



Indigenous Knowledge on Utilization of plant Biodiversity for Treatment and Cure of diseases of Human beings in Nagaland, India: A case study

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Abstract

A study was carried out to explore indigenous knowledge on utilization of available plant biodiversity which have been utilized for treatment and cure of human ailment by eight Naga tribes i.e. Angami, Zeliang, Ao, Lotha, Sangtam, Konyak, Chakhesang, Rengma, and Khiamniungam in 20 villages of 9 districts of Nagaland during 2005-2010. Selected villages and households were surveyed and interviewed by using the structured schedule (questionnaires) for medicinal plant resources, their uses and information about their relationships with indigenous people. Information about traditional practices adopted for the medicinal resources was also gathered from the 'Local Medicine Men/Local Healers', Goanburha (Village Head Man), village elders etc. About 241 plant species belong to 142 families were recorded for traditional medicine used by eight Naga tribes. Highest number of utilization of medicinal plants were reported from cold regions (22.61 %) i.e. from high altitude areas of the state, followed by warm areas (25.73 %). Extraction of traditional medicines was highest in case of plant leaf (106 plant species) followed by roots (58 plant species), fruits (45 plant species), whole plant (36 plant species), bark (30 plant species) and the seeds (27 plant species) while the least used part were flowers and pods (21 plant species). About 33 plant species were recorded to use for treating dysentery, followed by 20 plant species for treatment of cough and control fever each. Fifteen plant species recorded for treatment of diarrhoea and 12 plant species were recorded to use for treat asthma. It was also observed that some endangered plant species such as *Rhus semialata* Murr, *Aquilaria malaccensis* Lam, and *Cephalotaxus griffithii* Hook.f., are utilized the people of Nagaland for medicinal purpose.

Keywords: Indigenous knowledge, traditional medicines, medicinal plant biodiversity, utilization, Naga tribes.

Introduction

Conducive ecological and climatic conditions gifted Nagaland as a rich repository of biodiversity, including medicinal plants. Most of these medicinal plants become a part of the socio-cultural heritage of the local tribes who are well aware of their medicinal properties. These practices have evolved over a long period of time with trials and errors by the claver medicine men and passed on to new generations. The interesting part is that the uses are being explored even for the exotics and weeds which have invaded the state in the recent past. As a result, the state is rich in both biological resources and traditional medicinal knowledge.

Work on medicinal plant species of Nagaland has been carried out by several workers¹⁻²¹. Rao and Jamir²²⁻²³ studied ethno botany of Ao and Angami Naga tribes of Nagaland. Rao¹¹ enumerated 125 plant species used by the 'Ao' and 'Angami' tribes of Nagaland and described about uses of 28 medicinal plants, 57 wild edible plants and miscellaneous uses of 36 plant species. Megoneitso and Rao²¹ and also Rao and Jamir²² had carried out some ethno-botanical studies in Nagaland. Jamir *et al.*²⁴ described 52 medicinal herbs being used in a wide range by various Naga tribes.

Keeping in view, the large numbers of indigenous tribes who inhabit the hills of Nagaland and the diversity in their culture, life style and usage of rich faunal wealth of the state, the ethno biological exploration have paramount importance. Many references appear in anthropological and ethnobotanical accounts, though very useful and informative are scattered here and there. However, still comprehensive studies on ethno-medicinal aspects covering a vast area of the state have hardly been conducted. Therefore, the study attempts to acquire more information on indigenous knowledge (IK) on utilization of plant biodiversity for treatment and cure of diseases of human beings and documentation of the IK, which can be effectively utilized in the conservation of biodiversity, sustainable developmental, planning of the tribal economy and ensuring environmental security to the indigenous people and the posterity.

Material and Methods

The Study Sites: Nagaland is situated between 25°6'N and 29°4'N latitudes, and between 92°20'E to 95°15'E longitudes. Eight (8) tribal communities' i.e. Angami, Zeliang, Ao, Lotha,

Sangtam, Konyak, Chakhesang, Rengma, and Khiamniungam of Nagaland distributed in 20 villages of 9 districts (i.e. Kohima, Peren, Mokokchung, Wokha, Kiphire, Pere, Mon, Phek and Tuensang) were selected as study sites (table-1). The four different agro-ecological zones (AEZ), namely (AEZ-1, AEZ-2, AEZ-3 and AEZ-4) are identified mainly on the basis of altitude, climate and topography with existing agro-ecology for documentation of IK of the selected tribes' practices. Five (5) villages out of 20 villages were selected at random from each of the four (4) Agro Ecological Zones (AEZ). The villages namely Sovima, Ingtanki, Tuli, Merapani and Naginimora were selected from AEZ-1 (Up to 200 MSL); villages i.e. Aonokpu, Chare, Jalukie, Medziphema and Mon village are in AEZ-2 (200–1000 MSL); Five villages namely Changki, Chozuba, Peren, Tseminyu and Wokha were in AEZ-3 (1000–1450 MSL) and villages selected from AEZ-4 (1450–>2000 MSL) were Kigwema, Kikruma, Noklak, Pfutsero and Phek (table-1).

Methodology: The multi stage stratified random sampling technique with sampling intensity in the range 3 – 5% of the total population of the representative villages of selected tribes was adopted on the basis of agro-ecological zones. The agro-ecological zones and select the representative villages were identified through the use of Google-earth map.

The village and household survey provided the main source of quantitative data about the medicinal plant resources, their features with components, and information about its

relationships with indigenous people. The total number of households surveyed during this study was 252. Interviews were conducted with the respondents of the selected households by using the structured schedule (questionnaires) to collect detailed information about traditional practices adopted for the medicinal resources and its impacts on the IK and socio-economic conditions of the Naga communities. Information about traditional practices adopted for the medicinal resources was also gathered from the 'Local Medicine Men/Local Healers', Goan-burha (Village Head Man), village elders etc. Plants collection has been followed according to the methods of Jain and Rao (1977)⁹.

Analysis of Data: Since the main objective of the study was IK appraisal of selected Naga tribes for sustainable management of biodiversity in Nagaland, India, it did not involve application of specific statistical tools. Microsoft Excel was used to make graphs and draw inference and relationships among different attributes of the study.

Results and Discussion

During the study about 241 plant species belong to 142 families were recorded for traditional medicine used by eight Naga tribes. The details of the medicinal plants used by various tribes of Nagaland, their common names and distribution in the state, parts used and diseased cured are mentioned in table-2.

Table-1
Identification of Agro-Ecological Zones (AEZ) and selection of Representative Villages indicating its location in the district

AEZs	Altitude above MSL in metres	Climate	Topography	Selected Villages specific to AEZ	Selected Tribes as per AEZ	Selected Villages specific to its location within a district
AEZ-1	Up to 200	Tropical Climate	Foot-hills	Sovima, Ingtanki, Tuli, Merapani, Naginimora	Angami, Zeliang, Ao, Lotha, Ao	Kohima, Peren, Mokokchung, Wokha, Mokokchung
AEZ-2	200–1000	Sub-Tropical Climate	Sub-Montane	Aonokpu, Chare, Jalukie, Medziphema, Mon	Ao, Sangtam, Zeliang, Angami, Konyak	Mokokchung, Kiphire, Pere, Kohima, Mon
AEZ-3	1000–1450	Sub-Temperate Climate	Sub-Montane Higher Ranges	Changki, Chozuba, Peren, Tseminyu, Wokha	Ao, Chakhesang, Zeliang, Rengma, Lotha	Mokokchung, Phek, Peren, Kohima, Wokha
AEZ-4	1450–>2000	Temperate Climate	High Hills and mountains	Kigwema, Kikruma, Noklak, Pfutsero, Phek	Angami, Chakhesang, Khiamniungam, Chakesang, Chakhesang	Kohima, Phek, Tuensang, Phek, Phek

It was observed that the maximum number of utilization of medicinal plants were reported from cold regions (22.61 %) i.e. from high altitude areas of the state, followed by warm areas (25.73 %), while few plants i.e. 4.56% species such as were common in both the regions (figure-1). Of which, traditional medicines are extracted maximum from plant leaves. It was followed by roots, fruits, seeds and bark, while the least used part were the flowers (figure-2). About 106 plant species were recorded to use their leaves for preparation of traditional medicine. Similarly, roots with 58 gain second highest importance in traditional system of medicine used by Naga tribes. Third place occupys by fruits 45 plant species, fourth by bark with 30 plant species. Moreover, plant parts such as seeds (27 plant species), stems (18 plant species), flowers and pods (19 plant species), Rhizomes (12 plant species), tuber (7 plant species), Woods (3 plant species), bulb (3 plant species) and corm (4 plant species) were traditionally used as medicine (figure-2). Very interestingly, 36 plant species were recorded to use the whole plant as medicinal purpose. During the study few indigenous remedies, which were observed to use commonly by the eight tribal's of the state are mentioned below:

The study reveals that traditional medicine men use to treat cough with 20 plant species namely *Adiantum philippense* L., *Adiantum raddianum* C. Presl, *Acorus calamus* L., *Sonchus wightianus* DC., *Schefflera venulosa*, *Balanophora dioica*, *Begonia roxburghii*, *Stixis suaveolens*, *Citrus grandis* L, *Terminalia belerica*, *Equisetum arvense* L., *Desmodium heterocarpum* (L.) D.C, *Hibiscus cannabinus* L, *Hibiscus rosa-sinensis* L, *Syzygium jambos* (L.) Alston, *Licuala spinosa* Roxb., *Sesamum orientale* L, *Bischofia javanica* Blume., *Scoparia dulcis* L. and *Capsicum frutescens* L.

About 12 plant species were recorded to use for treat asthma i.e. *Adhatoda vasica* Nees., *Cissus quadrangularis* L., *Phlogacanthus thyrsoiflorus* (Roxb.) Nees., *Viburnum foetidum* Wall., *Panax pseudo-ginseng* Wall., *Bombax ceiba* L., *Swertia chirata* (Wall.) C.B. Clarke., *Michelia champaca* L., *Artocarpus heterophyllus* Lam., *Artocarpus lakoocha* Roxb., *Licuala spinosa* Roxb. and *Zanthoxylum rhetsa* (Roxb.) DC. by the tribals of Nagaland. Similarly, 8 plant species were found to involve in treatment of bronchitis i.e. *Adhatoda vasica* Nees., *Phlogacanthus thyrsoiflorus* (Roxb.) Nees., *Ilex pernyi* Franch., *Sonchus wightianus* DC., *Tagetes erecta* L., *Zanthoxylum rhetsa* (Roxb.) DC., *Paris polyphylla* Sm. and *Paris quadrifolia* Linn. Fever is a symptoms of different diseases.

The study reveals about 20 plant species such as *Adhatoda vasica* Nees., *Andrographis paniculata*, *Phlogacanthus thyrsoiflorus*, *Sesuvium portulacastrum* L., *Tabernaemontana divaricata* (L.) R. Br., *Cassia tora* L., *Lagerstroemia speciosa* (L.) Pers., *Woodfordia floribunda* Salisb., *Michelia champaca* L., *Sida acuta* Burm.f., *Tinospora cordifolia*. (Thunb.) Miers., *Artocarpus lakoocha* Roxb., *Aeginetis indica* L, *Oxalis drummondii* Gray., *Licuala spinosa* Roxb, *Thysanolaena maxima* (Roxb.) Kuntze., *Aconitum paniculatum* Auct, *Gardenia angusta* (Linn.) Merr., *Salix tetrasperma* Roxb. and *Carea arborea* Roxb. were used to control fever. Apart from that decoction of boil ponogranate (*Punica granatam* L) with sweet basil (*Ocimum basilicum*) was recorded to drink to relief fever. It was also informed that leaves of *Eucalyptus* sp boiled in water and take bath to relief from fever. Leaves of *Artemisia vulgaris* (Ningro) and *Adhatoda vasica* were boiled and take bath to prevent fever.

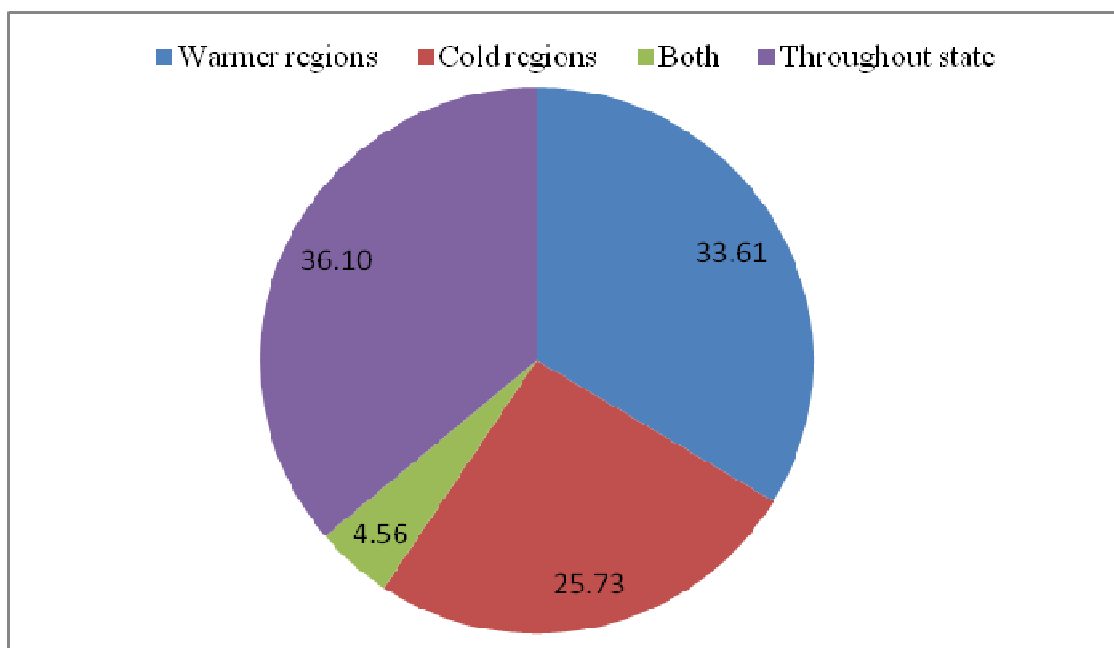


Figure-1
 Distribution of medicinal plants in different regions of Nagaland (%)

Table-2
Details of the medicinal plants used by various tribal communities in Nagaland

S.N.	Scientific Name	Local Name	Uses
1	<i>Adhatoda vasica</i> Nees.	Mhejung Malabar nut	Leaves, barks and fruits are used Ao and Lotha tribes for curing bronchitis, fever, asthma and bleeding gums. Flowers and roots are used as an antiseptic.
2	<i>Andrographis paniculata</i> (Burm.f.) Wall.ex.Nees	<i>Kalmegh</i>	All Naga tribes use this whole plant in dysentery, diarrhoea, stomach skin diseases and fever, malaria, jaundice, liver trouble, diabetes and stomach ailment
3	<i>Phlogacanthus thryrsiflorus</i> (Roxb.) Nees.	Tita Phul Metecüse	Leaves and flowers are used for Fever, asthma and chronic bronchitis.
4	<i>Thunbergia grandiflora</i>	Sky flower, Nulidongmoli	Fruits used as vegetable. Roots are used as an aphrodisiac
5	<i>Adiantum philippense</i> L.	Maiden hair fern	Leaves are used to treat cough and throat infections. Rhizomes used as an antipyretic.
6	<i>Adiantum raddianum</i> C. Presl	Delta maiden hair fern	The whole plant is used to improve flow of urine, cure pulmonary, cough and respiratory problems and relieve muscle pains and inflammation of joints.
7	<i>Viburnum foetidum</i> Wall	Tsiekha	Leaves and roots are used for Anti-spasmodic and asthma.
8	<i>Agave Americana</i> L.	Century Plant	Whole plant used as blood purifier, diuretic and prevents formation of pus
9	<i>Sesuvium portulacastrum</i> L.	Shoreline purselane	Water extract of whole plant is used for scurvy and fever.
10	<i>Achyranthes aspera</i> L.	Pickles chaff flower, Aok rhua	The decoction of the herb is used for Pneumonia, toothache, abdominal tumours, diabetes, rheumatic pain, dysentery and piles. Root paste is used as anti-fertility drug Flowering spikes or seeds paste is used as an external application for poisonous insect bites and snake bites
11	<i>Amaranthus gangeticus</i> L.	Elephant-head amaranth	Roots used in treating abdominal pain and stomachache. Paste of whole plant used in inflammation of skin. Used in treating boils and burns and as laxative.
12	<i>Deeringia amaranthoides</i> Merr.	Mathukthuka	Tender leaves are used to heal fresh cuts by Ao community.
13	<i>Hippeastrum puniceum</i> (Lam.) Kuntze	Barbados lily	Bulb extract is used in allergy and rheumatism by the Sangtam and Khiamniungam tribes
14	<i>Rhus semialata</i> Murr.	<i>Naga tenga</i> Tangma-tong, Tanmo	Fruits edible, used for treatment of dysentery, diarrhoea and food poisoning
15	<i>Annona reticulata</i> L.	Bullock's heart	Used for remedy of jaundice, liver disorders, skin diseases, dropsy and as a diuretic. Also used as condiments
17	<i>Cathranthus roseus</i> (L.) G. Don	Periwinkle	Leaves used by the Sangtam Konyak and Chakhesang tribes for leukaemia, hypertension, diabetes and kidney problems.
18	<i>Gomphocarpus physocarpus</i> E. Mey	Baloon plant yongpi	Leaves and seeds are used by Chakhesang and Sangtam tribes in gastro-intestinal problems but can be fatal
19	<i>Rauvofia serpentina</i> (L.) Benth. ex Kurz	Serpent wood	Roots used as remedy for insomnia and high blood pressure
20	<i>Tabernaemontana divaricata</i> L	Crepe gardenia	Leaves, seeds and roots used in anti-inflammatory, syphilis, leprosy, gonorrhoea, dysentery, diarrhoea, malaria and fever.
21	<i>Ilex pernyi</i> Franch.	Perny holly	Tannin and bitter substances derived from leaves are used to treat bronchitis and rheumatic ailments.
22	<i>Acorus calamus</i> L.	Sweet Flag, Calamus,	Oil extract from the dried rhizome is used for coughs, influenza and tuberculosis. It is also used to enhance memory function of brain
23	<i>Colocasia esculenta</i> (L.) Schott	Arum/Banu, Manü	Corms edible, used by the Sangtam Angami, Zeliang tribes in insect stings, cuts, burns, injuries and internal hemorrhages.

S.N.	Scientific Name	Local Name	Uses
24	<i>Homalomena aromatica</i> (Spreng.) Schott.	Sungandhmantri	Rhizomes are used by Zeliang tribe in making oriental perfumes and also used as an aromatic stimulant.
25	<i>Panax pseudo-ginseng</i> Wall.	Yongka, Takumtsu mozu	Tuber/Root decoction are used to recuperative energy to body for the treatment of amnesia, convulsions, dysentery, cancer, neurasthenia, dyspepsia, palpitation and asthma.
26	<i>Schefflera venulosa</i> (Wight and Arn.) Harms.	Dwarf umbrella plant	Decoction of leaves for scurvy, bark relieves cough and use resin for treating wounds.
27	<i>Areca catechu</i>	Betel-nut, Tamul	Pericarp and seeds are laxative, antihelmintic, antiseptic and also promotes menstrual flow
28	<i>Asclepius curassavica</i> L	Blood flower	Leaves are used as an antihelmintic. The milky sap is used for curing corns and warts.
29	<i>Gymnema sylvestre</i> R. Br.	Gurmari	Whole plant is hypoglycemic, diuretic, refrigerant, astringent, tonic and has anti-diabetic properties.
30	<i>Asparagus racemosus</i> Willd	Ananta mul	Roots are used Zeliang tribe with milk as a stimulant
31	<i>Acmella oleracea</i> (L.) R. K. Janse	Toothache plant	Whole plant is edible, medicinal to give relieve to toothache
32	<i>Bidens pilosa</i> L.	Mütsanu	The whole plant is anti-rheumatic
33	<i>Blumea lacera</i> L.	Kashidoria, Zurha	The plant is used for nerve ailment massage. Taking the decoction of plant cures severe constipation like that of goat faecal matters
34	<i>Sonchus wightianus</i> DC.	Pensung yi, (Gyazü), Yasen	Whole plant is used for cough and bronchitis. It has the properties are anti fungal. Gyazü's milky exudates cure the bruises between the thigh and groin
35	<i>Tithonia diversifolia</i> (Hemsl.) A. Gray	Mexican sunflower	Leaves and flowers are used for remedy to wounds and bruises. Together with Abakhanha it cures amoebic dysentery.
36	<i>Balanophora dioica</i> R. Br. Ex Royle	Kümroh	Flowers/ Inflorescences are used for remedy of Cough with profuse sputum by the Ao and Sangtam tribes
37	<i>Impatiens tripetala</i> Roxb. Ex. DC.	Abakhanha	Leaves and flowers are used for treatment of Gonorrhoea and urinary problems. It cures gastritis, chest congestion and breathlessness
38	<i>Basella alba</i> L.	Indian spinach	Root paste is applied to reduce swelling. Leaves are used for healing wounds, boils and ulcers.
39	<i>Begonia roxburghii</i> DC.	Begonia, Futsa	Plant is edible. Leaves used in cough and dysentery
40	<i>Berberis</i> spp.	Fruits	Konyak Naga tribe uses to treat gastric problems and Chakhesang and Khamniungam tribes use to treat ulcerative conditions and urinogenital disorder.
41	<i>Oroxylum indicum</i> L. Benth Kurz.	Bhatgilla, Tsüngrem Noklangnok	Anti-cancerous, root bark paste is used orally to treat jaundice by lotha community
42	<i>Bixa orellana</i> L.	Annatto tree	Fruit is astringent and purgative. Seeds are a febrifuge. Leaves are used in jaundice. Roots and bark are anti-pyretic
43	<i>Bombax ceiba</i> L.	Azupentong	Roots of young plants used as an aphrodisiac. Used in the treatment of digestive disorders, pimples, anemia, asthma and leprosy by Ao and Angami
44	<i>Cardia myxa</i> L.	Assyrian, plum	Fruit is anti-inflammatory and laxative
45	<i>Rorippa indica</i> (L.) Hiern.	Yellow cress	Arial parts are used for diarrhoea and dysentery
46	<i>Ananas comosus</i> Merr	Alipiong Chiro	Anti-inflammatory, Fruit juice is taken for abortifacient, anti-amoebic and antihelmintic by Sangtam and Angami tribes
47	<i>Buddleja asiatica</i> Lour	Chirid	Whole plant is abortifacient and for treating skin diseases Angami, Zeliang Khamniungam. Flowers are eaten by Rengma, and Khamniungam tribes.
48	<i>Bauhinia variegata</i> L	N'gapa, Tafil	Flowers used for diarrhoea, dysentery and stomach disorders. Bark

S.N.	Scientific Name	Local Name	Uses
			for treatment of cuts, wounds and skin diseases. Roots are used to stop bleeding and to treat dyspepsia
49	<i>Cassia tora</i> L.	Foetid cassia, Sickle pod	Leaves, roots and seeds are used treat fever, kill or expel worms from the body, cures ringworm, helps in the digestion and chronic inflammation of the skin
50	<i>Pratia begonifolia</i> (Wall.) Lindl	Tsüngnünglah	Whole plant is used by <i>Sangtam</i> , Konyak and Ao tribes in urinary disease, helps in dissolving kidney and gall bladder stones, and stops excessive bleeding
51	<i>Cannabis sativa</i> L.	Marijuana, Hemp	Leaves and flowers are used as sedative, tonic, intoxicant, stomachic, narcotic, analgesic, antibacterial use by <i>Sangtam</i> , Konyak and Ao tribes
52	<i>Canna ehemanii</i>	Canna	Rhizome used for demulcent and diuretic Zei
53	<i>Stixis suaveolens</i> Roxb.	Geku	Fruits are edible and used for cough and malaria
54	<i>Sambucus ebulus</i> L.	Dwarf elder	Leaves, shoot and roots are anti-inflammatory, diuretic, expectorant and purgative
55	<i>Carica papaya</i> L.	Papaya , Mamatsang	Leaves used for removing corn and warts. Fruits help in digestion, flow of urine and constipation. Seeds act as anti-cancer use by the <i>Sangtam</i> , <i>Angami</i> , <i>Zeliang</i> and <i>Rengma</i> tribes
56	<i>Drymaria cordata</i> (L.) Willd. ex Schult.	Püpünha, Pipi-tong , Chickweed	Leaves and soft stem in use. Antidote, appetizer, blood purifier, emollient and also reduce headache
57	<i>Cephalotaxus griffithii</i> Hook.f.	Griffith's plum yew, Kelingsang	Leaves and bark in use. Taxol obtained from needles are used against uterine and breast cancer
58	<i>Chenopodium album</i> L	Wild spinach	Seeds and leaves in use. Carminative, laxative, anthelmintic and diuretic
59	<i>Citrus grandis</i> L	Pomelo/ Chemphem	Fruits are used against cold, cough, throat infection and indigestion
60	<i>Cleome gynandra</i> L	Spider wisp, African cabbage	Leaves and seeds are used for muscular pain and headache
61	<i>Garcinia xanthochymus</i> Hook.f.ex T. Anders	Tepor	Fruits are effective in the treatment of dysentery
62	<i>Terminalia belerica</i> (Gaertn) Roxb	Beleric	Fruits are used for remedy of cough, sore throat, dropsy, pile problems and diarrhea.
63	<i>Terminalia chebula</i> Retz	Black myrobalan,	Fruits, roots and bark used as astringent, tonic, expectorant and laxative
64	<i>Commelina cyanea</i> R. Br.	Spiderwort, Jerakrak	Whole plant for diuretic and in use for depression.
65	<i>Tagetes erecta</i> L.	Marigold, Kitsung naro	Leaves are used for treatment of rheumatism, bronchitis, carbuncles, eye problem, ulcers and laxative
66	<i>Ophiopogon jaburan</i> 'vittatus'	Mondo grass,	Leaves and seeds are used for anti-inflammatory, expectorant and stomach disorders.
67	<i>Ipomoea nil</i> (L.) Roth.	Blue dawn glory	Seeds are used as antifungal, anti-tumor, diuretic laxative
68	<i>Cornus nuttallii</i> Audubon ex Torr. and A. Gray	Pacific dagwood	Leave, bark and fruits are used as febrifuge, anti-periodic, tonic and laxative
69	<i>Costus speciosus</i> (J.Konig) Sm	Crepe ginger, Konothie, Kebuk	Whole plant is used for astringent, purgative, depurative, tonic, antihelmintic and against rheumatism. Root decoction of Konothie cures Kidney ailment Diabetes, thickened blood in the blood streams, removes accumulated blood, cures internal swellings, breathlessness and joint pains.
70	<i>Kalanchoe pinnata</i> (Lam.) Pers	Nokcha-moli, Clapper bush	Leaves are used for. antibacterial; soothe irritation, inflammatory skin burns, amoebic dysentery and diabetes and eyes
71	<i>Coccinia grandis</i> (L.) J. Voigt	Ivy gourd	Green fruits are edible and used as aphrodisiac, astringent, cooling and anti-diabetic
72	<i>Juniperus horizontalis</i>	Creeping juniper	Wood and fruits are used for diarrhoea, abdominal pain, fluid

S.N.	Scientific Name	Local Name	Uses
	Moench		retention in abdomen, tumors, piles, indigestion and constipation and vaginal discharge
73	<i>Dicksonia antartica</i> Labill	Tree fern	Tendered plant sap is used to sooth insect bites
74	<i>Cyperus involucratus</i> Rottb	Nut dwarf umbrella grass	Tuber is diuretic, antihelmintic, astringent and stimulant
75	<i>Dillenia indica</i> L.	Elephant apple	fruit Aids in digestion and flatulence
76	<i>Dioscorea transversa</i> R. Br.	Pencil yam, Pokmaso	Seeds and tuber are used as contraceptive, joint pain, useful in leprosy, piles and gonorrhea
77	<i>Dracaena deremensis</i> Janet	Craig dracaena	Decoction of leaves is diuretic
78	<i>Diospyros peregrina</i> (Gaertn.) Gurke	Pipakinsang	Decoction of bark, fruits and seeds is used as anti-stress and anti-diabetes
79	<i>Equisetum arvense</i> L.	Horse tail, Shiehi	Water extract of whole plant is used for treatment of gonorrhoea, coughing, rheumatism and arthritic problems. Decoction of Equisetum with Pedaria creeper is ideal for remedy of kidney ailments.
80	<i>Rhododendron anthopogon</i> D. Don	Rhododend-ron	Decoction of stems, leaves and roots for rheumatism and nerve disorder
81	<i>Rhododendron arboreum</i> Sm	Metapen/Topen, Methu	Flower used against diarrhoea and dysentery. Decoction root cures early stage of cancer diseases, removes the bones of fish stuck on the wall of the throat.
82	<i>Croton tiglium</i> L	Purging croton	Bark and seeds are chronic constipation, indigestion, inflammation and cancer.
83	<i>Emblica officinalis</i> Gaertn.	Indian gooseberry, Jakhethi	Fruits and seeds are used to cure anaemia, dysentery, haemorrhage, eye inflammation, jaundice, leucorrhoea and menorrhagia; injury wound; scrap the inner tender barks and applies to wound tightens the muscles and cures the injury (Lotha, Ao)
84	<i>Mallatus phillippensis</i> (Lam.) Mull. Arg.	Kamala tree	Leaf, bark and seeds are used against rheumatism, skin diseases and anthelmentic.
85	<i>Phyllanthus fraternus</i> G. L Webster	Phyllanthus	Leaves, fruits and roots are used for treatment of kidney stone and gall stone, cystitis, uro-genital diseases, jaundice, dysentery, gonorrhea and diabetes.
86	<i>Phyllantus acidus</i> L. skeels	Star goose berry	Fruit and leaves are antipyretic, against dyspepsia and jaundice
87	<i>Clitoria ternatea</i> L.	Whole plant	The plant produces dye, which is used in indigenous medicine. Powdered seeds have purgative and aperient properties. The root act as an antidote against snake bite.
88	<i>Desmodium heterrocarpum</i> (L.) D.C	Desmondium	Leaves and bark extracts are used in cough and cold
89	<i>Mucuna poggei</i> Taub	Buffallo Bean	Seeds for Aphrodisiac, astringent and cholera
90	<i>Discentra scandens</i> (D.Don) Walp	Yellow climbing heart	Roots are high blood pressure, diabetes, malaria, stops bleeding, snake bite, dysentery and tuberculosis
91	<i>Swertia chirata</i> (Wall.) C.B. Clarke	Whole plant is used as tonic, febrifuge, appetizer, laxative, malaria, stomachache, skin diseases and asthma	
92	<i>Aeschynanthus longiflorus</i> Blume	Aeschynanth-us	Fever and pain; Juice of crushed leaves is applied for inflammatory glands
93	<i>Dicranopteris linearis</i> (Burm.F.) Underw	Silver fern	Decoction of plant is used in treating epilepsy, removes sterility in women and has antibacterial property
94	<i>Gnetum gnemon</i> L.	Spanish koint fir	Purifies blood and controlled dosages regulates the flow of urine but in case of using large doses it stops urination.
95	<i>Dichroa febrifuga</i> Lour	Evergreen hydrangea	Used for treatment of Malaria

S.N.	Scientific Name	Local Name	Uses
96	<i>Hypericum perforatum</i> L	St.John's wort	Flowers are used as vermifuge, emollient and anti-enuretic. Leaves are used as an alternative to tea
97	<i>Curculigo orchioides</i> Gaertn	Koritong, Piyaknok	Tuber are used for aphrodisiac, carminative, antipyretic and tonic by Sangtam and Rengma tribes
98	<i>Crocus tommasinianus</i> Herbert.	Woodland crocus	Flowers Style and stigma are antispasmodic, aphrodisiac, appetizer and sedative
99	<i>Juglan regia</i> L.	Pfhii, Nothi	Leaves, bark and young fruit shell are used as antihelmintic. Fruits are tonic and used in treating joint pain. Mature fruits are aphrodisiac
100	<i>Elsholtzia</i> sp	Pyonyhü, Thongvi	Whole plant Used in treatment of kidney and urinary bladder problems. It is also used as condiments.
101	<i>Elsholtzia stauntonii</i> Benth	Mint-shrub, Khanyhü	Leaves and seeds Used as a cure for diabetes, mellitus and osteoporosis
102	<i>Leonurus japonicus</i> Houtt.	Mother wort	Whole plant Menstrual disorder, excess urine, pus formation, ulcers, skin diseases, anticancer, antibacterial and malaria
103	<i>Leucas aspera</i> Willd	Common leucas	Whole plant Used to treatment of typhoid, nose problem
104	<i>Mentha spicata</i> L	Garden mint, Opfokosopro	Leaves used for stimulant, tonic, and jaundice, gallstone, throat and uterus infections, toothache and for de-worming.
105	<i>Perilla frutescens</i> (L.) Britton	Perila	Stems, leaves and seeds. Antidote and antiseptic
106	<i>Thymus serpyllum</i> L.	Wild thyme, Creeping thyme	Whole plant Used for spasmolytic, antibiotic and expectorant
107	<i>Cinnamomum tamala</i> Nees and Ebermaier	Ongchinaro, Sangchisang	Leaves and bark saps are anthelmintic, Carminative, astringent and has digestive property
108	<i>Litsea citrata</i> Blume.	Ningtrong sang	Sap of Bark and seeds is used for pain reliever, astringent and antiseptic. Dysentery, diarrhoea. Carminative, expectorant, stimulant, poultice and insecticide.
109	<i>Lagerstroemia indica</i> L.	Crape myrtle	Febrifuge, stimulant, styptic, purgative, astringent, detoxicant and diuretic
110	<i>Lagerstroemia speciosa</i> (L.) Pers.	Pride of India	Used for fever, diarrhoea, mouth ulcer and diabetes, promotes flow of urine and has purgative properties
111	<i>Leea compactiflora</i> Kurz.	Leea	Leaves are applied in body pain, juice for nervous disorder and insect bites.
112	<i>Cassia alata</i> L	Fleur palmis	Juice of leaves is used against ringworm, skin diseases and also act as purgative
113	<i>Entada scandens</i> (L.) Benth.	Khüling	The seed paste is applied by the Sangtam tribes in burns and has anti-dandruff properties. Kennels are edible.
114	<i>Allium hoojeri</i> Thwaites	Shiela	Decoction of leaves and roots is used as antihelmintic, massaging during body ache by Sangtam Naga tribe
115	<i>Ophipogon intermedius</i> D.Don	Lily of the valley	Tubers are used for the treatment of Dropsy
117	<i>Allium odorum</i>	Chinese chives/ leek	Leaves are used in urinary problems
118	<i>Cardocrinum giganteum</i> (Waqll.) Makino	Khorcii	Leaves are used for treatment of wound and bruises.
119	<i>Hosta plantaginea</i> (Lam.) Asch.	Hosta	Water extract of fresh flowers mixed with salt and then applied in foot massages
120	<i>Lycopodium clavatum</i> L.	Common club moss	Whole plant is used for skin burns, digestive disorders, constipation with flatulence and against urinary problem.
121	<i>Lygodium flexuosum</i> (L.) Sw	Twining fern	Rhizomes are used for rheumatism, sprains, scabies, ulcers, eczema, wounds, stomachache and indigestion.
122	<i>Woodfordia floribunda</i> Salisb	Fire flame bush	Flowers are used for dyeing silk and leaves are used in the treatment of dysentery, fever, headache, hemorrhoids and diarrhea
123	<i>Magnolia grandiflora</i>	Lily tree	Bark extract is used stimulant, tonic and good against rheumatism

S.N.	Scientific Name	Local Name	Uses
	L		and malaria.
124	<i>Michelia champaca</i> L.	Golden champa	Leaves, bark and fruits are used in Chronic rheumatism, gastric, inflammation, anti-fertility, asthma, cholera, menstrual complaints and fever
125	<i>Abelmoschus moschatus</i> Medik.	Wild bhindi,	Leaves are anti diabetic, Seeds yield an essential oil used mainly in cosmetic and perfumery industries. It is also used against digestive disorders
126	<i>Abutilon indicum</i> (Linn.) Sweet	Country mallow	Leaves are used as a laxative and seed used in pile problems. The infusion or the paste is applied in boils and ulcers
127	<i>Hibiscus cannabinus</i> L	kasturika	Extract of leaves are used to treat cough, dysentery and blood disorders. The flower extracts are used against acidity and the stems for treatment of anemia and fatigue, seeds as aphrodisiac.
128	<i>Hibiscus rosa-sinensis</i> L	Japa	Flower and stem extracts use by by Lotha, Sangtam and Ao for relieves periodic pains, spasms, cures sexually transmitted diseases, cough and cold, soothes internal and external wounds and sores. Flowers are also used to lower body heat
129	<i>Hibiscus sabdariffa</i> L	Okhriewo	Anti-hypertensive, diuretic, mild laxative, stomachic and emollient and also against cardiac and nerve diseases. The flower is used as a food colouring ag Mallotus ent.
130	<i>Sida acuta</i> Burm.f.	Bala	Sedative, cardiac stimulant and good against rheumatism, tuberculosis and fever
131	<i>Sida cordifolia</i> L.	Country mallow	Anti-inflammatory and it acts as a stimulant within the central nervous system. It is also used as a fat burning supplement
132	<i>Sida rhombifolia</i> L.	Arrow-leaf sida	Piles, gonorrhoea, diuretic and aphrodisiac
133	<i>Urena lobata</i> L	Vanabhenda	Roots are antibacterial and diuretic. Leaves are also used in cuts, diarrhea and sore throat
134	<i>Maranta arundinacea</i> 'variegata'	Hnah-thial-alu	Tubers are used in skin disorders and dyspepsia, roots are edible
135	<i>Melastoma malabathricum</i> L.	Malabar malastome	Leaf paste is applied on cuts to check bleeding and also improves appetite. Flowers are used in the pile problem
136	<i>Azadirachta indica</i> A.Juss.	Neem tree	Leaves, bark and fruits are used against skin infections and ulcers. Also used as antiseptic and insect repellent
137	<i>Cissampelos pareira</i> L.	Tubukilota	Infusion of leaves and roots are good against menstrual cramps, pre and post natal pain and during uterine hemorrhages.
138	<i>Stephania gladiifera</i> Miers	Gana-grjo, Jangrou, Ketcha moli	Infusion of stem and leaves is used for treating menorrhage. Bark is also used against jaundice, rheumatism, diarrhoea and urinary problems.
139	<i>Tinospora cordifolia</i> (Thunb.) Miers	Heartleaf moonseed	Leaves and stem are used in fever, blood purifier, anti-arthritis, aphrodisiac, carminative, diuretic and expectorant
140	<i>Parkia roxburghii</i> G.Don	Tree bean Roanjak	Leaves, tender pods and bark are used for treatment of diarrhoea and dysentery treated by Sangtam tribes
141	<i>Mimosa himalayana</i> Gamble	Kingrei	Decoction of whole plant. and root used as antiemetic agent for fever, stems used for teeth pain.
142	<i>Artocarpus heterophyllus</i> Lam	Bulong	Bark is made into a poultice. Roots are used in the treatment of skin diseases and asthma. Seeds relieve biliousness
143	<i>Artocarpus lakoocha</i> Roxb	Monkey jack, Dewacham	Seeds and barks are used for treatment of asthma, fever, diarrhoea and as an aphrodisiac
144	<i>Ficus benghalensis</i> L	Bot, Banyan tree	Decoction of bark increases fertility in male
145	<i>Ficus benjamin</i> L	Papasih	Decoction of leaves is mixed with oil and applied to ulcers by Angami, Zeliang
146	<i>Ficus glomerata</i> Roxb	Cluster fig tree	Decoction of leaves and bark are used as astringent, treated for gastritis and has anti-diabetic properties
147	<i>Ficus hispida</i> Linn.f	Papasih	Fruits is used against leprosy and bladder complaints.
148	<i>Morus nigra</i> L.	Kakuithi	The fruits are mildly laxative. Leaves are antibacterial and are used

S.N.	Scientific Name	Local Name	Uses
			for treating cold
149	<i>Moringa oleifera</i> Lam.	Drumstick	Water extract of root, bark, leaves, flowers and fruits are used for urinary problems, rheumatism, ophthalmia, reduce inflammation, as appetizer, laxative and tonic
150	<i>Musa ornata</i>	Banano nano	Water extract of fruits, stems and leaves is used for treatment of dysentery, cardiac diseases, hypertension and diabetes.
151	<i>Myrica esculenta</i> D. Don	Achensü, Metiyong	Bark decoction is used to cure dysentery, diarrhea etc
152	<i>Ardisia humilis</i> Vahl.	Low shoe button	Decoction of roots is used against diarrhea and rheumatism
153	<i>Psidium guajava</i> L	Motiram, Bangochi	Roots, bark, leaves and immature fruits are use as astringent, to treat wounds, ulcers, rheumatism, toothache, vermifuge and leucorrhea by the Sangtam tribes
154	<i>Syzygium jambos</i> (L.) Alston	Along-tong, Longchen	Flowers, seed and fruit are used to treat leprosy, cough and diabetes
155	<i>Mirabilis jalapa</i> L.	4 o' clock plant, Marvel of peru	Fresh leaf-juice is demulcent and found useful when applied to allergic reactions. Root is aphrodisiac and mildly purgative
156	<i>Nymphaea nouchali</i> Burm.f	Star water lily	Flowers, rhizome and seeds are used to treat dysentery, indigestion, ringworm and skin problems.
157	<i>Jasminum pubescens</i> (Retz.) Willd.	Star jasmine	Leaves, flowers and roots are antidote to snake venom
158	<i>Fuchsia magellanica</i> Lam	Hardy fuchsia	Fruit is used as a diuretic and febrifuge
159	<i>Helminthostachys zeylanica</i> (L.) hook	Flowering fern	Dried leaves are used to stop nose bleeding.
160	<i>Paphiopedilum hirsutissimum</i> (Lindl. ex Hook) Stein	Lady's slipper	Leaves and bark are used against ringworm. Leaves are used in scabies.
165	<i>Renanthera imschootiana</i> Rolfe	Red Vanda	Leaves are effective in treating skin diseases
166	<i>Aeginetis indica</i> L	Forest ghost flower	Roots juice of the roots is used in treating fever
167	<i>Oxalis corniculata</i> L	ozhe pito	The whole plant is used as a cure for scurvy, cataract, boil, wound, eczema, dysentery, diarrhoea and used and used as an appetizer
168	<i>Oxalis drummondii</i> Gray	Purple wood sorrel	Leaves are used in Fever, cuts, rashes and skin infections
169	<i>Licuala spinosa</i> Roxb	Spiny licuala	Seeds are used in cough, asthma and fever
170	<i>Pandanus fascicularis</i> Lam	Korantong	Root juice is used for incense, eye diseases by Lotha and Ao
171	<i>Argemone mexicana</i> L	Mexican poppy	Decoction of leaves, seeds and roots Jaundice and skin infections. Seed oil is applied to heal ulcers.
172	<i>Mucuna pruriens</i> (L.) D.C.	Cowhage, Suhthreh	Root decoction induces the flow of urine and act as body tonic, treating reproductive disorders like leucorrhea, spermatorrhea and menstrual problems
173	<i>Passiflora edulis</i> Sims	Passion fruit Entsülashe	Leaves and fruit Diarrhoea, dysentery and insomnia. Hypertension and has sedative properties
174	<i>Sesamum orientale</i> L	Sesame	Seeds and leaves Amenorrhea, cholera, constipation, cough, dysentery and ulcers.
175	<i>Bischofia javanica</i> Blume	Java cedar	The leaf juice is used for gingivitis, toothache, cough and sore throat.
176	<i>Phytolacca esculenta</i> Van houtte	Pokewood	Leaves are abortifacient, antibacterial, antifungal, anti-inflammatory, diuretic, expectorant, hyertensive and purgative
177	<i>Peperomia pellucida</i> L.	Shiny bush	Whole herb Eye inflammation, kidney and prostate problems
178	<i>Piper longum</i> L.	Long pepper, Sangshing	Fruits and roots are used as stimulant, carminative, stomachic and condiment. Fruit is an appetizer, aphrodisiac and rejuvenator. Both roots and the fruits are useful in respiratory tract problems,

S.N.	Scientific Name	Local Name	Uses
			dysentery and leucoderma
179	<i>Plantago major</i> Linn	Lemkimao, Aswagola	Whole plant is febrifuge, diuretic, astringent, aphrodisiac, demulcent, expectorant and also used against dysentery, toothache, earache and wounds
180	<i>Plumbago zeylanica</i> Linn	Ceylon leadwort	Roots and seeds are used for the treatment of piles, diarrhoea and toothache.
181	<i>Thysanolaena maxima</i> (Roxb.) Kuntze	Broom grass	Water extract of root is used against fever by Lotha and Ao
182	<i>Rumex crispus</i> L	Curly dock, Furonniki	Leaves can be eaten and also applied on burns. A decoction of the root is applied to dislocated bones. Roots are purgative and stomachic.
183	<i>Fagopyrum tartaricum</i> (L.) Gaertn	Lomfoli	Decoction of whole plant is used for curing diarrhoea, hemorrhage, eczema, liver disorders and high blood pressure.
184	<i>Polygonum capitatum</i> Buch.-Ham. ex. D. Don	Psuzie, Knotgrass	Whole plant is used in cold, wounds and insect bites
185	<i>Monochoria hastata</i> (L.) Solms-Laub.	Hastate-leaf pondweed	Paste of leaves is applied to treat boils
186	<i>Portulaca oleracea</i> L	purslane	Whole plant and seeds are used to treat gonorrhea, burns, kidney and bladder problems
187	<i>Lysimachia laxa</i> Baudo	Yellow loosestrife	Roots for gastric and gas formation in the bowl.
188	<i>Punica granatum</i>	Taliim-tong	Leaves and fruits are used in dysentery, leucorrhoea, enlarged spleen, malaria and sore throat, also provides vitality to the body.
189	<i>Aconitum paniculatum</i> Auct	Monkshood	Roots are used in fever, stomach ache and as an aphrodisiac
190	<i>Clematis buchnaniana</i> D.C.	Shipak, Tewhuomiwu	Leaves are edible. Root paste is used to reduce inflammation. Root juice used in treating peptic ulcers.
191	<i>Rhamnus nepalensis</i> L	Buckthorn	Bark extract is laxative
192	<i>Fragaria moscata</i> L.	Zingsi	Fruits and roots are used in the treatment of dysentery and stomach disorders.
193	<i>Prunus cerasoides</i> L.	Yangpi	Bark is used by the Sangtam tribes for treating body-ache and fruits are astringent
194	<i>Anthocephalus chinensis</i> (Lamb) A. Rich.	Kadam	Fruits are edible. Leaves are used in cases of stomatitis. Barks are used as tonic and febrifuge
195	<i>Coffea bengalensis</i> Roxb. ex. Schult	Coffee plant	Fruits are edible. Leaves are used in stomatitis. Barks are used as tonic and febrifuge
196	<i>Gardenia angusta</i> (Linn.) Merr	Cape jasmine	Hepatitis, cold and fever, toothache, sprains and insomnia
197	<i>Mussaenda hirsutissima</i> (Hook.f.) Hutch ex. Gamble	Mussaenda, Awathsu	Extract of leaves and bark is used for treatment of stomach ulcer, mouth ulcer; paste of leaves is applied in cuts and wounds
198	<i>Paederia foetida</i> L	Bhedia lata, Sunemli	The root extract is used in treating pile problems, inflammation of spleen and pain in chest and liver
199	<i>Rubia cordifolia</i> L	Sangshep, Manjishtha	Roots, leaves and stems have anti-bacterial, antifungal, antiseptic and anti-dysenteric and used by Lotha and Ao
200	<i>Polygonatum kingianum</i> Collet and hemsl	Solomon's seal	Rhizome extracted for tonic, emetic and astringent
201	<i>Aegle marmelos</i> (L.) Corr. Serr.	Stone apple, Holy fruit tree, Beal fruit	Ripe fruits are used as a laxative. Unripe fruits used for chronic diarrhoea and dysentery. Infusions of leaves are found to be effective in peptic ulcers. Roots are used for curing ear problems
202	<i>Murraya koenigii</i> (L.) Spreng	Curry leaf tree	Leaves are taken in dysentery, haemorrhoids, abdominal pain and as de-worming. It purifies blood and also used as carminative
203	<i>Zanthoxylum rhetsa</i>	Indian ivy rue,	Seeds, bark and leaves are used to treat rheumatism, dyspepsia,

S.N.	Scientific Name	Local Name	Uses
	(Roxb.) DC		asthma, bronchitis and malaria
204	<i>Salix tetrasperma</i> Roxb	Indian willow	Decoction of bark is used in fever
205	<i>Carea arborea</i> Roxb	Slow match tree	Leaves and bark are used to treat anaemia, leprosy, laxative, stomachic, abdominal pains and fever
206	<i>Sapindus mukorossi</i> Geartn.	Rhujang-tong	Fruit is an expectorant and also induces vomiting, also use it as soap
207	<i>Houttuynia cordata</i> Thumb	Stink grass, Yimlongchola	Whole plant is used against body ache, cholera, dysentery, arthritis and relieving stomach ache.
208	<i>Bergenia cilata</i> (Haw.) Sternb Wall	Hairy bergenia	Juice or powders of the whole plant are used for treating urinary problems. The root is used to dissolve kidney stones
209	<i>Scoparia dulcis</i> L.	Sweet broom, Licorice weed	Anti-inflammatory, anti-febrile and diuretic properties. It is used as a remedy for hyperthermia, sore throat, cough, boils, skin infections and menorrhoea.
210	<i>Selaginella martensii</i> Spring	Sanjivani	Whole plant is used as remedy for liver disorder and epilepsy by Lotha and Ao
211	<i>Smilax perfoliata</i> Lour	Indian smilax, Chobchini	Leaves and roots Demulcent, depurative, diaphoretic, diuretic, parasiticide, stimulant and used as a tonic by Lotha and Ao
212	<i>Solanum annuum</i> L. Black	Cherry bomb, Kantakari	Fruits are taken in diabetes, body ache, throat infections and relieves toothache
213	<i>Capsicum frutescens</i> L	Birds eye chilli	Fruits are taken to treat sore throat, relieves cough and cold
214	<i>Cyphomandra betacea</i> (Can.) Sendt	Tree tomato, Tamarillo	Fruits are taken to treat cold, sore throat, high blood pressure, liver diseases and also help to cure migraine and severe headache
215	<i>Lycopersion lycopersicum</i>	Cheery tomato	Fruits are used to soothe skin irritation, gastric and colic problems, stimulate liver and kidney and as antiseptic
216	<i>Physalis minima</i> L.	Makoi	Fruits are taken for treatment of urinary problems
217	<i>Solanum khasianum</i> C.B. Clark	Nightshade, Kamonglüzuh	The berries are used in formulation of birth control pills and the seed is poisonous and used as germicide
218	<i>Solanum spirale</i> Roxb	Brush hightshade	Roots are narcotic and diuretic. The various plant parts are used for de-worming
219	<i>Duabanga grandiflora</i> (Roxb. ex DC.) Walp	Khokon	Barks extracted for skin diseases and cancer
220	<i>Stemona tuberosa</i> Lour	Stemona root	Tubers/ root extract has insecticide, antibacterial, anti-parasitic and expectorant properties
221	<i>Abroma augusta</i> L	Devil's cotton	Leaves are used against diabetes and headache. Stem parts soothes irritated or inflamed skin.
222	<i>Tacca chantrieri</i> Andre	Bat plant	Rhizome Gastric ulcer, high blood pressure, burns and laxative.
223	<i>Taxus bacata</i> L.	Yew	Barks and seeds Epilepsy, headache, giddiness, rheumatism, stomach-ache and cancer
224	<i>Camellia sinensis</i> (Linn.) Kuntze	Tea, Sa	leaves and buds Astringent, digestive, carminative, diuretic, thermogenic and nerve tonic
225	<i>Thylypteris palustris</i> Schott	Marsh fern	Grinded leaves applied in cuts and wounds
226	<i>Aquilaria malaccensis</i> Lam	Sungza, Akurr	Oil extract is used in perfumeries. Also used for diarrhoea, dysentery, gout, rheumatism, pneumonia and skin diseases
227	<i>Triumfetta rhomboidea</i> Jacq	Bur bush	Roots and leaves extract used in treatment of intestinal ulcers, boils and also acts as emollient and abortifacient
228	<i>Paris polyphylla</i> Sm	Shingko	Root extract is used in bronchitis, rheumatism and as aphrodisiac
229	<i>Paris quadrifolia</i> Linn	Shingko	Root extract is used in bronchitis, rheumatism and as aphrodisiac
230	<i>Tropaelum majus</i> L.	Nasturtium	Whole plant extract is purgative and anti-bacterial
231	<i>Typha elephantine</i> Roxb	Cat's tail	Decoction of leaves and stem promotes the flow of urine, purifies breast milk, checks internal bleeding and sterility
232	<i>Centella asiatica</i> L. Urb.	Tsüingnünglah	Whole plant is used in skin disorder, syphilis, rheumatism, leprosy, epilepsy, nervous and immune system disorders

S.N.	Scientific Name	Local Name	Uses
233	<i>Girardinia heterophylla</i> Decne	Himalayan nettle	Leaves and roots are used in chronic hepatitis, cholangitis, constipation and diarrhoea
234	<i>Valeriana wallichii</i>	Lomfoli, Gilgiti, valerian	Rhizomes and roots are used in neurosis, epilepsy, hypnotic and spastic disorders.
235	<i>Lantana camara</i> L	Tuqhü xamunu	Fruits and leaves are applied in wounds, increases perspiration, relieves gastric and associated colic problem and antispasmodic properties
236	<i>Callicarpa macrophylla</i> Vahl	Beauty berry, Mütsing	Leaves, root and stem bark are chewed by the <i>Sangtam</i> tribes for treating rheumatism
237	<i>Vitex negundo</i> Linn	Indian wild pepper,	Water extract of leaves is anti-inflammatory, anti-bacterial and anti-fungal
238	<i>Cissus quadrangularis</i> L.	Veld grape	Whole plant is used to treat stomach ache, irregular menstruation, scurvy, asthma, dyspepsia and aphrodisiac.
239	<i>Alpinia galanga</i> (L.) Willd	Kulanjan	Rhizomes are used to treat Rheumatism, bronchial catarrh and acts as a carminative by Lotha and Ao
240	<i>Curcuma amada</i> Roxb	Mango ginger	Rhizomes are used as deworming, anti-inflammatory and anti-fungal
241	<i>Hedychium spicatum</i> Buch-Ham	Sati Pfhesei	Rhizomes are used to treat liver disorder, body ache and also used as carminative, expectorant, stomachic and tonic by Lotha and Ao

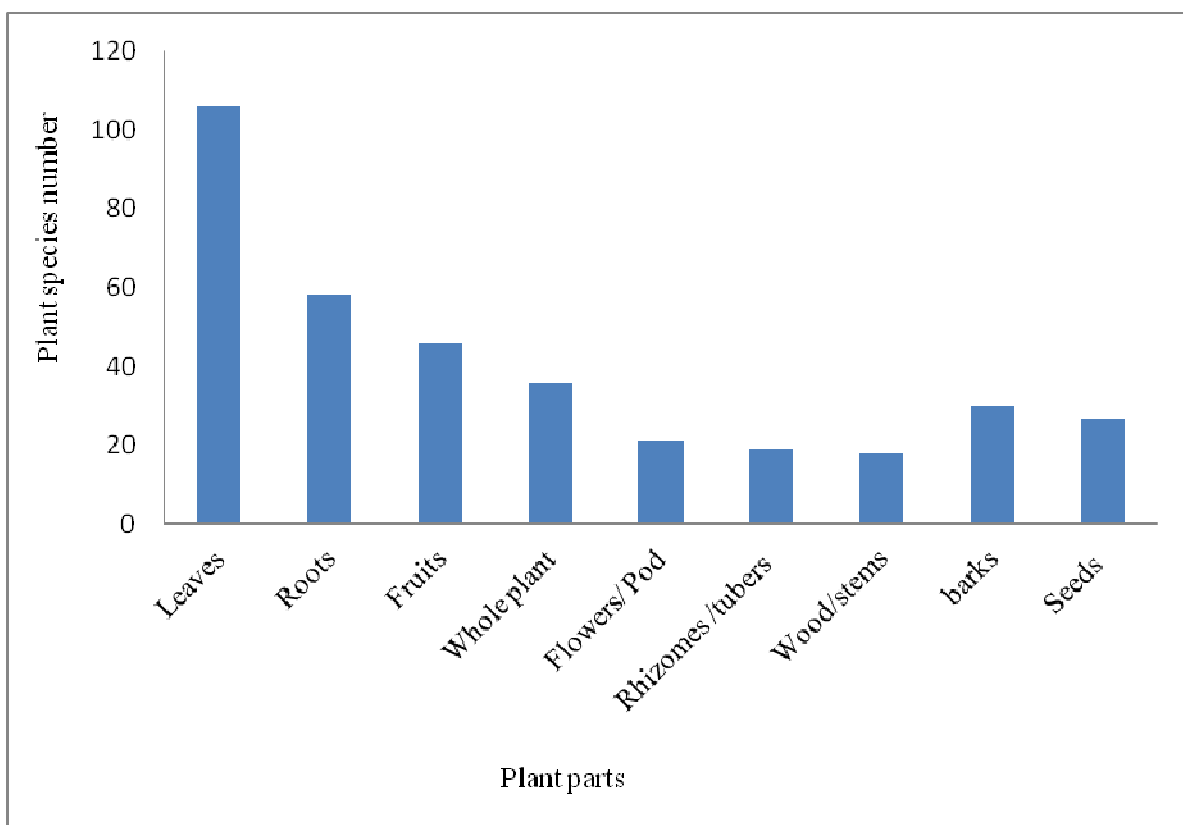


Figure-2
Medicinal plant species as per their used parts by various tribes of Nagaland

About 33 plant species were recorded to use for treating dysentery i.e. *Achyranthes aspera* L., *Tabernaemontana divaricata* (L.) R. Br. *Rhus semialata* Murr., *Panax pseudo-ginseng* Wall., *Tithonia diversifolia* (Hemsl.) A. Gray *Begonia roxburghii* DC., *Rorippa indica* (L.) Hiern., *Bauhinia variegata*

L., *Garcinia xanthochymus* Hook.f.ex T. Anders. *Kalanchoe pinnata* (Lam.) Pers, *Rhododendron arboreum* Sm, *Embllica officinalis* Gaertn., *Phyllanthus fraternus* G. L Webster, *Discentra scandens* (D.Don) Walp, *Litsea citrata* Blume, *Hibiscus cannabinus*, *Parkia roxburghii* G.Don, *Musa ornata*,

Myrica esculenta, *Nymphaea nouchali* Burm.f, *Oxalis corniculata* L, *Passiflora edulis* Sims, *Sesamum orientale*, *Piper longum* L, *Plantago major* Linn, *Punica granatum*, , *Aquilaria malaccensis* Lam. *Fragaria moscata* and *Aegle marmelos* (L). Corr. Serr. The common treatment of Blood Dysentery by bark of *Myrica esculenta* + Peeled parts of Banana rhizome + Guava leaves – are boiled and drink a cup of the decoction twice a day for a couple of days. Amoebic dysentery was observed to treat with just few drops of the exudates of the core stem of Banana trunk. Decoction prepared from leaves of *Impatiens tripetala* Roxb. Ex. DC.(locally called Abakhanha) + leaves of *Tithonia* (*Tithonia diversifolia*) are crushed and same was recorded to take to cure amoebic dysentery. According to the users this formulation is very bitter but gives instant relieve.

Fifteen plant species recorded for treatment of diarrhoea by deferent Naga tribes such as *Rhus semialata* Murr., *Tabernaemontana divaricata* (L.) R. Br., *Rorippa indica* (L.) Hiern., *Bauhinia variegata* L, *Juniperus horizontalis* Moench., *Rhododendron arboreum* Sm, *Litsea citrata* Blume., *Stephania gladulifera* Miers., *Parkia roxburghii* G.Don, *Artocarpus lakoocha* Roxb., *Oxalis corniculata* L., *Passiflora edulis* Sims., *Plumbago zeylanica* Linn., *Fagopyrum tartaricum* (L.) Gaertn, *Aegle marmelos* (L). Corr. Serr., *Aquilaria malaccensis* Lam. and *Girardinia heterophylla* Decne. The most common formulation for treatment of diarrhoea and vomiting is winter bean, commonly called Chühkanyü when prepared in the form of Khichri and consume it prevents diarrhoea and vomiting instantly. Secondly, the grounded inner soft layer after peeling the outer layer of the skin of *Myrica esculenta* was found to take as drink to prevent diarrhoea. Das and Duarah⁴ also reported about 4 plant species for treatment of Child born diarrhoea of Kaibatra community of Assam.

Root decoction of *Costus speciosus* (Konothie) cures Diabetes. The tubers of Konothie are boiled for several times without smashing the tuber and given to drink its decoction to cure diabetes. Other plant species recorded to use traditionally for treatment of diabetes are *Kalanchoe pinnata*, *Diospyros peregrina*, *Phyllanthus fraternus*, *Discentra scandens*, *Elsholtzia stauntonii*, *Lagerstroemia speciosa*, *Syzygium jambos*, *Solanum annum*, *Abroma augusta*, *andrographis paniculata*, *Achyranthes aspera* and *Cathranthus roseus*.

Malaria is one of the major threats to the people of Nagaland. Treatment of the disease was traditionally practised by Naga community healers by the plant species such as *Andrographis paniculata*, *Tabernaemontana divaricata*, *Stixis suaveolens* Roxb., *Discentra scandens*, *Swertia chirata*, *Dichroa febrifuga*. *Leonurus japonicas*, *Magnolia grandiflora*, *Punica granatum* and *Zanthoxylum rhetsa*.

Four (4) plant species were recorded to use for treatment of Cholera patient i. e. *Houttuynia cordata* Thumb, *Mucuna poggei* Taub, *Michelia champaca* L. and *Sesamum orientale* L. and two (2) species as antihelminthic, i.e. *Cyperus involucratus*

Rottb. and *Allium hoojeri*.

Treatment of some types of Cancer was recorded to practice by traditional healers. For that bark or leaves or flowers of *Rhododendron* plants boiled and given to drink its decoction. The outer rough layer of bark of *Oroxylum indicum* is removed and the soft layer of the skin is peeled, grinded and soaked in the warm water for three days and subsequently used to drink its water on the third day helps curing Cancer. Garlic should be used regularly. Consuming the decoction of *Rhododendron arboreum* root cures early stage of cancer diseases. Its application also removes the bones of fish stuck on the wall of the throat. Occasional use of Zurha and Methu would be ideal for precautionary measures. The outer rough layer of bark of *Oroxylum indicum* is removed and the soft layer of the skin is peeled, grinded and soaked in the warm water for three days and was given subsequently to drink its water on the third day helps curing Tuberculosis.

Treatment of Gastritis was investigated and some formulations were recorded such as *Rhus semialata* (Tsiemhezü) + 1 tsp Stingless honey (Elyokhwizü) + (sugar, if required) – add warm water and was given to drink for three days, once a day, in the night time. Whole plant of *Sonchus wightianus* DC.(Gadzü) boiled in water and was taken as soup to get relief from gastritis. Peeled roots of *Curculigo orchioides* Gaertn Phyagye is soaked in the water for some time and was found to drink the juice to get relief of gastritis.

Treatment of Bile and Liver was recorded among the Angami tribes. Cooked crabs are taken for bile ailment. Sugarcane juice is also recorded to prescribe against Jaundice. Among few community it was recorded to take own urine for treatment of liver ailment. *Arisaema* (Zaryü) tuber is cut into small slices, inserted it into the empty shells of capsules and prescribed to swallow or given to eat embedded inside banana as therapeutic bile ailments.

Traditional medicine men of Naga tribes use to treat patients of high blood pressure (BP). Several therapies were recorded for treatment/prevention of High Blood Pressure such as *Spondias mangifera* (Mezasei) fruit juice, fruit of figs, soup of fruits of *Solanum nigrum*, Garlic flicks, *Acorus calamus*, vegetable Passion fruit and its vegetative parts taken Cooked with millet and was given as food. Sweet Basil, either as vegetable or boil used to drink its decoction reduces BP. Avoid pork, bamboo shoot and sour vegetables. For treatment of low BP and weakness the medicine men used to prepare sticky rice into dried powder, boil it and that was given to drink improves low BP.

Two plant species i.e. *Aegle marmelos* (L). Corr. Serr. and *Clematis buchmaniana* D.C. were recorded for treatment of peptic ulcers and *Viburnum foetidum* Wall was recorded as an anti-spasmodic agent used traditional medicine men of the state. Anaemia was found to treat with 2 plant species i.e. *Embllica*

officinalis Gaertn. and *Carea arborea* Roxb.

Three plant species *Cathranthus roseus* (L.) G. Don., *Andrographis paniculata*, and *Abroma augusta* L were found to use for curing Diabetes. *Juniperus horizontalis* Moench , *Dioscorea transversa* R. Br., *Sida rhombifolia*. L., *Plumbago zeylanica* L. and *Achyranthes aspera* L. were found to prescribe against curing of piles by the Naga Medicine men. Juice of ripped and peeled fruits of *Solanum khasianum* also found to prescribe to cure piles.

Toothache is another common disease among Naga communities. A common traditional practice for treatment and relief of toothache was recorded during the survey. Mustard oil is heated by burning candle, scoop out the seeds of *Solanum khasianum* are burned in the mustard oil burning flame and sucked or inhaled through a small pipe at the toothache portion and allowed the mouth the germs falling out of the mouth along with saliva.

During survey it was observed that sinus was treated with naturopathy by using *Eucalyptus globosa* leaves. Firstly, massage the chest and back of the Sinus patient with Mustard oil and Vicks. Secondly, boiled Eucalyptus leaves in water and used to take its vapour bath to the patient and also inhaled the steam through the nose (not through mouth), twice a day for three days, particularly in the evening during bed time to cure sinusitis.

Treatment of muscle injuries was found to practice with traditional phytomedicine. The outer bark of *Embllica officinalis* (Goose berry) is gently removed and the inner layer of the bark is slowly removed by rubbing with sharp knife into powder form. This powdered part of inner layer of the bark when applied on the opened injury wound helps to heal it within few days.

Several kidney Ailments were found to treat by the Naga community medicine men. Kidney patients were found to give the root decoction of *Costus speciosus* (Konothie) to heal ailment. One of the practitioners say its decoction of any part of the plant dilutes concentrated accumulation of blood vessels, heals internal swellings, joint pains, relieves kidney problem etc.

Treatment of several eye problems is recorded to cure with traditional phytomedicines such as *Curculigo orchioides* Gaertn. Phyagye root are cleaned, soaked in clean water overnight and prescribed to apply on the eyes gives soothing affect. Wild grape is cut and the exudates of the vine stem when apply to the eyes cures the eye sores. Application of honey is prescribed to improve the eyes eye sight. Application of own urine to the injured eyes was found to prescribed to heal injury.

Scurvy is also treated traditionally with 4 plant species i.e.

Cissus quadrangularis L. *Sesuvium portulacastrum* L., *Schefflera venulosa* (Wight and Arn.) Harms and *Oxalis corniculata* L. Grinded *Perilla* (Ena) inflorescence and or leaves were found to apply to treat itching and Dhobi itch. Leprosy a kind of skin diseases found to treat with 2 plant species i.e. *Bombax ceiba* L. and *Ficus hispida* Linn.f. Allergy of skin or painful spot on the skin or Kewucu, where its not getting healed and even touching it creates enormous inconvenience can be healed by *Herpes zoster*, locally called as Tewhuomiwu (Viketou Kiso).

Syphilis (Sexually transmitted disease) and Gonorrhoea Cure are found to treat with traditional phytomedicine by a few medicine men of Ao and Angami communities. It was observed that the seed of *Ricinus communis* are crushed into a paste and applied on the venereal disease cure the disease.

As per traditional medicine men *Drymaria cordata* (L.) Willd. Ex Schult. (Püpünha or Kerhepinha) is good for stomach, kidney, swelling of heart having breathlessness. The smaller variety is better. Boiled *Sonchus wightianus* DC.(Gadzü) is prescribed to take as soup or eat raw leaves or any part of the plant can relieve pain of Uterus and abdomen. Gyazü's milky exudates cure the bruises between the thigh and body i.e the groin itching. The study indicated that *Equisetum arvense* L. (Shiehi) is ideal for urinary tract remedy.

Apart from that *Rhus semialata* Murr., *Aquilaria malaccensis* Lam, *Cephalotaxus griffithii* Hook.f., are some endangered plant species found to utilized the people of the state.

Foregoing results convincingly demonstrated the rich traditional knowledge and practices with regards to natural resources and ethno medicine confined among tribal communities of Nagaland. Exploration and documentation of such knowledge has immense importance in policy making, development planning, formulation of conservation and management strategies and scientific intervention for socioeconomic development of the region.

Conclusion

Traditional healing system is unique and suitable strategies are adopted by the tribals for sustenance as they are endowed with a vast knowledge concerning the use of these wild plants. Several reasons act upon for use of traditional medicinal plants by tribal communities. Because the tribal's living in rural areas, they cannot afford or access to formal health care systems and therefore, largely depend on the indigenous knowledge of traditional medicines. Still today, the bioresources are so intrinsically interwoven with the life style of tribals that medicinal plants are inseparable to the poor tribal communities. The use of medicinal plants and its products to cure different ailments is very much reported and recorded, but confirmation and systematic clinical test of these medicinal plants are yet to be scientifically validated for most of the plants till date.



Figure-3
Medicinal plant parts used by various tribes of Nagaland

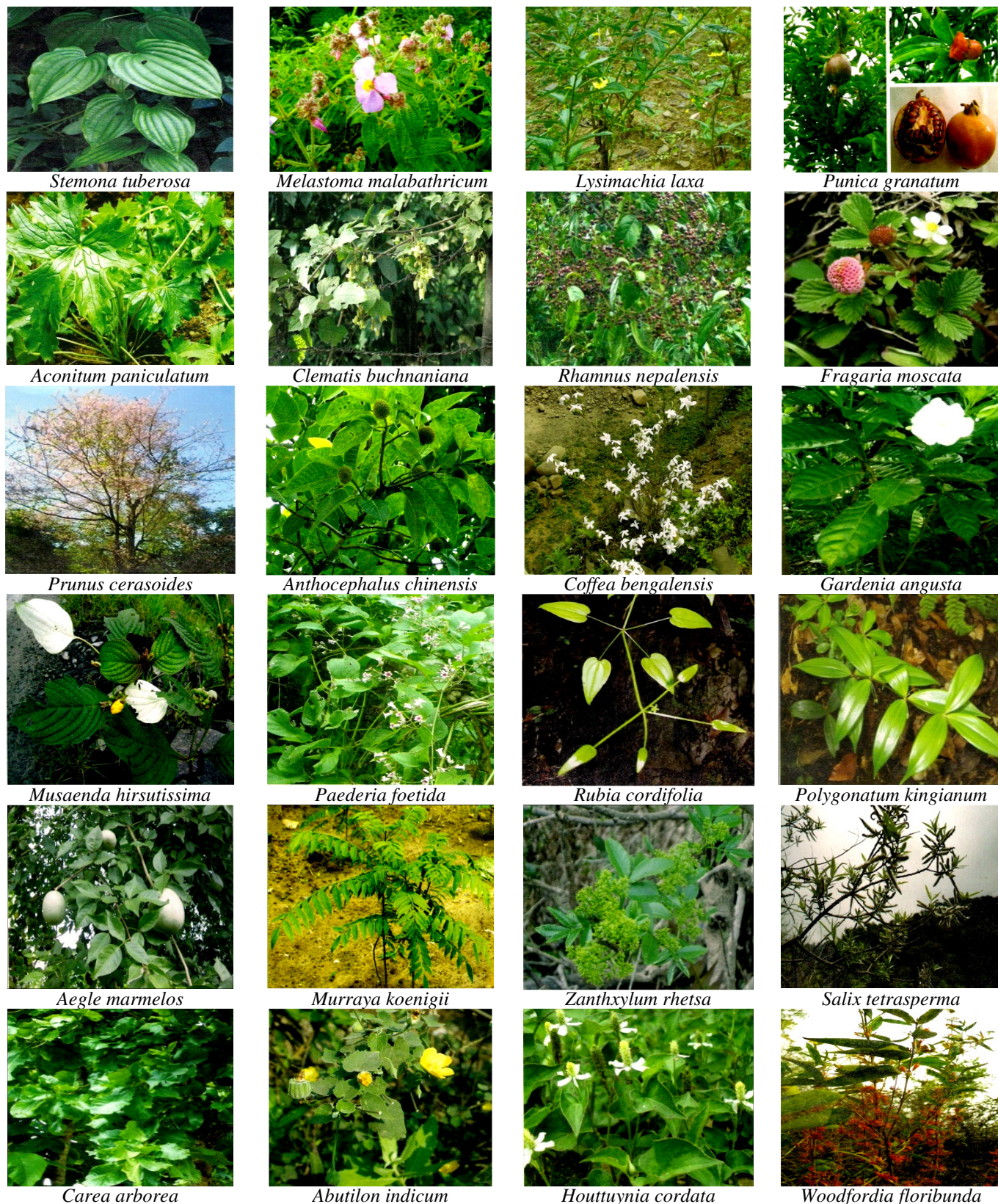


Figure-4
Medicinal plant parts used by various tribes of Nagaland

Medicinal plants practitioners and healers are available and their helps are sought local people for treatment of various ailments and injuries and earn good income too, by way of treatment and sell of medicines. The knowledge thus gained by tribals has been passed on from generation to generation as a guarded secret and, therefore, remained confined to their near and dear ones only. The medicinal plants practitioners do not divulge nor are they willing to share their knowledge with others not only because their source of income will be affected but also are aware that random harvesting would deplete these valuable plants. Research reveals that in order to improve health care of the poor tribal we can build on the existing wealth of experience and the presence of experienced practitioners and revalidate the applications with scientific applications for future generations.

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References

1. Changkija S., Biodiversity of the North East India, In: Proceeding, Wildlife Festival of Nagaland, Kohima (1996)
2. Changkija S. and Kumar Y., Forest Types of Nagaland and its Floristic elements, Higher Plants of Indian Sub-continent (Ed. Gupta, B.K.), *Add. Ser. Indian J For. Ser. VIII*, 127-141 (1997)
3. Changkija S., Folk Medicinal Plants of the Nagas in India, *Asian FolkLore Studies*, **58**, 205-230 (1999)
4. Das K and Duarah P., Traditional Knowledge of the Women's of Kaibarta Community of Assam about the application of Phyto-remedies in certain Common Childhood Diseases, *Int. Res. J. Biological Sci.*, **3(1)**, 57-63 (2014)
5. Deorani S.C and Sharma G.D., Medicinal plants of Nagaland, Bishen Mahandra Pal Sigh, Dehradun, 396 (2007)
6. Gokhale A.M., Signatures of Plants through the Camera, Bishen Singh Mahendra Pal Singh, Dehra Dun, (1998)
7. Hynniewta T.M., Nagaland (In: Mudgal, V. and Hajra, P.K. Eds.), *Floristic Diversity Conservation Strategies in India*, III- BSI, Howrah, (1999)
8. Imchen K. and Jamir N.S., Ethnomedicinal plants used by the Phom Naga tribe in Longleng district of Nagaland, India, *Pleione*, **5(1)**, 77-82 (2011)
9. Jain S.K and Rao R.R., A hand book of field and herbarium methods, Today and Tomorrows Printers and Publishers, New Delhi, 157 (1977)
10. Jamir N.S and Upadhayay D.N., Studies on some medico-herbs from North east India, In proceeding on *Medicinal plant's herbal heritage*, 114-121 (1998)
11. Jamir N.S. and Rao R.R., Fifty new or interesting medicinal plants used by the Zeliang of Nagaland, India, *J. Soc. Ethnobot.*, **2**, 11-18 (1990)
12. Jamir N.S., Ethnobotany of Naga tribe in Nagaland-1, Medicinal herbs, *J. Soc. Ethnobot.*, **9(1)**, 101-104 (1997)
13. Jamir N.S., Indigenous knowledge of medicinal plants in the state of Nagaland, In proceeding on *Horticulture for sustainable income and protection*, **2**, 677-683 (2006)
14. Jamir N.S., Jungdan and Deb M.S. Traditional knowledge of medicinal plants used by the Yimchunger Naga tribes in Nagaland, *Pleione*, **2(2)**, 223-228 (2008)
15. Jamir N.S., Jungdan and Madhabi S., Traditional knowledge of medicinal plants used by the Yimchunger – Naga tribes in Nagaland, *Pleione*, **2**, 223-228 (2008)
16. Jamir N.S., Lanusunep and Narola P., Medico-Herbal Medicine Practiced by the Naga Tribes on the State of Nagaland (India) *Indian Journal of Fundamental and Applied Life Sciences*, **2(2)**, 328-333 (2012)
17. Jamir N.S., *Ornament Orchids plants in Nagaland and its prospects* in Economic Development in Nagaland Prospects and Constraints (eds. Akali, A.J. Sebastian and Savino), 73-76, N.V. Press, Kohima, Nagaland (2006)
18. Kakati L.N and Doulo V., Indigenous knowledge system of Zootherapeutic use by Chakesang tribe of Nagaland, India, *J. Hum. Ecol.*, **13(6)**, 419- 421 (2002)
19. Lanusunep and Jamir N.S., Folk-medicinal herbs used by the Sumi Naga tribes of Zunheboto district, Nagaland, *Pleione*, **4(2)**, 215-220 (2010)
20. Medhi P., Kar A and Borthakur S.K., Medicinal uses of wild edible plants among the Ao Nagas of Mokokchung and its vicinity of Nagaland, India, *Asian Resonance*, **2(4)**, 64-67 (2013)
21. Megoneitso and Rao R.R., Ethnobotanical studies in Nagaland: Sixty two medicinal plants used by Angami Nagas, *J. Eco. Tax. Bot.*, **4**, 167-172 (1983)
22. Rao R.R and Jamir N.S., Ethnobotanical studies in Nagaland-1, Medicinal plants, *Econ. Bot.*, **36**, 176-181 (1982)
23. Rao R.R and Jamir N.S., Ethnobotanical studies in Nagaland-2, 54 medicinal plants used by Nagas, *J. Econ. Taxon.Bot.*, **3(1)**, 11-17 (1982a)
24. Sangtam L.T., Jamir N.S., Deb C.R and Jamir S.A, Study on the Medicinal Plants Used by the Sangtam Naga Tribe in Kiphire District, Nagaland, India, *International journal of ayurvedic and herbal medicine*, **2(2)**, 267-275 (2012)