* Linn	Lamiaceae	Nungshi hidak	Whole plant	Crushed extract of whole plant with honey	[66]
108	*Meyna spinosa* Roxb. Ex Link	Rubiaceae	Lam heibi	Fruits	Boiled extract of the fruit	[2, 66]
109	*Momordica charantia* Linn	Cucurbitaceae	Karot akhabi	Leaf, fruit	As Vegetable	[63, 2, 76]
110	*Morus indica* Linn	Moraceae	Kabrangchak	Tender leaf	tender leaf cooked with any roasted fish	[66]
111	*Musa sapientum* Linn	Musaceae	Lafu	Inflorescence	Extract of water soaked smashed inflorescence	[66]
112	*Nelumbo nucifera* Gaertn	Nelumbonaceae	Thambal	Tender shoot	Extract obtained by boiling the tender shoot along with *Phyllanthus fraturnus*	[2, 66]
113	*Nyctanthes arbortristis* Linn	Oleaceae	Singarei	Leaves	Boiled extract of leaves	[63]
114	*Ocimum americanum* Linn	Lamiaceae	Mayangba	Petiole	ash of the petiole mixed with honey	[66, 77]
115	*Oreocnide integrifolia* (Gaudich) Miq	Urticaceae	U-khajing	Leaves	Hot decoction of the leaves is mixed with honey	[2]
116	*Osbeckia nepalensis* Hook	Melastomataceae	Yachubi	Tender shoot	boiled extract of the tender shoot	[2, 66]
117	*Parkia timoriana* (A.DC.) Merr	Mimosaceae	Yongchak	Bark	Decoction of bark of the plant with *Centella asiatica* and *Ficus glomerata* fruits	[63, 66, 75]
118	*Passiflora edulis* Sims	Passifloraceae	Shitaphal	Fruit and leaves	Fresh fruits and decoction of leaves	[63, 71]
119	*Peristrophe fera* C.B. Clarke	Acanthaceae	Ishing langthrei	Whole plant	Boiled extract of the plant	[66]
120	*Pentaneura khasiana* Kurz.	Asclepiadaceae	-	Bark	Fresh extract of bark	[80]
121	*Phologocanthus tubiflorus* Nees	Acanthaceae	Nongmangkha angangba	Bark	Decoction of bark and *Zingiber officinale* rhizome	[2, 66]
122	*Phyllanthus emblica* Linn	Euphorbiaceae	Heikru	Tender leaves	Cooked tender leaves along with a local fish *Puntius phutunio*	[2, 64, 66, 70, 79]
123	*Psidium guajava* L.	Myrtaceae	Pungdhol	Fruit and	Raw, boiled as well as vegetables	[70, 79]

				leaves		
124	*Punica granatum* L.	Lythraceae	Kaphoi	Seeds	Decoction of the seeds with honey	[2]
125	*Quercus serrata* Thunb.	Fagaceae	Uyung	Leaves	Boiled extract of leaves	[80]
126	*Maesa indica* (Roxb.) A. DC.	Myrsinaceae	-	Leaves	Decoction of leaves	[62]
127	*Melothria purpusila* Cogn.	Cucurbitaceae	Lamthabi	Whole plant	Decoction of whole plant	[73]
128	*Oroxylum indicum* (L.) Kurz	Bignoniaceae	Shamba	Stem bark, seed	Decoction of bark and seed	[72]
129	*Oxalis corniculata* Linn.	Bignoniaceae	Yensil	Leaves	Extract of leaves	[63]
130	*Peristrophe bicalyculata* (Retz) Nees	Acanthaceae	Khuman langthrei	Whole plant	Decoction of plant	[66]
131	*Plumbago rosea* Linn	Plumbaginaceae	Kengoi	Stem	Boiled extract of stem	[63]
132	*Portulaca oleracea* L.	Portulacaceae	Leibak kundo	Leaves	Extract of leaves	[2, 71, 76]
133	*Phyllanthus acidus* (L.) Skeels	Euphorbiaceae	Kihoree	Seeds	Seed extract	63]
134	*Phyllanthus urinaria* L.	Euphorbiaceae	Chakpaheikru	Leaves, fruits	Extract of leaf and raw fruit	[63, 2, 66, 68]
135	*Pyrus lindleyi* Rehder	Rosaceae	Naspati	Fruits	Fresh fruits	[2]
136	*Quercus acutissima* Carruth	Fagaceae	Chakpa uyung	Leaves	Boil extract of leaves	[2]
137	*Rumex maritimus* L.	Polygonaceae	Torongkhongchak	Leaves	Fresh juice of leaves and young shoots with honey	[2]
138	*Rhus chinensis* Mill	Anacardiaceae	Heimang	Seeds	Tea of dried seed	[65]
139	*Sesbania grandiflora* (L.) Pers.	Fabaceae	Houwaimal	Leaves	Extract of leaves	[71]
140	*Scleria terristris* (Linn.) Fuss	Cyperaceae	Lam thangjou	Whole plant	Boiled extract of the plant	[66]
141	*Scutellaria discolor* Colebr	Lamiaceae	Yenakhat	Whole aerial plant	Decoction of the aerial plant parts	[2]
142	*Senna bicapsularis* L.	Leguminosae	Thaonam nashangbi	Tender leaves	Decoction of tender leaves	[2, 76]
143	*Sesbania sesban* (Jacq.) W.Wight	Fabaceae	Chu-chu rangmei	Leaves	Aqueous leaf extract	[63, 66, 71, 76]
144	*Schima wallichii* (DC.) Choisy	Theaceae	Usoi	Leaves	Fresh leaves extract	[2, 80]
145	*Scleria terrestris* (Linn.) Fuss	Cyperaceae	Lam thangjou	Whole plant	Boiled extract of whole plant	[68]
146	*Scoparia dulcis* L.	Plantaginaceae	Yangli manbi	Whole aerial plant	Decoction of the aerial plant parts	[2]
147	*Smilax lanceaefolia* Roxb.	Smilacaceae	Kwamanbi	Rhizome	Extract of rhizome	[66, 73]
148	*Stephania rotunda* Engl	Menispermaceae	Koubru yai	Tuber	Extract of tuber	[74]
149	*Stevia rebaudiana* Bertoni	Asteraceae	Stevia	Whole plant	Extract of whole plants	[71]
150	*Strobilanthes cusia* (Nees) Kuntze	Acanthaceae	Kum pambi	Leaves	Boiled extract of leaves	[2]
151	*Tinospora cordifolia* Willd	Menispermaceae	Ninghoukhongli	Leaf, Bark	Extract of leaf, bark	[63, 2]
152	*Thevetia peruviana* (Pers.) Merr	Apocynaceae	Utong lei	Bark	Ash of the bark mixed with water	[66]
153	*Trigonella foenum graecum* Linn.	Fabaceae	Methee	Leaves and seeds	Boiled extract of leaf and seed	[63, 2]
154	*Vallisneria spiralis* L.	Hydrocharitaceae	Lairenchak	Whole plant	Decoction of boiled leaves	[2]
155	*Zanthoxylum acanthopodium* DC	Rutaceae	Muthrubi tingkhang panbi	Root, leaves	Boiled root extract, leaf decoction along with the leaves of *Azadirachta indica* and *Justicia adhatoda* taken in equal proportion	[66]
156	*Zanthoxylum alatum* Roxb	Rutaceae	Mukthrubi	Root	Crushed decoction of roots	[63, 66]
			Meghalaya			
1	*Abroma augusta* (L.) L.f	Malvaceae	Dieng tyrkhum	Leaves	Decoction of leaves	[85]
2	*Bauhinia acuminata* L.	Caesalpinaceae	Megong	Leaf, flower	Cook as vegetables	[83]
3	*Osbeckia crinite* Benth. Ex C.B. Clarke	Melastomataceae	-	Shoots	Boiled extract of shoot	[83]
4	*Olax acuminata* Wall. ex Benth	Olacaceae	-	Leaves	Extract	[84]
5	*Potentilla fulgens* Wall. ex Hook.	Rosaceae	Lynniang	Roots	Root is chewed	[83]
6	*Scoparia dulcis* L	Plantaginaceae	Krahlebekor	Whole plant	Decoction of the aerial plant parts	[83]
			Mizoram			
1	*Abrus precatorius* L.	Papilionaceae	Theiherawt	Leaves, fruit and stem	Decoction	[91]
2	*Aegle marmelos* (L). Corr	Rutaceae	Belthei	Leaves	Powder	[87]
3	*Albizia procera* Roxb.	Leguminosae	Kangṭek	Leaves, flower, bark	Decoction and infusion	[87]
4	*Allium cepa* Linn.	Liliaceae	Purunsen	Bulb	Paste	[87]
5	*Allium sativum* Linn.	Liliaceae	Purunvar	Bulb	Paste	[87]
6	*Aloe barbadensis* (L.) Burm.f.	Asphodelaceae	Awle lei	Whole plant	Decoction	[97]
7	*Alstonia scholaris* (Linn.) R. Br	Apocyanaceae	Ṭhuamriat	Leaves, bark	Decoction	[87]
8	*Ananas comosus* L.	Bromeliaceae	Lakhuihthei	Whole plant	Decoction	[87]
9	*Artocarpus heterophyllus* Lamk.	Moraceae	Lamkhuang	Leaves	Decoction	[87]
10	*Aartocarpus lakoocha* Wall ex Roxb	Moraceae	Theitat	Bark, leaves, seed	Decoction	[87]
11	*Averrhoa carambola* L.	Oxalidaceae	Theiherawt	Fruits	Decoction	[97]
12	*Azadirachta indica* A. Juss.	Meliaceae	Hnahkha	Leaves	Decoction	[87]
13	*Bauhinia purpurea* Linn.	Leguminosae	Vaube	Seed	Decoction	[87]
14	*Benincasa hispida* Thunb.	Cucurbitaceae	Maipawl	Fruit	Fruit juice is taken orally	[98]
15	*Bidens pillosa* L.	Compositae	Beggar's tick	Leaves	Powder of dried leaves	[87]

16	*Bombax ceiba* L.	Bombacaceae	Pang	Leaves, flower, bark	Decoction	[87]
17	*Bouganvillea spectabilis* Wild.	Nyctaginaceae	Sarawn par	Leaves	Decoction	[87]
18	*Brassica juncea* L.	Crucifereae	Anṭam	Leaves, seed	Decoction and powder	[87]
19	*Bryphytum sensativum* (L.) DC.	Oxalidaceae	Zarero	Leaves	10-20 ml saline extract of mature leaves twice daily for 2 months	[96]
20	*Butea monosperma* (Lam.) Taubert	Leguminosae	Farṭuahnu	Leaves, fruits	Decoction and paste	[87]
21	*Callicarpa arborea* Roxb.	Verbenaceae	Hnahkiah	Bark	The bark is grinded and the infusion is taken	[98]
22	*Careya arborea* Roxb.	Lecythidaceae	Wild guava	Bark and leaves	Decoction	[92]
23	*Carica papaya* L.	Caricaceae	Thingfanghma	Seed	Decoction	[87]
24	*Casearia tomentosa* Roxb.	Salicaceae	Vakithei	Root	Decoction	[95]
25	*Cassia alata* Linn.	Leguminosae	Uihlo	Leaves	Decoction of leaves taken orally twice for 6-8 wk	[96]
26	*Cassia occidentalis* L.	Caesalpiniaceae	-	Bark	50 g bark is used to make infusion and taken orally daily for 8-10 wk	[96]
27	*Cassia tora* Linn.	Leguminosae	Kelbaan	Leaves	Decoction	[87]
28	*Catharanthus roseus* (Linn.) G.Don	Apocyanaceae	Kumtluang	Leaves, flower	~20 ml of leaf and root decoction taken orally once a day for 8-10 wk	[96]
29	*Centella asiatica* L.	Umbelliferae	Lambak	Whole plant	Decoction	[87]
30	*Chamaecostus cuspidatus* (Nees & Mart.) C.Specht & D.W.Stev.	Costaceae	Sumbul chi khat	Leaves and roots	Decoction	[94]
31	*Citrus medica* Linn.	Rutaceae	Sertawk	Leaves Seeds	Leaf decoction, seeds are peeled and eaten twice a day	[87]
32	*Cinnamomum tamala* (Bach-Ham) Nees & Eberm	Lauraceae	Tespata	Stem, bark, root	The powder is made from dried leaves and 5 g per day is taken orally for 5-6 wk	[96]
33	*Cinamomum verum* J. Presl.	Lauraceae	Thakthing	Bark	Bark powder infusion is taken orally	[98]
34	*Clerodendrum colebrookianum* Walp.	Verbenaceae	phuihnam	Leaves and stem	Decoction	[91]
35	*Coccinia indica* Wight & Arn.	Cucurbitaceae	-	Leaves and stem	Decoction	[91]
36	*Colocasia esculenta* Linn.	Araceae	Dawl	Rhizome and leaves	Rhizome decoction, leaves are boiled and taken orally	[91, 98]
37	*Costus speciosus* (J.Konig) Sm.	Costaceae	Sumbul	Tubers	Tubers boiled with water or root juice is used	[98]
38	*Cucumis melo* Roxb.	Cucurbitaceae	Hmazil	Seeds	Decoction	[87]
39	*Cucurmis sativus* L.	Cucurbitaceae	Fang-hma	Leaves	The decoction of leaves is taken orally	[98]
40	*Curcuma longa* Linn.	Zingiberaceae	Aieng	Rhizome	Decoction	[87]
41	*Daucus carota* L.	Apiaceae	Kerawt	Flowers	Infusion	[87]
42	*Dillenia pentagyna* L.	Dilleniaceae	Kaihzawl	Bark	Decoction is prepared from the 100g bark, is taken orally once a day for 6-8 wk	[96]
43	*Dioscorea alata* L.	Dioscoreaceae	Rambachim	Tuber	Raw	[87]
44	*Dioscorea bulbifera* Linn.	Dioscoreaceae	Farṭuahpa	Tuber	Raw	[87]
45	*Emblica officinalis* (L.)	Euphorbiaceae	Sunhlu	Bark	Decoction, bark grinded into powder and used	[97, 98]
46	*Eryngium foetidium* L.	Apiaceae	Wild coriander	Leaves	Decoction	[92]
47	*Erythrina variegata* Lam.	Leguminosae	Hmawng	Leaves	Decoction	[87]
48	*Eucalyptus* sp.	Myrtaceae	Nawalhthing	Leaves	Hot water decoction of leaves	[86]
49	*Eugenia jambolana* Lam.	Myrtaceae	Jaman	Powdered bark and fruit	Infusion	[91]
50	*Ficus benghalensis* Linn.	Moraceae	Paihte	Root	Raw	[87]
51	*Ficus hispida* Linn.	Moraceae	Maian	Fruit	Decoction	[87]
52	*Ficus semicordata* Miq	Moraceae	Theipui	Bark	20-30 ml decoction once a day for 5-6 wk	[96]
53	*Glinus oppositifolia* L.	Aizoaceae	Bakhate	Whole plant	Boil extract of the plant is used	[98]
54	*Gmelina arborea* Roxb.	Verbenaceae	Thlanvawng	Leaves, fruits	Decoction	[87]
55	*Gossypium arboretum* Linn.	Malvaceae	La	Leaves	Decoction	[87]
56	*Hibiscus rosasinensis* Linn.	Malvaceae	Midum pangpar	Leaves	Decoction	[87]
57	*Helicia robusta* (Roxb.) R.Br. ex Blume	Proteaceae	Pasaltakaza	root bark	Decoction	[91]
58	*Ichnocarpus frutescens* (L.) R.Br.	Apocynaceae	-	Root	1-2 gms of root powder is administered along with milk and also root decoction is taken orally once daily for 4-6 wk	[96]

59	*Inula cappa* (Buch.- Ham.ex D. Don) DC	Asteraceae	Buarthau	Leaves	Decoction	[96]
60	*Ipomea botatus* Linn.	Convolvulaceae	Kawlbahra	Leaves	Leaves are boiled and juice is taken orally	[98]
61	*Jasminum laurifolium* Var.	Oleaceae	Maufimhlo	Stem and leaves	The decoction of stem and leaves is taken twice a day	[98]
62	*Jatropha curcas* Linn.	Euphorbiaceae	Kang damdawi	Leaves	Decoction	[87]
63	*Lagerstroemia speciosa* (L.) Pers.	Lythraceae	Thla do/chawnpui	Bark	The infusion of the bark is used	[98]
64	*Lantana camera* Linn.	Verbenaceae	Hling pangpar	Leaves, flowers	Decoction, infusion	[87]
65	*Lepionurus sylvestris* Blume	Opiliaceae	Anpangthuam	Leaves	Decoction	[89]
66	*Macaranga denticulate* (Blume) Mull. Arg.	Euphorbiaceae	Mallata	Leaves	Decoction	[88]
67	*Mallotus roxburghianus* Müll.Arg.	Euphorbiaceae	Zawngtenawh-lung	Leaves and bark	Decoction	[93]
68	*Mangifera indica* L.	Anacardiaceae	Theihai	Young leaves	The decoction of the young shoots is taken twice a day	[98]
69	*Mentha arvensis* Linn.	Labiatae	Pudina	Leaves	Decoction	[87]
70	*Mimosa pudica* Linn.	Leguminosae	Hlonuar	Whole plant	Decoction	[87]
71	*Mirabilis jalapa* L.	Nyctaginaceae	Artukkhuan	Root	Tuberous roots are boiled and taken	[98]
72	*Momordica charantia* L.	Cucurbitaceae	Changkhate	Leaves, fruits	2-3 fruits are cooked and consumed, and also raw fruit juice of 50 ml is taken orally once a day for 5-6 wk	[96]
73	*Moringa oleifera* Lam.	Moringaceae	Archangkawm	Leaves	Decoction, infusion	[87]
74	*Musa acuminate* Colla.	Musaceae	Balhla	Flower, fruit	Unripe fruit juice is taken orally	[98]
75	*Musa glauca* Roxb.	Musaceae	Saisu	Seeds, bark	The seeds are powdered and 5 to 10 g of powder is taken orally twice a day, for 6-8 wk. The water inside the bark is taken twice a day	[96, 98]
76	*Ocimum sanctum* L.	Lamiaceae	Runhmui	Leaves	Decoction	[87]
77	*Orthosiphon aristatus* (Blume.) Miq	Lamiaceae	Java tree	Leaves and stem	Decoction	[91]
78	*Oxalis corniculata* L.	Oxalidaceae	Sialthur	Leaves	Decoction	[87]
79	*Passiflora quadrangularis* L.	Passifloraceae	Sapthei lian chi	Leaves	Decoction	[97]
80	*Picrasma javanica* Blume	Simaroubaceae	Thingdamdawi	Bark	Decoction is prepared from bark, and two tablespoonfuls (15 ml) of decoction are taken orally twice a day, for 6-8 wk	[96]
81	*Psidium guajava* L.	Myrtaceae	Kawlthei	Leaves	Decoction	[87]
82	*Punica granatum* L.	Punicaceae	Theibuhfai	Fruit	Decoction	[87]
83	*Phaseolus vulgaris* L.	Fabaceae	Bean	Fruits	Cooked fruits are taken	[98]
84	*Physalis angulata* L. Var. *angulata* L.	Solanaceae	Kelasawirawphit /chalpang puak	fruits, stem and leaves	Decoction	[97]
85	*Phyllanthus emblica* Linn.	Euphorbiaceae	Sunhlu	Fruit	Infusion	[87]
86	*Phyllanthus fraternus* G.L. Webster	Euphorbiaceae	Mithi sunhlu	Whole plant and leaves	Whole plant decoction; boiled extract of leave is taken orally	[98, 90]
87	*Plantago asiatica* L.	Plantaginaceae	Kelbaan	Whole plant	Decoction	[94]
88	*Plantago major* L.	Plantaginaceae	Kel ba an	Leaves and stem	Decoction	[91]
89	*Ricinus cummunis* Linn.	Euphorbiaceae	Mutih	Flower	Decoction	[87]
90	*Rubia cordifolia* L.	Rubiaceae	Rawngsen	Root	Decoction	[87]
91	*Scurrula parasitica L.*	Loranthaceae	Thlilthli ek bawm	Whole plant and leaves	Decoction is taken twice day	[96, 97]
92	*Senecio scandens* L.	Asteraceae	Sai-ek-hlo	Whole plant	The whole plant is boiled and taken orally	[98]
93	*Solanum lycopersicum* Linn	Solanaceae	Sapbawkbawn	Fruit	Decoction	[87]
94	*Syzygium cumini* (Linn.) Skeel	Myrtaceae	Lenhmui	Bark, fruit, seed	Decoction	[87]
95	*Tinospora cordifolia* (Wild.) Hook. f & Th.	Menispermaceae	Theisawntlung/ hrui vankai/hrui vankai hnah mam	Leaves, bark	Decoction	[87]
96	*Thunbergia grandiflora* Roxb	Acanthaceae	Sky flower	Leaves	Decoction	[86]
97	*Vitex peduncularis* Wall.	Lamiaceae	Thingkhawilu	Bark	~50 ml decoction is taken twice a day for 2-3 months	[96]
98	*Zanthoxylum armatum* DC.	Rutaceae	Arhrikreh	Bark, fruit	Decoction	[87]
Nagaland						
1	*Abroma augusta* (L.) L.f.	Malvaceae	Ulatkambal	Fresh leaves	Decoction of fresh leaves	[99]
2	*Achyranthes aspera* L.	Amaranthaceae	-	Whole plant	Decoction	[100]

3	*Andrographis paniculata* (Burm.f.) Wall.ex.Nees	Acanthaceae	Kalmegh	Whole plant	Juice, powder of dried leaves	[100]
4	*Albizia lebbeck* Linn. Benth	Fabaceae	Moang (Ao tribe)	Stem and its bark	Dried powder of stem and bark are boiled and extract are drink	[99]
5	*Asparagus racemosus* Willd	Asparagaceae	Pongijo (Phom tribe)	Roots	Decoction of roots	[99]
6	*Azadirachta indica* A. Juss	Meliaceae	Neem	Leaf	Extract of leaf	[99]
7	*Bauhinia variegate* L.	Caesalpiaceae	Alphabo (Sumi tribe)	Roots and bark	Extract of root and bark	[99]
8	*Cajanus cajan* (L.) Millsp.	Fabaceae	Chiopi (Zeliang tribe)	Leaf	Boiled leaf is drink as tea	[99]
9	*Catharanthus roseus* (Linn.) G. Don	Apocynaceae	Ampoknaro (Phom tribe), Supienaro (Ao tribe)	Leaves and flowers	Decoction of leaves and flowers	[99]
10	*Cassia alata* L.	Fabaceae	Dadmari	Leaves	Decoction of leaves	[99]
11	*Cinnamomum tamala* (Buch-Ham) T.	Lauraceae	Tejpat	Leaves	Boiled leaves	[99]
12	*Cissampelos pareira* Linn.	Menispermaceae	Likhazung (Ao tribe)	Roots and leaves	Boiled extract of roots and leaves	[99]
13	*Clarodendron colebrookianum* D. Don	Verbenaceae	Oremwa (Ao tribe)	Leaves	Leaves are taken by simple boiling	[99]
14	*Coccinia indica* W. & A.	Cucurbitaceae	Kundru	Leaf and fruit	Leaf and fruit is consumed as vegetables	[99]
15	*Costus speciosus* (J. Konig) Sm	Costaceae	Crepe ginger, Konothie, Kebuk	Root	Root decoction	[100]
16	*Debregeasia longifolia* (Burm.f.) Wedd	Urticaceae	Natsulawa (Ao tribe)	Leaf	Leaf decoction is taken orally	[99]
17	*Dicentra scandens* (D. Don) Walp.	Fumariaceae	Phubai (Ao tribe)	Tubers	Extract of tubers	[99]
18	*Dioscorea alata* Linn.	Dioscoreaceae	Achuchu (Sumi tribe)	Tubers	Extract of tubers	[99]
19	*Diospyros peregrina* (Gaertn.) Gurke	Ebenaceae	Pipakinsang	Bark, fruits and seeds	Decoction	[100]
20	*Eclipta prostrata* Roxb.	Asteraceae	Bringaraja	Leaves	Leaf extract	[99]
21	*Elsholtzia stauntonii* Benth	Lamiaceae	Mint-shrub, Khanyhü	Leaves and seeds	Decoction	[100]
22	*Emblica officinalis* Gaertn.	Euphorbiaceae	Jakhethi (Lotha tribe), Aonla (Chakhesang tribe)	Fruit	Fruit extract	[99]
23	*Eucalyptus globules* Labill.	Myrtaceae	Eucalyptus (Ao tribe)	Leaves and flowers	Leaves and flowers extracts	[99]
24	*Euphorbia hirta* L.	Euphorbiaceae	Laghudugdhika	Leaves and flower	Leaves and flower decoction	[99]
25	*Gymnema sylvestre* R. Br.	Asclepidaceae	Gurmari	Leaves	Leaves are eaten once a day	[100]
26	*Gynura crepidioides* Benth.	Asteraceae	Monglibaza (Ao tribe)	Leaves	Leaf decoction is taken orally	[99]
27	*Juglans regai* L.	Juglandaceae	Lakhek	Leaves, bark, fruits	Extracts of the parts	[101]
28	*Juniperus racemose* Risso.	Cupressaceae	Vapusa	Berries	Decoction of berries	[99]
29	*Kalanchoe pinnata* (Lam.) Pers.	Crassulaceae	Hohlongkak (Phom)	Leaves	Leaves decoction	[99]
30	*Lagerstroemia speciosa* (L.) Pers.	Lythraceae	Pride of India	bark	Infusion of bark	[100]
31	*Melothria heterophylla* (Lour.) Cogn.	Cucurbitaceae	Hangkhapaitarere (Tangkhul –Naga tribe)	Fruits	Fruits is taken as vegetables	[99]
32	*Momordica balsamina* L.	Cucurbitaceae	Kora (Chang tribe)	Leaves and seed, fruits	Leaves as decoction, fruits and seeds as	[99]
33	*Momordica charantia* L.	Cucurbitaceae	Karela	Fruits	Fruits are taken by frying	[99]
34	*Momordica dioica* Roxb. Will	Cucurbitaceae	Bhat karela	Fruits	Fruits is taken as vegetables	[99]
35	*Morus alba* L.	Moraceae	Yong metiong	Leaves	Leaf is used as tea	[99]
36	*Mucuna pruriens* (L.) DC	Fabaceae	Mesener (Ao tribe)	Seeds	Seeds are used	[99]
37	*Musa ornata* Roxb.	Musaceae	Banano nano	Fruits, stems and leaves	Water extract	[100]
38	*Ocimum basilicum* L.	Lamiaceae	Nangparangtong	Leaves	Leaf decoction	[99]
39	*Ocimum tenuiflorum* L.	Lamiaceae	Tulasi	Leaves	Leaf decoction	[99]
40	*Oroxylum indicum* (Linn.) Benth. ex Kurz.	Bignoniaceae	Kakidziihe (Mao tribe)	Bark	Decoction of freshly peeled bark, dried peels of bark grounded and mixed with water	[99]
41	*Paederia foetida* L.	Rubiaceae	Ajungzu or sunemli (Ao tribe)	Whole plant	Whole plant is pounded into paste and the paste is taken orally	[99]
42	*Phyllanthus fraternus* G. L. Webster	Phyllanthaceae	Phyllanthus	Leaves, fruits and roots	Decoction	[100]
43	*Panax ginseng* C. A. Meyer.	Araliaceae	Tsudirmozu	Roots	Dried roots powder is taken orally	[99]
44	*Passiflora edulis* Sims.	Passifloraceae	Bel (Angami tribe)	Leaf	Decoction of leaves	[99]
45	*Perilla frutescens* (L.) Britt.	Lamiaceae	Napa –tong (Ao tribe)	Leaves and inflorescence	Powder of dried leaves and inflorescence are drank with water	[99]

46	*Phylogacanthus thytyrsiflorus* Nees.	Acanthaceae	Tuo-mozu (Ao tribe)	Leaves	Tea of powdered dried leaves	[99]
47	*Potentilla fulgens* Wall.	Rosaceae	Kijiichiini (Angami tribe)	Roots	Roots is tap and then eaten raw or decoction taken	[99]
48	*Punica granatum* L.	Puniaceae	Pomegranate, Jarem (Ao tribe)	Fruits and seeds	Decoction of fruits and seeds mixed with pure honey is taken orally	[99]
49	*Scoparia dulcis* L.	Plantaginaceae	Mithipatta	Whole plant	Whole plant extract	[99]
50	*Solanum annum* L. Black	Solanaceae	Cherry bomb, Kantakari	Fruits	Raw fruits	[100]
51	*Solanum nigrum* L.	Solanaceae	Tiitsishe (Chakhesang tribe)	Leaves	Leaves is boiled and taken along with extract	[99]
52	*Solanum trilobatum* L.	Solanaceae	Longkok or likok (Ao tribe)	Leaves	Leaf extracts	[99]
53	*Solena heterophylla* Lour.	Cucurbitaceae	Bankundri	Roots	Roots decoction	[99]
54	*Syzygiumcumini* (L.) Skeels	Myrtaceae	Jamun	Bark	Bark decoction	[99]
55	*Tamarinduss indica* L.	Fabaceae	Imli	Seeds and leaves	Extract of seeds and leaf	[99]
56	*Terminalia chebula* Retz.	Combretaceae	Haritaki	Seeds	Extract of seeds	[99]
57	*Tinospora cordifolia* (Thunb.) Miers	Menispermaceae	Guduchii	Stems	Extract of stem	[99]
58	*Zanthoxylum armatum* Roxb	Rutaceae	Mongmang (Ao tribe), Ganya (Angami)	Leaves and fruits	Leaves and fruits are chewed	[99]
			Sikkim			
1	*Abelmoschus esculentus* (L.) Moench	Malvaceae	Lady's finger	Whole plant	Cooked or raw	[105]
2	*Abroma augusta* (L.) L.f.	Sterculiaceae	Ulatkamal	Stem, leaves and bark	10-20 ml stem, bark and leaf decoction once alternate day in empty stomach for 4-6 wk	[103]
3	*Abutilum indicum* (L.) Sw.	Malvaceae	Ghantiphool	Stem and bark	20-50 ml of stem bark decoction twice daily after meal for 3-4 wk	[103]
4	*Aconitum palmatum* D. Don.	Ranunculaceae	Seto bikhumma, Nyini, Bhongnanukpo	Root	10-15 ml root decoction taken once daily with milk after meal for 7-10 days	[103]
5	*Acorus calamus* L.	Aracaceae	Bhojo	Rhizome	Decoction	[106]
6	*Aegle marmelous* (L). Corr	Rutaceae	Bael	Fruits and leaves	Powder of fruits and leaves	[106]
7	*Allium sativum* L.	Liliaceae	Lasun	Bulb, leaves, almost whole plant	Vegetable	[106]
8	*Aloe barbadensis* Mill	Liliaceae	Ghew kumari; Kumari	Leaves	40-50 gms. Fresh leaf pulp once a day in empty stomach for 10-12 days	[103]
9	*Amomum subulatum* Roxb.	Zingiberaceae	Alaichi, Sthoolaila, ma-ko-la	Rhizome and roots	Decoction	[107]
10	*Anthocephalus cadamba* (Roxb.) Miq.	Rubiaceae	Kadam	Leaves	Decoction	[104]
11	*Asparagus racemosus* Willd.	Liliaceae	Kurilo; Neusiri	Tender shoots	Decoction of tender shoots (25 ml) taken once a day for 6–8 wk	[103]
12	*Azadirachta indica* Juss.	Meliaceae	Neem	Leaves, seeds	Leaf decoction, seed powder	[107]
13	*Bauhinia vahlii* Wight & Arn.	Caesalpiniaceae	Verla	Stem bark	Decoction	[104]
14	*Berberis aristate* DC.	Berberidaceae	Sano Chutro; Sutangkung; Skyerba	Root and bark	Root bark extract (5–10 ml) taken twice daily (after breakfast and dinner) for 1–2 wk	[103]
15	*Boenninghausenia albiflora* (Hook. f.) Reich ex Meissn.	Rutaceae	Chirbirpatay	Whole plant	The whole plant is crushed without water and the juice (5–10 ml) taken one to two times daily for 3–4 weeks	[103]
16	*Calamus rotanga* (L.)	Arecaceae	Bet	Fruit	Raw fruit (1–2) taken as masticatory two times daily (after breakfast and lunch) for 6–8 wk	[103]
17	*Callicarpa arborea* Roxb.	Lamiaceae	Guahelo	Stem bark	Infusion of grinded stem and bark	[103]
18	*Calotropis gigantea* (L) W. Aiton.	Asclepiadaceae	Anhk	Leaves, flower	Paste of leaves and flower	[104]
19	*Campylandra aurantiaca* Baker	Liliaceae	Nakima	Flowers	Flowers are made into curry and taken with staple food two 20.times per wk for 4–6 wk	[103]
20	*Cannabis sativa* (L.)	Cannabaceae	Bhang	Leaves	Leaves extract (5–10 ml) taken two times daily for 3–4 weeks	[103]
21	*Cassia fistula* L.	Caesalpiniaceae	Raj Briksha	Leaves	Seed powder, flower and stem, bark decoction	[104]
22	*Catharanthus roseus* (L.) G. Don.	Apocynaceae	Sada bahar	Leaves	Raw leaf (1–2) chewed daily for 2 wk	[103]
23	*Centella asiatica* L.	Mackinlayaceae	Gora taprey	Leaves	Whole plant parts crushed and	[104]

					decoction	
24	*Chenopodium album* L.	Chenopodiaceae	Bethu saag	Root	Decoction	[104]
25	*Cinnamomum tamala* (Buch.-Ham.) Nees and Eberm.	Lauraceae	Sinkauli; Napsor; Mensing	Stem and bark	Decoction of stem bark taken three times daily for 3–4 wk	[103]
26	*Cissampelos pareira* (Buch.-Ham ex DC) Forman	Menisper- maceae	Batulpatay	Root and bark	Root bark extract (5–10 ml) tken one to two times daily for 2–3 wk	[103]
27	*Coccinea grandis* (L.) Voigt.	Cucurbitaceae	Tilkor	Root	Fresh root extract (5–10 ml.) taken two times daily (before principal meals) for 3–4 wk	[103]
28	*Costus speciosus* (Koening) Sm.	Costaceae	Betlouri; Ruyang	Rhizome	Decoction of rhizome (10–20 ml) taken two to three times daily for 2–4 wk	[103]
29	*Dillenia indica* L.	Dilleniaceae	Ramphal Paanca phal	Flowers	Extract	[104]
30	*Dioscorea alata* L.	Dioscoreaceae	Ghartarul	Rhizome	Boiled extract of rhizome	[104]
31.	*Drymaria cordata* subsp. *diandra* (Blume) J.A. Duke	Caryophyllaceae	Abhijalo	Whole aerial plant	Whole aerial plants cooked	[102]
32.	*Edgewotthia gardener* (Wall.) Meisn.	Thymelaeaceae	Argaily	Flower, stem bark	Decoction	[104]
33	*Fagopyrum esculentum* Moench	Polygonaceae	Mithey phapur	Bran	Cooked, tender leaves used as vegetable	[104]
34	*Ficus racemose* (L.)	Moraceae	Dumri	Fruit	20–25 ml fruit juice twice daily before meal for 4-8 wk	[103]
35	*Ficus semicordata* Buch.-Ham. Ex Sm.	Moraceae	Khasrey khaneu	Root, fruit, leaves	20-30 ml bark decoction is taken orally once a day for 5-6 wk	[104]
36	*Fraxinus floribunda* Wall.	Oleaceae	Lakuri	Bark	Decoction	[104]
37	*Garuga pinnata* Roxb.	Burseraceae	Dubdabay	Bark	Decoction	[104]
38	*Girardiana heterophylla* Decne.	Urticaceae	Bhangre sisnu	Root	25-50 ml root decoction twice daily for 4-8 wk	[103]
39	*Gloriosa superba* Linn	Liliaceae	Langarey tarul	Root tuber	Decoction	[104]
40	*Gynocardia odorata* R. Br.,	Flacourtiaceae	Gantay; Tukkung	Fruit	10-15 ml fruit juice once daily for 2 wk	[103]
41	*Hedychium spicatum* Buch-Ham.	Zingiberaceae	-	Rhizomes	The fresh extract of the rhizomes	[108]
42	*Holarrhena antidysentrica (*L.) Wall. ex A. Dc.	Apocynaceae	Anley khirrn	Bark, seed	Seed powder, bark decoction	[104]
43	*Jatropha curcas* L.	Euphorbiaceae	Hathikana	Leaf, twigs	Sun dried powder of leaf and twig, freshly as vegetables	[104]
44	*Ipomoea batatus* (L.) Lamk.	Convolvulaceae	Sagarkhanda	Aerial plant parts	25–30 ml juice of aerial plant parts twice daily for 3-4 wk	[103]
45	*Leea macrophylla* Roxb. Ex Hornem.	Vitaceae	Bulyettra	Root, leaves, seeds	Decoction	[104]
46	*Litsea cubeba* Pers.	Lauraceae	Siltimmur	Fruit	One raw fruit chewed as masticatory two times daily for 4–6 wk	[103]
47	*Malia azederach* L.	Meliaceae	Bakiana	Entire plant	Decoction	[104]
48	*Mallotus philippinensis* Muell.-Arg.	Euphorbiaceae	Numboongkor, Purva, Tukla, Sinduri, Kampillaka	Leaves	Decoction of leaves	[108]
49	*Momordica charantia* (L.)	Cucurbitaceae	Karela	Fruit	25 ml fruit extract twice daily for 12-14 wk	[103]
50	*Morus alba*. L. Kimbu	Moraceae	Mulberry	Fruits	Ripe fruits are eaten	[106]
51	*Nardostachys jatamansi* DC.	Valerianaceae	Jatamansi, Spanpos	Root	~50 ml root decoction once daily for 2-3 wk	[103]
52	*Nyctanthes arbor-tristis* Linn	Oleaceae	-	Leaves, flower	Young leaf juice, paste of flower	[105]
53	*Ocimum sanctum*. L.	Labiateae	Tulsi	Leaves	Decoction	[106]
54	*Oxalis corniculata L.*	Oxalidaceae	Chariamilo	Leaves	Extract of leaves	[104]
55	*Oroxylum indicum* (L.) Vent.,	Bignoniaceae	Sonaka, Totola, Phagorip	Bark	15-20 ml stem bark decoction taken twice daily	[103]
56	*Paederia foetida* (L.)	Rubiaceae	Birilahara, Takpoedrik	Leaves	Leaf infusion (50–60 ml) taken one time in the morning for 2–3 wk	[103]
57	*Physalis minima* L.	Raasbhari	-	Fruit	Raw fruits	[104]
58	*Panax pseudoginseng* Wall.	Araliaceae	Panch patay	Rhizome	Dried rhizome powder (0.5–1 g) taken one time daily with warm milk	[103]
59	*Picrorhiza kurrooa* Royle ex Benth.	Scrophulariaceae	Kutki, Putse sel	Rhizome	Dry rhizome powder (0.5 g) taken with two table spoon of curd and a pinch of pepper power once daily for 1–2 wk	[103]
60	*Potentilla fulgens* Wall	Rosaceae	Banmula	Root	Decoction of root (20–25 ml) taken two times daily for 4–8 wk	[103]

61	*Rubia cordifolia* Linn	Rubiaceae	Vhyem, Manjito	Root	Decoction	[108]
62	*Rubus ellipticus* Sm.	Rosaceae	Aeiselu	Fruit	Decoction	[104]
63	*Ricinus communis* L.	Euphorbiaceae	Rairi	Flower, seeds	Flower and seed decoction mixed with milk and drink	[104]
64	*Quercus lanata* Sm	Fagaceae	Banj	Bark	Decoction of stem bark (20–25 ml) taken one or two times daily for 2–3 wk	[103]
65	*Saraca asoca* (Roxb.) De Wilde	Caesalpiniaceae	Asok	Flowers	Infusion of the dry flower (50–100 ml) taken two times daily (before principal meals) for 4–5 wk	[103]
66	*Smallanthus sonchifolius* (Poepp.) H.	Asteraceae	-	Rhizome	As food	[105]
67	*Smilax zeylanica*L.	Smilacaceae	Kukur Daaino	Rhizome	Decoction	[104]
68	*Stephania glabra* (Roxb.) Miers	Menispermaceae	Tamarkay, Kanthey	Tubers, root	20-25 ml of root decoction taken with milk two to three times daily for 1–2 wk	[103]
69	*Stephania hernandifolia* Willd.	Menispermaceae	-	Tubers	Decoction	[109]
70	*Swertia angustifolia* Buch.-Ham.ex D	Gentianaceae	Patlay Chireto	Whole plant	~50 ml infusion of whole plant taken twice daily befor meal for 3-4 wk	[103]
71	*Swertia chirayita* (Roxb. ex Flem.) Karst.	Gentianaceae	Chireto, Rungkyon, Tagota	Whole plant	~50 ml infusion of whole plant taken once daily in empty stomach for 2 weeks	[103]
72	*Swertia pedicellata* Banerji	Gentianaceae	Chireto	Shoots	~25 ml decoction taken twice daily before meal for 4-6 wk	[103]
73	*Syzygium cuminii* (L.) Skeels	Myrtaceae	Kyamuna, Dzambu	Stem bark	~25 ml stem bark decoction taken thrice daily for 2–3 wk	[103]
74	*Tamarindus indica* L.	Caesalpiniaceae	Teet - teetee	Fruit pulp	Extract	[104]
75	*Terminalia chebula* Retz	Conbretaceae	Harra	Dry fruits	Chew the dry fruits	[106]
76	*Tinospora cordifolia* Miers	Menispermaceae	Gurjo	Root	Extract of roots	[104]
77	*Trigonella foenum-graecum* (L.)	Fabaceae	Methi	seeds	Sprouted seeds mixed with chilly, salt and garlic and ground into a paste. 5–10 g of the paste taken with two principal meals daily	[103]
78	*Urtica dioica* (L.)	Urticaceae	Sisnu, Sarong	Leaves and shoot	~100 ml young leaf and shoot decoction taken as curry one or two times daily with meals for 4–8 weeks	[103]
79	*Zingiber officinale* Rosc.	Zingiberaceae	Adua, Heng, Beasga	rhizome	~50 ml rhizome decoction taken as herbal tea with a pinch of salt 2-3 times daily for 8–12 wk	[103]
Tripura						
1	*Adhatoda vasica* Nees.	Acanthaceae	Vasak pata	Root, leaf, flower Whole plant	Decoction	[110]
2	*Andrographis paniculata* (Burm.f.) Wall. Ex Nees	Acanthaceae	Kalmegh	Flower, leaf	Juice	[110]
3	*Albizia procera* (Roxb.)	Mimosaceae	Koroi	leaf, flower, bark	Decoction	[110]
4	*Alocasia indica* (Roxb.) Schott.	Araceae	Mankachu,	Nuts, fruit and flower	Juice, shade dried powder	[110, 111]
5	*Alpinia galangal* Will	Zingiberaceae	-	Tuber, rhizome	Taken raw	[112]
6	*Ananas comosus* (L.) Merr.	Bromeliaceae	Amato	Seeds and stem bark	Fresh fruit pulp, Leaf decoction	[110]
7	*Andrographis paniculata* (Burm. f.) Wall. ex Nees	Acanthaceae	Chirata (K)	Whole Plant	Whole plant decoction	[111]
8	*Areca catechu* L.	Araceae	Supari	Flower andstem bark	Juice	[110, 113]
9	*Artocarpus chaplasa* Roxb.	Moraceae	Chamal	Bark	Extract of bark	[114]
10	*Artocarpus heterophyllus* Lamk.	Moraceae	Kathal	Leaves	Juice	[110, 115]
11	*Asteracantha longifolia* Nees	Acanthaceae	Kulekhara	Leaves	Leaf decoction or either eaten raw	[111]
12	*Averrhoa carambola* L.	Oxalidaceae	Kamaranga	Fruits	Fruit is advised to consume during Jaundice	[111]
13	*Azadirachta indica* Juss.	Meliaceae	Inkbow	Leaves, seed	Leaf decoction, Seed powder.	[110, 111, 116]
14	*Bacopa monnieri* (L.) Pennell	Scrophulariaceae	Bramhi	Leaves	Leaf juice is given until cure	[111]
15	*Bombax ceiba* L.	Bombacaceae	Shimul	Flowers, seeds, stem bark	Decoction	[110]
16	*Cajanus cajan* (L.) Millsp.	Papilionaceae	Arahar	Leaves, fruits	Decoction of leaf and also cooked	[111]
17	*Carica papaya* L.	Caricaceae	Papaya	Whole plant	Fruit pulp, shade dried seed powder	[110, 111]

18	*Catharanthus roseus* G. Don.	Apocynaceae	Nayantara	leaves	Decoction of fresh leaves	[110, 116]
19	*Cannabis sativa* L.	Cannabinaceae	Bhang	Seeds	Smoked seed powder	[110]
20	*Cassia fistula* L	Caesalpiniaceae	Aragvadha	Seeds	Seed powder, flower and stem bark decoction	[110]
21	*Cassia sophera* L.	Caesalpiniaceae	Kalkasunda	Seeds	Decoction	[110]
22	*Cassia tora* L.	Caesalpiniaceae	Panevar	Seeds	Shade dried seed powder	[117]
23	*Centella asiatica* (L.) Urb	Apiaceae	Thankuni	Whole plant	Whole plant parts crushed and decoction	[117]
24	*Cicca acida* Merr	Euphorbiaceae	Laboir	Leaves	Decoction	[110]
25	*Citrus limon* (L.) Osbeck	Rutaceae	Kagajilebu	Roots, Leaves	Decoction	[111]
26	*Clerodendrum viscosum* Vent.	Verbenaceae	Bhandirah	Whole plant	Extract	[110]
27	*Clausena heptaphylla* (Roxb.) Wightand Arn	Rutaceae	Kukra	Leaf	Crushed leaves	[116]
28	Coccinia indica (L.) Voigt	Cucurbitaceae	Telakuchi	Leaf, fruit	Decoction	[110, 111, 116]
29	*Cocos nucifera* L.	Araceae	Narikel	Whole plant	Freshfruitpulp, flower decoction	[110, 111]
30	*Colocasia esculenta* (L.) Schott	*Araceae*	Kocho	Leaf	Boiled leaf	[115]
31	*Cmorphophallus paeoniifolius* (Dennst.) Nicolson	*Araceae*	Batama	Corn	Boiled decoction	[115]
32	*Cucumis melo* L.	Cucurbitaceae	Kakur	C Whole plant part	Fruist pulp, plant decoction	[110]
33	*Cuscuta reflexa* Roxb	Convolvulaceae	Sarnalata	Whole plant part	Decoction of the plant along with coconut water	[116]
34	*Cynodon dactylon* (L.) Pers.	Poaceae	Durba	Whole plant	Fresh juice	[110]
35	*Cyperus rotundus* L.	Cyperaceae	Mutha	Rhizome	Fresh juice	[110]
36	*Dioscorea alata* L.	Dioscoreaceae	Guranialu	Rhizome	Decoction	[110, 113]
37	*Diptercarpus turbinatus* Gaertn.	Dipterocarpaceae	Garjan	Bark	Extract of bark	[117]
38	*Elettaria cardamomum* (L.) Maton	Zingiberaceae	Elaichi	Fruit, seed and leaf	Fruit and leaf decoction, seed powder	[110]
39	*Enhydra fluctuans* Lour	Asteraceae	Helencha	Leaves	Boiled leaf	[111]
40	*Ensete glaucum* (Roxb.)	Musaceae	Chisau	Pseudo-stem	Pseudo stem is eaten raw	[111]
41	*Entada phaseoloides* (L.) Merr.	Mimosaceae	Gila	Root bark	Paste of root bark	[111]
42	*Equisetum debile* Roxb. ex Vauch	Equisetaceae	Lai	Whole	Boiled extract of plant along with root extract of male *Carica papaya*	[118]
43	*Ehretia acuminata* (DC.) R. Br.	Boraginaceae	-	Bark	Decoction of bark	[110]
44	*Euphorbia hirta* L.	Euphorbiaceae	Bara dudhai	Whole plant	Fresh juice, Decoction	[110]
45	*Fagopyrum esculantum* Moench	Polyganaceae	-	Whole plant	Cooked, tender leaves used as vegetable	[118]
46	*Ficus pumila* L.	Moraceae	Ludisharbuho	Leaves	Decoction of leaf	[110]
47	*Garcinia pedunculata* Roxb. ex Buch.-Ham	Clusiaceae	Borthekera	Fruits	Raw fruits	[111]
48	*Glycosmis arborea* (Roxb.) DC.	Rutaceae	TuluthaPoka	Roots	Decoction	[111]
49	*Hemidesmus indicus* (L.) R.Br.	Apocynaceae	Anantamul	Rhizome	Decoction	[110]
50	*Hibiscus surattensis* L.	Malvaceae	Sarba-ameli	Leaves	Curry of tender leaves	[111]
51	*Hodgsonia heteroclite* (Roxb.) Hook f.& Thomson	Cucurbitaceae	-	Fruits	Raw fruit	[118]
52	*Holarrhena antidysenterica* (L.) R.Br.	Apocynaceae	Kurchi	Roots	Seed powder, bark decoction	[110]
53	*Hygrophilia phlomoides* Nees	Acanthaceae	-	Whole plant	Boiled extract of plants	[118]
54	*Ichnocarpus frutescens* (L.) R. Br.	Apocynaceae	Dugdhalata	Root, bark	Juice of old root barks and *Ziziphus oenoplia*	[111, 117]
55	*Ipomoea aquatica* Forssk	Convolvulaceae	Kamli	Stem, Leavs	Boiled leaf and stem	[111]
56	*Inula cappa* (Buch.-Ham. Ex D. Don.) DC.	Asteraceae	-	Leaves	Decoction	[118]
57	*Jussieua repens* L.	Onagraceae	-	Whole plant	Boiled extract of plant	[118]
58	*Kalanchoe pinnata* Pers.	Crassulaceae	Kophpata	Whole plant part	Fresh juice	[110]
59	*Leucaena galuca* L.	Mimoraceae	-	Leaves	Decoction	[118]
60	*Litsea monopetala* (Roxb.) Pers	Lauraceae	Kala deungra	Seeds	Decoction	[116]
61	*Litsea semecarpifolia* (Wall.Ex.Nees) Hook.f	Lauraceae	Leichchoshibiang	Leaves, seeds	Decoction	[116]
62	*Mangifera indica* L.	Anacardiaceae	Thaaychuk	Bark, Young leaf, Stem	Bark paste is boiled and water	[111]
63	*Marsilea minuta* L.	Marsileaceae	Susni	Leaf	Soup is prepared with its leaves.	[111]
64	*Melocanna baccifera* (Roxb.) Kurz	Poeaceae	Muia	Young shoot	As vegetable	[119]
65	*Mentha arvensis* L.	Lamiaceae	Pudina	Whole plant	Crushed decoction	[116]
66	*Meyna spinosa*Roxb. Ex Link	Rubiaceae	-	Fruits	Boiled extract of fruits	[113]

67	*Micromelum integerrimum* (Roxb. ex DC.) Wight Arn. Ex M. Roem	Rutaceae	Karai	Fruit, bark	Bark decoction	[116]
68	*Mikania cordata* (Burm.f.) B.L. Rob	Asteraceae	Noreshbodug	Leaves	Crushed leaves paste	[116]
69	*Momordica charantia* L.	Cucurbitaceae	Korola	Fruits, twigs	Extract of fruits and twigs	[117]
70	*Moringa oleifera* Lam	Moringaceae	Sajna	Leaves, stem	Crushed leaves and stems	[111, 116]
71	*Musa paradisiaca* L.	Musaceae	Mucha	Fruits, stem	Juice, decoction	[110, 115, 117]
72	*Neptunia prostrata* Baill	Mimosaceae	Panilajuk	Whole plant	Decoction of whole plant	[111]
73	*Nymphae arubra* L.	Nymphaeaceae	Podda kuchok	Leaf, stem and flower	Flower extracts, stem and leaf decoction	[110]
74	*Ocimum sanctum* L.	Lamiaceae	Bantha	Leaf, stem, flower twig and root	Decoction	[110]
75	*Oroxylum indicum* (L.) Benth. ex Kurz	Bignoniaceae	Tokharung	Bark	Decoction of bark is taken	[111]
76	*Pavetta indica* L.	Rubiaceae	-	Root	Root decoction	[111]
77	*Peristrophe fera* C.B. Clarke	Acanthaceae	-	Whole plant	Decoction	[118]
78	*Phlogacanthus thyrsiflorus* Nees	Acanthaceae	Vasaka	Leaves	Fresh juice	[110]
79	*Phyllanthus emblica* L.	Euphorbiaceae	Amloki Amla	Seeds	Roasted seed powder	[110]
80	*Phyllanthus niruri* Roxb. Ex Wall	Euphorbiaceae	Bon amlokhi	Fruits	Fruit is eaten raw	[111]
81	*Plumbago zeylanica* L.	Plumbaginaceae	Chitra	Leaves, root	Leaf juice, root paste	[111]
82	*Saccharum officinarum* L	Poaceae	Kussar	Stems	Stem juice	[111]
83	*Schima wallichii* (DC.) Choisy	Theaceae	Kanak	Leaves	Decoction of the leaf crushed.	[111]
84	*Scoparia dulcis* L.	Plantaginaceae	Nover kotornisam	Whole plant	Decoction.	[110, 111]
85	*Sesbania sesban* (Jacq.) W. Wight	Fabaceae	Jayanti	Leaf	Decoction	[110]
86	*Shorea robusta*Gaertn.	Dipterocarpaceae	-	Bark	Decoction of bark	[111]
87	*Smilax zeylanica* L.	Smilacaceae	Jangliaushbah	Root and leaf	Decoction	[111]
88	*Solanum nigrum* L.	solanaceae	Kakmachi	roots	Powdered roots	[111, 113]
89	*Solanum viarum*Dunal	Solanaceae	-	Fruits	Raw fruits	[118]
90	*Streblus asper*Lour	Moraceae	Sheora	Leaf	Decoction	[110]
91	*Syzygium cumini* (L.) Skeels.	Myrtaceae	Kala jam	Bark, fruit and seeds	Decoction	[110]
92	*Terminalia bellirica* (Gaertn.) Roxb.	Combretaceae	Boira	Fruits	Dried fruit dipped in water	[111]
93	*Terminalia chebula* Retz	Combretaceae	Hortokhi	Leaves, fruit	Seed decoction and powder	[110, 113]
94	*Thevetia peruviana*(Pers.) K. Schum.	Apocynaceae	-	Bark	Decoction	[118]
95	*Thunbergia grandiflora* Roxb	Acanthaceae	Vako	Root	Root powder	[111]
96	*Tinospora cordifolia* Miers	Menispermiaceae	Ghamacilata	Stem	Stem is cut into small pieces and soaked	[111]
97	*Typhonium trilobatum* (L.) Schott	Araceae	Kharkun	Leaves	Leaves are used as vegetable	[111, 113]
98	*Vanda tessellata* Hook. ex G. Don	Orchidaceae	Rashna	Leaves	Crushed leaf mixture	[111]
99	*Zanthoxylum Acanthopodium* DC	Rutaceae	-	Roots	Boiled leaf and root extract taken along with leaves of *Azadirachta indica* and *Justicia adhatoda* taken in equal proportion	[118]
100	*Ziziphus oenoplia* (L.) Mill	Rhamnaceae	Bonbaroi	Bark	Grinded bark	[111, 113]

4. Results and Discussion

During this review process we could retrieve 131 research papers covering all the 8 states of North Eastern region of India. It was found that the same plant material and part(s) are being used differently in different states, ethnic tribes and also in different doses for controlling diabetes. The main plant parts used range from leaves, bark and roots to the whole of the plants. The study observed that the decoction of plant parts using water as the primary preparation medium is a standard treatment method. Some of the plants are also taken as either raw or cooked. Though this review compiled 407 plants from several families has been used to treat anti-diabetics in the states of northeast India, most of the information are ethnomedicinal information beased on traditional knowledge. It was a sriprising fact that though over 400 plant and plant parts are being used traditionally for either treating or controlling diabetes, there is very little known on pharmacological and or clinical training. Out of these plants, only 38 plants are subjected to pharmacological testing in different states (Table 2). The plant parts utilized are a random collection of local people's knowledge that needs proper scientific confirmation. Some of the clinical trials show anti-hyperglycemic effects in STZ-induced animal models. Some are tested for alpha-glucosidase and alpha-amylase and are reported to show high inhibition. Data relating to acute and chronic toxicity are in high demand to develop safe plant-based supplements and drugs against diabetes. There is a chance of using improper portions of the plants; thus, screening and evaluating biochemical constituents are essential.

Table 2: Antidiabetic potential ethnomedicinal plants from NE India subjected to pharmacological investigation

Sl. No.	Species Name	Family	State	Pharmacological trial done	Reference (s)
1	*Alpinia galangal* (L.) Willd.	Zingiberaceae	Manipur	Shows high inhibition in alpha amylase enzyme test	[69]
2	*Eryngium foetidum* L.	Apiaceae	Manipur	Tested for alpha amylase inhibition	[69]
3	*Maesa indica* (Roxb.) A. DC.	Myrsinaceae	Manipur	Tested for both alpha amylase and alpha glucosidase inhibition and shows actehypoglycemic activity	[62]
4	*Wendlandia glabrata* DC.	Rubiaceae	Manipur	Tested for alpha glucosidase and anti-hypergylcemic effects in STZ induced animal models	[80]
5	*Ficus cunia* Ham. ex Roxb.	Moraceae	Manipur	Tested for alpha glucosidase and anti-hypergylcemic effects in STZ induced animal models	[80]
6	*Antidesma diandrum* Retz.	Euphorbiaceae	Manipur	Tested for alpha glucosidase	[80]
7	*Ardisia colorata* Roxb.	Myrsinaceae	Manipur	Tested for alpha glucosidase	[80]
8	*Artemisia maritima* Linn.	Asteraceae	Manipur	Tested for alpha glucosidase	[80]
9	*Curcuma angustifolia* Roxb.	Zingiberaceae	Manipur	Tested for alpha glucosidase	[80]
10	*Cyperus esculentus* Linn.	Cyperaceae	Manipur	Tested for alpha glucosidase	[80]
11	*Euryale ferox* Salisb.	Nymphaeaceae	Manipur	Tested for alpha glucosidase	[80]
12	*Kaempferia rotunda* Linn.	Zingiberaceae	Manipur	Tested for alpha glucosidase	[80]
13	*Leucaena leucocephala* (Lam.) de Wit.	Fabaceae	Manipur	Tested for alpha glucosidase	[80]
14	*Litsea monopetala (*Roxb.) Pers.	Lauraceae	Manipur	Tested for alpha glucosidase	[80]
15	*Lysimachia obovata* Z.D.H.	Primulaceae	Manipur	Tested for alpha glucosidase	[80]
16	*Pentaneura khasiana* Kurz.	Asclepiadaceae	Manipur	Tested for alpha glucosidase	[80]
17	*Quercus serrata* Murray	Fagaceae	Manipur	Tested for alpha glucosidase	[80]
18	*Schima wallichii* (DC.) Korth.	Theaceae	Manipur	Tested for alpha glucosidase	[80]
19	*Dillenia indica* L.	Dilleniaceae	Assam	anti-hypergylcemic effects in STZ induced animal models	[58]
20	*Costus pictus* D.	Costaceae	Assam	anti-hypergylcemic effects in STZ induced animal models	[41]
21	*Garcinia lanceifolia* Roxb.	Clusiaceae	Assam	exhibited a very potent dose-dependent antidiabetic activity when tested in animal model	[120]
22	*Lasia spinosa* L.	Aracaceae	Assam	anti-hypergylcemic effects in STZ induced animal models	[120]
23	*Musa paradisiaca* L.	Musaceae	Tripura	Tested for antidiabetic activity in animal model and found decreasing fasting glucose level and serum hemoglobin	[121]
24	*Amorphophallus paeoniifolius* (Dennst.)	Araceae	Tripura	Tested for antidiabetic activity in animal model and found decreasing fasting glucose level and serum hemoglobin	[121]
25	*Colocasia esculenta* (L.) Schott	Araceae	Tripura	Tested for antidiabetic activity in animal model and found decreasing fasting glucose level and serum hemoglobin	[121]
26	*Saccharum spontaneum* L.	Poaceae	ArunachalPradesh	anti-hypergylcemic effects in STZ induced animal models	[122]
27	*Mallotus roxburghianus* Mull. Arg.	Euphorbiaceae	Mizoram	anti-hypergylcemic effects in STZ induced animal models	[124]
28	*Olax acuminata* Wall. ex Benth.	Olacaceae	Meghalaya	anti-hypergylcemic effects in STZ induced animal models	[84]
29	*Bauhinia acuminata* L.	Fabaceae	Meghalaya	anti-hypergylcemic effects in STZ induced animal models	[84]
30	*Zanthoxylum armatum* DC.	Rutaceae	Meghalaya	Both alpha amylase and beta glucosidase inhibition were tested and anti-hypergylcemic effects in STZ induced animal models was also tested	[123]
31	*Ixeris gracilis* (DC.) Stebbins	Asteraceae	Meghalaya	anti-hypergylcemic effects in STZ induced animal models	[125]
32	*Smilax perfoliate* Lour.	Smilacaceae	Meghalaya	Anti hyperglycemic activity and oral glucose tolerance test were conducted on animal model	[126]
33	*Flemingia macrophylla* L.	Fabaceae	Meghalaya	Hypoglycemic and anti-hyperglycemic effect on mice were tested	[127]
34	*Myrica esculenta* Buch.-Ham. ex D.Don	Myricaceae	Meghalaya	Hypoglycemic and anti-hyperglycemic effect on mice were tested	[128]
35	*Osbeckia chinensis* L.	Melastomataceae	Meghalaya	Hypoglycemic and anti-hyperglycemic effect on mice were tested	[129]
36	*Houttuynia cordata* Thunb.	Saururaceae	Meghalaya	anti-hypergylcemic effects in STZ induced animal models	[130]
37	*Drymaria cordata* (L.) Willd. ex Schult.	Caryophyllaceae	sikkim	anti-hypergylcemic effects in STZ and nicotinamide induced animal models	[102]
38	*Berberis aristate* DC.	Berberidaceae	Sikkim	anti-hypergylcemic effects in STZ induced animal models	[131]

5. Conclusion

This study contributes as evidence and supports the use of medicinal plants traditionally. This current study reveals the importance of documentation of ethnobotanical plants to pass on the generations of knowledge and scientifically support the current uses of medicinal plants. Some plants have shown their effects as antidiabetic by controlling hyperglycemia. They are potent inhibitors of alpha-glucosidase and have high inhibition activities towards alpha-amylase. Thus this demonstrated the need for wide clinical trials to prove their antidiabetic effects. With the ever-increasing demand for drugs, utilising medicinal plants and mass multiplication of various plant species has become very important. The plants thus mentioned can also be designed as helpful food for avoiding the diabetic effect. It can also be a helpful nutrient supplement for a diabetic patient. Detailed evaluation of bioactive compounds and their mechanism of action is one of the main activities that need to be done.

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