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Eating from the wild: an insight into the indigenous wild edible plants consumed by the Digaru Mishmi tribe of Arunachal Pradesh

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Anjaw district is situated at the extreme foothill of eastern himalaya of Arunachal Pradesh, distinctive in its nature by having a rich diversity of wild edible plants rich in nutrition as well as medicinal properties. Ethnically, the Digaru Mishmi tribe (inhabitants) of the district adopted the traditional way of consuming these rich ethnobotanical resources to fulfill their daily nutrition & health care. These plants have traditionally occupied an important position in their socio-cultural, spiritual and health aspects of the rural tribal lives. So, the consumption of wild edible plants as a food source has been an integral part of the indigenous people's culture. To get an insight into the Digaru Mishmi people's way of lifestyle, the present study was conducted to explore, identify & document the ethno botany of the Digaru Mishmi people and to record their unique knowledge about wild edible plants. Around 57 species were found & all the plants used by the tribe are tabulated in alphabetical order along with botanical name, vernacular name (Digaru Mishmi), family, parts used, food value and ethnomedicinal uses. Wild edible plants form a good source of protein, fat, vitamins, sugar and minerals requirement of the tribal people to a greater extent. Hence, the paper highlights the identification diversity of wild edible plants and its documentation.

Keywords: Anjaw, Digaru Mishmi, Edible plants, Ethnic, Indigenous

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Since time immemorial the tribal inhabitants of the state have been consuming the edible leafy vegetables from the wild and their traditional knowledge and practice can still be perceived in their various cuisines. They collect and eat wild edible plants as food. According to FAO, around one billion people consume wild foods in their everyday diet (Aberounmand A. 2009). This ethnic group resides in the Eastern part of the country, 'Arunachal Pradesh-The Land of Rising sun'. The state is situated in the lap of Eastern Himalayas and is a natural hub of many medicinal and edible plants having around 5000 species of plants indigenous to it **(**APHRDM) 2014: VII).The state has also been recorded as the country's highest medicinal plant repository of a record of 500 species till date, but much is still to be explored. The state comprises of 21 districts which is inhabited by 26 major diverse tribes and 100 sub tribes. Among them Mishmi tribe is one such major tribe residing populous in Dibang valley, Lower Dibang valley, Lohit and Anjaw districts of Arunachal Pradesh. The present study was conducted in Anjaw district situated in the extreme corner of the country, which shares international boundaries with China in the North and Myanmar in the Southeastern region. It has also been witnessed that the first morning sun ray of India touches the Mountains of Dong village, under Walong circle of Anjaw district. Rivulets and glittering waterfalls meeting the roaring 'Lohit' river, ridges, valleys, steep cliffs, snow caped rocky mountain and dense greenery forest are the main attractive features of the district. The district has different topographic land situation and land form with four different agro-climatic zones from alpine, temperate, sub temperate and sub-tropical hills.

Consumption of wild edible plants as a food source has been an integral part of the Indigenous people's culture. Nearly 80% population of Anjaw district still

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live in remote villages where there is still no road connectivity and no means of transportation till date. Living is not as easy and beautiful as its mesmerizing scenic beauty. People still transport their normal livelihood amenities like rice, salt, sugar, vegetables, medicines, clothes, blankets, etc. on foot march by crossing hanging bridges and climbing mountains since settling at higher altitude. Apart from hunting, gathering, fishing and other related activities they have to rely mostly on the production from forests. Hence, the tribal folks mainly depend upon the locally available wild vegetables for their subsistence requirements. The (Fig. 1) shows an age-old Mishmi woman seen collecting wild edible plants. The nutritional value of the wild plants is higher than several known common vegetables (Ogle *et al.* 2000, Sundriyal *et al.* 2001). These plants have traditionally occupied an important position in the socio-cultural, spiritual and health aspects of the rural and tribal lives (Namrata *et al.* 2011). Many of the plants have high nutritive and medicinal value. The people prepare various delicacies using these plants in their daily consumption. They derive major share of their food and energy necessity from wild edible plants, i.e., by extraction and collecting from the forest directly and so far, are not cultivated. Even though the importance of wild edible plants has been cited by many researchers but still wild edible plants are not appreciated or valued as cultivated plants even though it has been reported (Balemie *et al.* 2006 and APHRDM 2014: VII) that it can supplement nutritional requirement especially vitamins, macro and micronutrients. The nutritional quality of these wild edible plants has also shown superior to many domesticated common vegetables **(**Mengistu *et al.* 2008).

At present, traditional folk knowledge of the wild edible plants of the Digaru Mishmi people is at the verge of its disappearance due to many factors such as immigration of villagers to towns, availability of high value foodstuff in the market, changing socio-economic conditions, availability of common vegetables in the market and mostly importantly lack of documenting the traditional knowledge. Many wild plant species are believed to possess edible value and are not documented yet (Grivetti *et al.* 2000). So in order to conserve them, the present study was designed in such a way to document the traditional knowledge of the wild edible plants of the Digaru Mishmi people, to study the taxonomic survey of less known wild edible plants species distributed in the study area and identify its edible form, or part used and its utility among the tribal community. This study

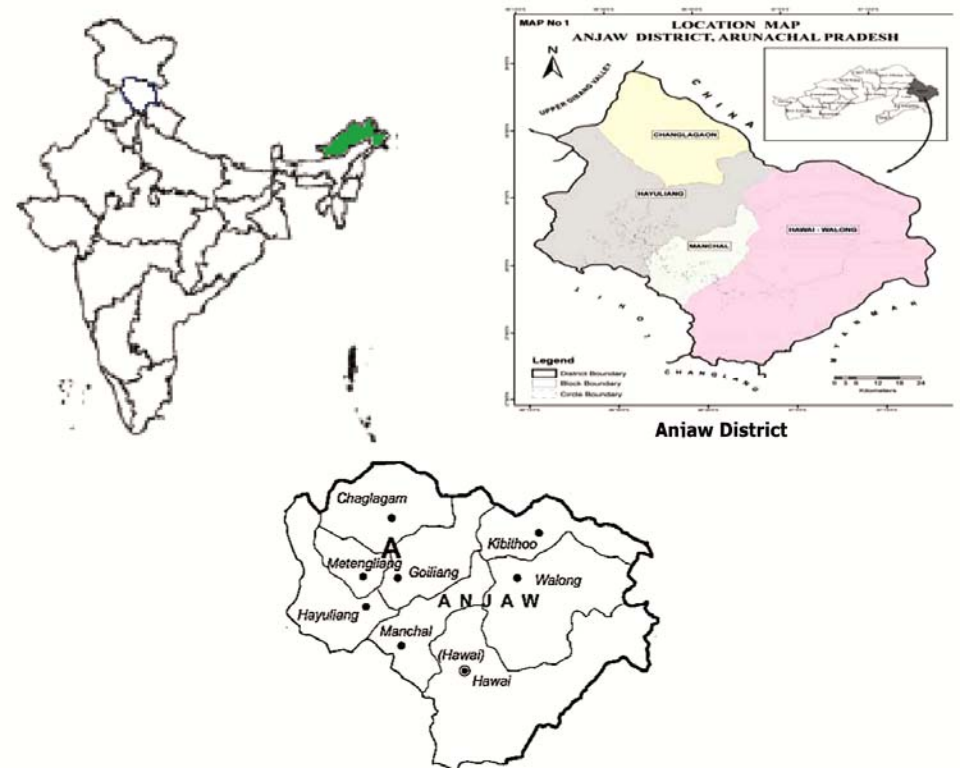

Fig. 1 — Map showing Anjaw District of Arunachal Pradesh

is an attempt to identify and document the traditional knowledge of the Digaru Mishmi tribes, henceforth be beneficial for the students, officers and academicians for further research.

Material and methods

The survey was conducted in Anjaw district (Fig. 2) of Arunachal Pradesh to study the ethnobotany (study of interrelations of primitive man and plants reported by Mengistu and Hager 2008) of the Digaru Mishmi people and to record their unique knowledge about wild edible plants. The district has an area of 7098.99 sq. km and by geographical area, it accounts for 7.39% of the total state area. It is situated between *22˚-29'* to *23˚-30'* N Latitude and *95˚-15'* to *97˚-24'*E Longitude (C-DAP of Anjaw, Department of Agriculture 2012-13). The area receives annual rainfall of 2847.76 mm (IMD, Govt. of India). The altitude ranges from 501 m to 6000 m amsl and hence the district enjoys wide range of agro-climatic zone from subtropical to alpine type of climate. It experiences heavy to moderate rainfall from May till September receiving an average annual rainfall of 3987.32 mm (DPR) and temperature ranges between 17.6–27.5ºC. The major soil types of the area are black loamy soil (40%) followed by black loamy fine soil (22%), sandy fine loamy black soil (20%) and sandy coarse loamy black soil (18%).

The district has an extensive flora fauna which are also used as common property resources of the whole community. The dominant ethnic groups of Anjaw district are Miju Mishmi and Digaru Mishmi, while Zakhring and Mayors are other ethnic groups.

During the year 2015-16 and 2016-17 and 2017-18, several trips were undertaken to different villages, viz., Chaglogam, Metengliang, Taflagam, Mithumna, Kambing, Manchal, Yatong, Manjulaing, Yakung, Amliang, Naraliang, Lautul, Kongra, Hawai, Klamdi, Barofu and Paya to document wild edible plants. To acquire the information on wild edible plants, frequent interaction and discussions were made with the local villagers. Questionnaire was prepared for collection of data such as village name, date of visit, address of respondent, age, sex and ethnic group, vernacular names, botanical name, food value and ethnomedicinal uses. Live specimens along with photographs were also taken for identification by referring scientific literatures.

Fig. 2 — An age-old Mishmi woman seen collecting wild edible plants

Results and discussion

Many scholars have documented the ethno medicobotany of the different indigenous tribal communities of Arunachal Pradesh **(**Kohli, 2001; Tag and Das, 2004; Mutem and Das, 2005; Kala, 2005; Dutta and Bhattacharjya, 2005; Tarak *et al*., 2009; Goswami *et al*., 2009; Sen *et al.*, 2009; Srivastava and Adi Community, 2009; Srivastava and Nyshi Community, 2010; Doley *et al*., 2010; Jeri *et al.*, 2011; Namsa *et al.*,2011; Khongsai *et al.*,2011; Nimachow *et al*., 2011 and 2012; Bora *et al.*, 2012; Das *et al.*, 2013). However, there has been no documentation on the ethnomedicinal plants consumed by the Digaru Mishmi tribe of Anjaw district. Therefore, the present study was conducted to show sufficient evidence about the existing traditional knowledge of Digaru Mishmi tribe about its wild edible plants. It was found out that the climatic condition, topography and soil of Anjaw district, Arunachal Pradesh provided the suitable congenial environment for the growth of several valuable and economically important plants. The study also reflected that mostly the elderly people from the villages had better knowledge of wild edible plants in compared with the younger generation. This traditional knowledge is however, currently threatened due to over extraction and deforestation due to anthropogenic activities, increasing influence of modernization and migration of the younger generations to urban areas, resulting in a hole in the beliefs and practices of indigenous tribal people. The plant-based knowledge, largely oral, has been transferred from one generation to the next through traditional healers, knowledgeable elders or ordinary people without any written documents (N D Namsa *et al.*, 2011).

The survey revealed that common people, most healers and plant practitioners of Digaru Mishmi

tribe consumed a total of about 57 wild plant species, belonging to 22 different families (Malvaceae, Alliaceae, Amaranthaceae, Asteraceae, Brassicaceae, Cucurbitaceae, Araceae, Apiaceae, Solanaceae, Chenopodiaceae, Lauraceae, Verbenaceae, Polypodiaceae, Urticaceae, Polygonaceae, Saururaceae, Convolvulaceae, Lamiaceae, Rubiaceae, Oleandraceae, Piperaceaeand Rutaceae) (Table 1) for ulcer, stomach ailments, burns, earache, fevers, hypertension, constipation, fits, asthma, stomach ache, worms, infertility complications, snake bites, diarrhea, malaria, toothache, throat-gum infections, high blood cholesterol, blood sugar, asthma, liver problems, intestinal problems.

Table 1 — List of indigenous wild edible plants with their Scientific name, Family, Vernacular name, Edible parts, Food value and uses.

Sl. No.	Botanical Name	Family	Vernacular name (Mishmi)	Edible parts	Food value	Ethno-medicinal uses
1.	*Abelmoschus moschatus* Medik.	Malvaceae	Harang pulo	Leaves and Seeds	Leaves & shoots are eaten as vegetables	Hoarseness & dryness of throat, scabies, nervous disorders, hysteria, gonorrhoea diseases
2.	*Allium hookeri* Thwaites	Alliaceae	Alo/Pulo	Leaves, flowers and bulb	Bulb and leaves are used as spice to add flavour to chutneys.	Its juice when mixed with salt is used to cure ulcer and stomach ailments.
3.	*Allium ampeloprasum*	Alliaceae	Lakshon	Swollen stem (pseudo-stem)	Leeks are consumed as salad and add flavor to their local cuisine	The economic part is blanched stem and leaves (broad) which are highly nutritive and rich in medicinal properties, especially for heart ailments.
4.	*Allium cepa var. aggregatum*	Alliaceae	Piaz	Leaves and bulb	Bulb and leaves are used as spice.	Used to cures high blood cholesterol, blood sugar, asthma, liver problems, intestinal problems and locally cures fever.
5.	*Allium chinense*	Alliaceae	Dilaap/Alo	Leaves and bulb	Bulb consumed as raw or cooked	Help reduce blood cholesterol levels, act as a tonic to the digestive system and circulatory system
6.	*Allium macranthum*	Amaryllidaceae	Macau	Leaves and bulb	Bubs & leaves are eaten as vegetables	Prevents absorption of cholesterol & blood pressure
7.	*Allium tuberosum*	Alliaceae	Machai	Leaves and bulb	Used as salad or in culinary purpose	Promote intestinal peristalsis, prevent the occurrence of colorectal cancer, while reducing the absorption of cholesterol, prevents heart disease, promote digestion as well as cure anemia
8.	*Amaranthus dubius* Mart. ex Thell	Amaranthaceae	Saining	Leaves and young shoots.	Mainly used as a subsistence leafy vegetable.	Rich source of vitamins and minerals
9.	*Amaranthus hybridus*	Amaranthaceae	Chigning	Leaves, seeds and young shoots	Leaves cooked as spinach, added to soups or eaten raw.	Rich source of vitamins (A and B), minerals (calcium and iron) and folic acid
10.	*Amaranthus hypochondriacus*	Amaranthaceae	Khana	Leaves, seeds and young shoots.	Used as vegetables.	Leaves are used against constipation.
11.	*Amaranthus viridis* L	Amaranthaceae	Khana Ja	Leaves and young shoots.	Used as vegetables.	Used to cure dysentery and inflammation and also taken to treat constipation.
12.	*Artimisia indica* Willd.	Compositae/ Asteraceae	Khalap	Leaves and young shoots.	Used as vegetables.	Its juice is used in the treatment of diarrhea, dysentery and abdominal pains. The tribal people use the plant paste to treat external wounds.

(*Contd*.)

Table 1 — List of indigenous wild edible plants with their Scientific name, Family, Vernacular name, Edible parts, Food value and uses. (*Contd*.)

Sl. No.	Botanical Name	Family	Vernacular name (Mishmi)	Edible parts	Food value	Ethno-medicinal uses
13.	*Brassica campestris* L.	Brassicaceae	Turi	Leaves and young shoots	Used as vegetables.	Leaves are used to relieve headache. Seeds are used for extracting mustard oil.
14.	*Brassica juncea var. rugosa*	Brassicaceae	Ka jung na	Leaves and young shoots	Most common edible leafy vegetables.	Brown Mustard is a folk remedy for arthritis, foot ache and rheumatism.
15.	*Benincasa hispida*	Cucurbitaceae	Tham mangil	Immature fruits	Used as vegetables.	It is considered good for people suffering from nervousness. It is also consumed to help prevent dysentery and diarrhoea.
16.	*Colocasia esculentum* (L.) Schott	Araceae	Asum or Sam-ma	Leaves and young shoots.	Edible corm and leaves are consumed as vegetable	It is recommended for gastric patients
17.	*Colocasia giganatea* Hook	Araceae	Sam leo	Leaf stalk and leaves	Leaf stalk & tender leaves are fried as well as boiled.	It is recommended for gastric patients
18.	*Centella asiatica* (L.)Urban	Apiaceae	Kaso Kruna or sewal ing	Whole plant is used.	Used in chutney and as vegetables	Cures skin disorder, syphilis, rheumatism, leprosy, epilepsy, nervous and immune system disorders.
19.	*Capsicum annum var. glabriusculum*	Solanaceae	Pachak Hatio or Beechi	Fruits	Used as spice for its pungency	It is good against cold.
20.	*Capsicum chinense* Jacquin	Solanaceae	Pachak Cla	Fruits	Used as spice for its pungency	It is used against diarrhoea, diabetes and delirium.
21.	*Capsicum frutescens* L.	Solanaceae	Pachak Hajing	Fruits	Used as spice for its pungency	Cures sore throat, relieves cough and cold.
22.	*Chenopodium album* L.	Chenopodiaceae	Khanaja	Leaves, tender shoots and seeds.	As vegetables	Used as carminative, laxative, anthelmintic, diuretic and as tonic.
23.	*Cinnamon tamala*	Lauraceae	Dalcini	Stem or bark and leaves	Bark/ leaves used as spice for flavoring food	Bark used in treating rheumatism
24.	*Clerodendrum colebrookianum* Walp.	Verbenaceae	Tuplickna or li pha fu	Leaves and tender shoots	Used as vegetables	Consumption of leaves & young shoots controls high blood pressure. Also applied in wounds for blood clotting
25.	*Cucurbita maxima* Duchesne.	Cucurbitaceae	Miniature pumpkin/ Kupra	Tender leaves and fruit	Used as vegetables	Used in burns and inflammation.
26.	*Cucumis sativus*	Cucurbitaceae	Gil	Fruits	Used as salad	Fresh or cooked, it is a main ingredient for salads. It is also consumed for its watery contents.
27.	*Cymbopogon citratus*	Poaceae	Machang or Adum sou sing	Leaves	Used as vegetables for its aroma	Popularly used in “Chambai” their cuisine for its aroma. Also used in teas, soups, and curries. Have Spiritual importance also, hence used in performing local rituals too.
28.	*Cyclanthera pedata* (L.) Schrad.	Cucurbitaceae	Chichu karela	Fruits & tender young shoots	Fruits are also eaten raw or cooked. Leaves and tender young shoots cooked and used as greens	Used for high blood pressure and gastrointestinal disorder.

(*Contd*.)

Table 1 — List of indigenous wild edible plants with their Scientific name, Family, Vernacular name, Edible parts, Food value and uses. (*Contd*.)

Sl. No.	Botanical Name	Family	Vernacular name (Mishmi)	Edible parts	Food value	Ethno-medicinal uses
29.	*Diplazium esculentum* (Retz.) Swartz, J. Bot. (Schrad.)	Polypodiaceae	Kajingna or khajung	Leaves and tender shoots	Used as a vegetable by frying along with potato.	It relieves indigestion.
30.	*Debregeasia longifolia (*Burm.F.) Wedd.	Urticaceae	Nyajumna	Tender leaves.	Used as vegetables	Helps indigestion.
31.	*Eryngium foetidum* L.	Apiaceae	Damgra/Tanum-tananang	Leaves	Used as spice due to its unique taste and aroma	Helps in curing burns, earache, fevers, hypertension, constipation, fits, asthma, stomach ache, worms, infertility complications, snake bites, diarrhea and malaria
32.	*Fagopyrum esculantum* Moench	Polygonaceae	Tolaina	Tender leaves and stem	Used as vegetable.	Used for treatment against diarrhea, hemorrhage, eczema, liver disorder and high blood pressure.
33.	*Girardinia zeylanica* Decne.	Urticaceae	Tacha/Diming	Tender shoot.	Young shoot is used as vegetable only after proper boiling	Leaf extract is used against gonorrhea. Fine silky fibre is obtained from stems used in making ropes, twine and coarse cloth.
34.	*Gynura cusimbua* (D.Don) S. Moore	Asteraceae	Aglaina	Tender shoot/ leaves	Consumed as a local vegetable	Juice of stem and leaves are applied to fresh wounds for stopping bleeding and fast healing.
35.	*Houttuynia cordata* Thunb.	Saururaceae	Amkhalai	Leaves and roots	Used as spice for garnishing	Have antiviral, antibacterial and anti-leukemic properties. Fights against many diseases like arthritis, body ache, cures cholera, dysentry and relieve stomach aches.
36.	*Ipomaea batatas*	Convolvulaceae	Guha	Tender leaves and its tuber	The young and tender leaves are used as vegetables.	It contains 33% starch and 3% sugar. Rich source of carbohydrates, protein, vitamins (B_1, B_2, B_6 and C) and minerals (Ca, P and Fe).
37.	*Litsea cubeba*	Lauraceae	Alup si	Fruits	Fruits are used as masala in Mishmi local dishes	Ripe or unripe fruits are eaten fresh as a remedy for cold & cough, thread worm infection and for good sleep.
38.	*Mentha arvensis L.*	Lamiaceae	Pudina	Tender stem	Leaves are used in chutney.	Used in congestive disorder, headache and toothache
39.	*Mussaenda glabrata* Hutch	Rubiaceae	Palaphan	Leaves and tender shoots	Used as vegetables	Used for treating stomach ulcer and mouth ulcer. Leaves are used in cuts and wounds.
40.	*Nephrolepis exaltata*	Oleandraceae	Tu tala Shabrang or arik pap	Fruits	Fruits are usually consumed for its juice when thirsty	Helps in urinary infection & discharges.
41.	*Ocimum basilicum*	Lamiaceae	Sowsang	Leaves & seeds	Leaves used as spice	It helps in poor digestion, nausea, abdominal cramps, gastro-enteritis, migraine, insomnia, depression and exhaustion.
42.	*Phaseolus vulgaris*	Leguminosae	Pachung	Fruits	Used as vegetables	The green pods are mildly diuretic and contain a substance that reduces the blood sugar level. It is used in the treatment of diabetes.
43.	*Piper sylvaticum* Roxb	Piperaceae	Ahamna	Leaves and tender shoots	Used as vegetable	The plant is used against rheumatic pain and body pain after child birth.

(*Contd*.)

Table 1 — List of indigenous wild edible plants with their Scientific name, Family, Vernacular name, Edible parts, Food value and uses. (*Contd.*)

Sl. No.	Botanical Name	Family	Vernacular name (Mishmi)	Edible parts	Food value	Ethno-medicinal uses
44.	*Pouzolzia benethiana* (Blume ex Hasskari)	Urticaceae	Siglikna	Leaves and tender shoots	Used as vegetables	Young shoots are used against acidity in stomach
45.	*Sechium edule Swartz*	Cucurbitaceae	Chow-chow/ isquash	Immature fruits	Used as vegetable	Chow-chow is rich source of calcium.
46.	*Solanum betaceum*	Solanaceae	Masang tomator	Immature fruits	The fruits are eaten raw or cooked	The fruit is rich in Vitamin C and its soup is said to be good remedy for patients suffering from constipation.
47.	*Solanum gilo* Raddi	Solanaceae	Tanaka	Immature fruits	The unripe fruits are eaten as vegetable	Used as demulcent, depurative, diaphoretic, parasiticide, stimulant and as a tonic.
48.	*Solanum indicum* Linn.	Solanaceae	Chikrang Sai	Immature fruits	The unripe fruits are eaten as vegetable	Used against asthma, dry cough, colic, flatulence, bronchitis, constipation and dropsy. The fruits are also used as expectorant
49.	*Solanum lycopersicum var. cerasiforme*	Solanaceae	Tana Thei/Thulusey	Ripe fruits	Used as substitute for tomato in household cooking.	Rich in Vitamin C
50.	*Solanum melongena*	Solanaceae	Baingun	Immature fruits	Fruits are eaten as vegetables	Rich in vitamin A & C.
51.	*Solanum nigrum* Linn	Solanaceae	Nakana	Leaves and tender shoots	Used as vegetable	The leaves improve appetite and used against asthma, skin diseases, ringworms and urinary discharges.
52.	*Solanum spirale Roxb.*	Solanaceae	Khasou	Tender leaves and fruits	Used as vegetable	Used for stomach ache and indigestion
53.	*Solanum torvum* Sw	Solanaceae	Tutusik	Immature fruits	The unripe fruits are eaten as vegetable	The fruits are useful against liver and spleen enlargement
54.	*Solanum violaceum*	Solanaceae	Chikrang	Immature fruits	The unripe fruits are eaten as vegetable	The fruit is consumed forblood pressure control
55.	*Spilanthes acmella* Murr.	Compositae	Maresa	Leaves, tender shoots and dried flower	Used as vegetables	The most common and widespread use is to treat toothache, throat and gum infections. The entire plant (root, stem, leaf and flower) is medicinally active and non-toxic to humans. The leaves and flower heads contain analgesic, antifungal, anthelminthic, and antibacterial agents.
56.	*Vigna unguiculata*	Leguminaceae	Tipe or kapai	Leaves & seeds	Vegetables purpose as well as dry seeds as dal	Rich in protein
57.	*Zanthoxylum oxyphyllum* Edgew	Rutaceae	Mathana or manjang	Leaves and tender shoots	Used as vegetables	Used against curing are carminative, depurative, rheumatism, dyspepsia and asthma.

The most common edible plants recorded in this study were *Clerodendron colebrookianum* (Fig. 3A), *Ocimum basilicum* (Fig. 3B), *E. foetidum* L. (Fig. 3C), *F. esculantum* Moench (Fig. 3D), *Houttuynia cordata* Thunb (Fig. 3E), *Spilanthes acmella* Murr (Fig. 3F), *Solanum nigrum* Linn (Fig. 3G), *Zanthoxylum oxyphyllum* Edgew (Fig. 3H) and *Centella asiatica* (L.) Urban (Fig. 3I). Apart from its consumption, these plants were also ingested as remedies. *C. colebrookianum* known as Tuplickna or Li-pha fu in Mishmi is used for the treatment against high blood pressure and also applied in wounds for blood

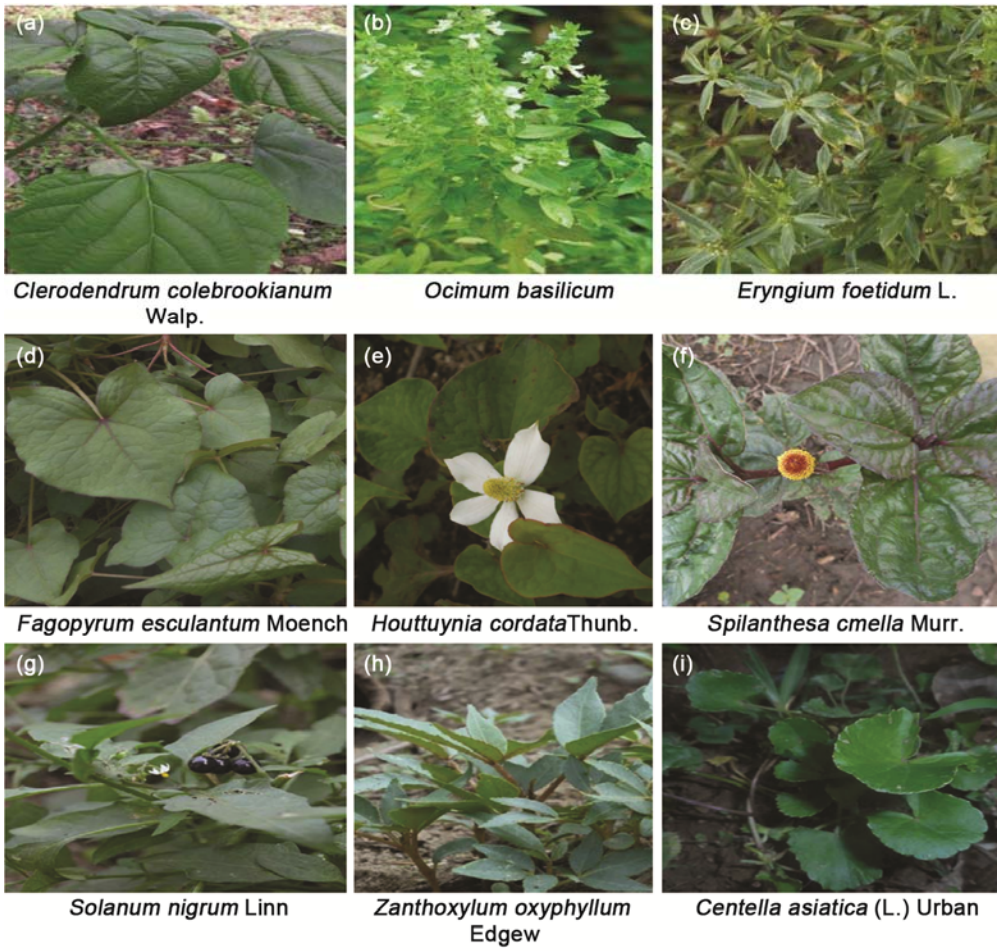

Fig. 3 — Pictures of different wild edible plant discovered & identified during the study period.

clotting. *O. basilicum, Houttuynia cordata* Thunb and *Spilanthes acmella* Murr are mostly used as spice in chutneys due to its unique taste and aroma, also have medicinal benefits. *Ocimum basilicum* known as Sowsang in Mishmi helps in poor digestion, nausea, abdominal cramps, gastro-enteritis, migraine, insomnia, depression and exhaustion. *H. cordata* Thunb known as Amkhalai in Mishmi have antiviral, antibacterial and anti-leukemic properties. *Spilanthes acmella* Murr known as Maresa in Mishmi is used to treat toothache, throat and gum infections. Plants such as *E. foetidum* L., *S. spirale* and *S. indicum* are also used for curing intestinal parasitic worms like round and tape worms. *F. esculantum* Moench known as Tolaina in Mishmi is used for treatment against diarrhea, hemorrhage, eczema, liver disorder and high blood pressure. *Z. oxyphyllum* Edgew known as Matha/ Manjang in Mishmi, tender leaves used as condiment, is used against curing of carminative, depurative, rheumatism, dyspepsia and asthma diseases. This study contributes to the enormous indigenous knowledge on medicinal plants and plant-based remedies practiced.

Besides the consumption of the leafy vegetables, some plant species also have spiritual importance, hence the Mishmi people use certain plant species such as *Cymbopogon citratus*, etc. in performing traditional ritual (puja), following certain taboos and obeisance.

Doley *et al.*, 2010 also reported that the consumption of wild edible plants is used as supplements to cultivated crops and as a survival strategy during food shortages that appears to have been intensified due to low development of agricultural production. While studying the Nyishi ethnic community of Arunachal Pradesh, Deb *et al.*, 2009 reported that a large number of traditional crops grown in agro-forestry are valuable for the farmer's everyday life, as they provide a greater diversity of food and also act as a good source of commercial

outlets in addition to household consumption. The study showed that most commonly used edible plant part among the plant species consumed were the leaves or tender shoots, other edible parts documented were fruits, bulbs, seeds, inflorescence and whole plant. The Mishmi tribe prepared different delicacies or cuisines using below mentioned wild leafy plant species. These were cooked as vegetables mixed with bamboo shoot and meat, stir fried or eaten as a salad or chutney. Wild edible plants form a good source of protein, fat, vitamins, sugar and minerals requirement of the tribal people to a greater extent (Sundriyal M and Sundriyal RC 2006). The plant species discovered & identified during the study period has been documented below with their Scientific name, Family, vernacular name, edible parts, food value and its uses.

Conclusion

Anjaw being the remotest part of Arunachal Pradesh faces food shortages due to heavy rainfall and blockage of road especially during summer months. Thus, the food shortage is partially fulfilled by the collection & consumption of these wild edible plants, thus making it a main contribution to the dietary intake of the Mishmi tribal community either in times of seasonal food shortage, gap filling or supplement staple food in normal times. But the resources are threatened by several anthropogenic and natural causes such as land-use change, habitat destruction, landslide, over extraction, overgrazing and invasive species (Prashanth Kumar GM and Shiddamallayya N 2014).Thus, conservation of these resources for the welfare of the local tribal people and to protect the biodiversity should be given utmost importance.

Wild leafy vegetables are not only sources of food and nutrients to the local communities, but could also be a means of income generation, if managed sustainably **(**Uprety *et al.,* 2012). In addition to food security, the sale of wild edible plants in local market also provides a source of income generation to the tribal people. So, its propagation and cultivation should be given prime importance for its better utilization and conservation. In this regard, some suggestions are being made for its conservation:

1. Participation of the local community should be encouraged through the *in situ* conservation
2. Identification, domestication and conservation of indigenous traditional knowledge of wild edible plants should be initiated by both the government and NGOS.
3. Promotion of its utility both in terms of its food security, nutrition and income generation
4. Further research work should be carried out in this aspect.

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