

Traditional medicinal plants used by the *Adi*, *Idu* and *Khamba* tribes of Dehang-Debang Biosphere Reserve in Arunachal Pradesh

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Abstract

Arunachal Pradesh is the largest state in North Eastern India and is a centre of rich biological diversity. It is the home of tribal people belonging to 26 major tribes and over 110 sub-tribes of the Indo-Mongoloid racial stock. The Adis the Idus and Khambas are some of the dominant tribes among them. Most of these communities are ethnically similar but their geographical isolation from each other has brought amongst them certain distinctive characteristics in language, dress, and customs. They use the diverse flora in their daily life. These tribes are well versed with knowledge of edible greens, vegetables, fruits, seeds and other materials. They have good knowledge of treatment of many ailments by the local plants. 55 plant species belonging to 49 genera and 36 families were found used for medicinal purpose by the *Adis* and the *Idus* of Dehang-Debang Biosphere Reserve (DDBR). About 93 formulations were prepared from 55 plant species. Some formulations were made from single plant; while others were of more plants and were categorized into different types as per curative properties with which they were associated. These medicinal plants have been used traditionally either by eating them as raw drugs, as vegetable or apply it directly to the affected area. The manner in which the plants are used for the treatment of animal bite, cut, wounds, swellings, skin diseases, dental diseases, gastrointestinal disorders, pain, fever and headache, jaundice, leprosy, cholera, cancer, cough and cold, malaria, osteological problems and others are presented in this paper.

Highlights

- Documentation of vast knowledge of medicinal plants of the tribal people of Arunachal Pradesh is essential.
- Conservation and cultivation of medicinal plants would substitute the allopathic medicine.

Keywords: Medicinal plants, Adis, Idus, Khambas, Dehang Debang Biosphere Reserve

Introduction

Arunachal Pradesh falls in the Eastern Himalayan region, a region known as a global hotspot for its rich biological diversity (Ronya, 2000) and it is situated on the confluence zone of the Palearctic, Indo-Malayan and Indo-Chinese bio-geographical realms. With the initiation of the 'National

Biosphere Reserve Programme' in 1986, the 12 designated BRs account in our country for a total geographical area of 53,849 km², on which Dehang-Debang Biosphere Reserve (DDBR) in Arunachal Pradesh is most important. The biosphere reserve is named after the rivers flowing through

this area-the river Dehang (Siang) and Debang and their tributaries (Ghosh, 2012). It is the tenth Biosphere Reserve of India which covers northern greater part of three districts like West Siang, Upper Siang and Upper Debang Valley in Arunachal Pradesh (26° to 29°28'N latitude and 91°25' to 97°24' E longitude) along the border of China. The major tribal communities inhabiting in BR are *Adis* (along with sub tribes *Ashings*, *Bokars*, *Boris*, *Minyongs*, *Palibos* and *Shimongs*), *Idus*, *Khambas* and *Membas*. Hills and foothills are inhabited by the *Idus* and plains are inhabited by the *Adis* (Ghosh *et al.*, 2012). The *Idus* inhabit close to eastern and north eastern borders of Upper Siang and Upper Debang Valley, an area of vast formidable mountainous terrain extending from the Indo-Tibetan Border on the north to the confluence of Lohit and Debang rivers on the south. They are short-statured and have very pronounced mongoloid features with flat and broad faces, nostrils wide and round, the eyes small and oblique. The women crop their hair in front but leave this long at the back. But in the men the long hairs are twisted into a bun at the back. They are practicing shifting cultivation on high hills where no flat land is available. Wet rice cultivation has become popular to those have come down to the plains. Rice and millet is their main food apart from roots and tubers of various wild plants including meat and fish. Conservation of biodiversity of DDBR is essential for food and medicinal security of these tribal people (Bantawa *et al.*, 2009; Kumar and Dwivedi, 2011; Chakraborty, 2012). '*Reh*' is their most important festival. The *Adis* inhabiting in the western part of Upper Debang Valley and in West Siang of the left bank of the Syom river are the *Minyongs*, the *Boris* and the *Pallibos*. The *Minyongs* and *Boris* are short and sturdy with straight black hair, trimmed round the head above the ears, and mostly with brown complexion. Their religious belief revolves round the Donyi-Polo (The Sun and the Moon). They worship various deities too by offering eggs and sacrifices. There are two types of worship-one for prosperity, productivity and health and the other to remove sufferings, illness and ghosts. The most important and the main community festival is the *Solung* which is celebrated annually for prosperity, happiness and bumper crops. They are keen hunters and go for hunting either in group or individually. Unlike hunting, fishing is done by both men and women by hand, bamboo traps or poisoning. The *Khambas* and *Membas* in north eastern of Upper Siang are Buddhists. The *Khambas*, both men and women, keep long hair. Their dwelling houses are all made in timber plants. Being Buddhists they do not sacrifice any animal in worship.

Ponung is the common traditional dance of all the tribal communities of Arunachal Pradesh. Padam is a dialect of the *Adis* language to which *Idus* are also related. Both the languages are Tibeto-Burman speech family (Roy, 1997). Through the years of co-existence, people have in depth knowledge of their forests, forests plants and their utilization through their own indigenous ways. Due to their close association with forests, people are well familiar with medicinal plants and have their own means and ways to use them. They keep their knowledge about the use of plants as medicine among them only by oral and transmission from generation to generation. It is their family's property. It is difficult to get the detailed information about medicinal plants from them due to their conservative attitude. They also claim that if they disclose the use of such medicinal plants to outsiders, the medicinal effect of such plants will vanish. However, the medicine men know certain curative properties of herbs/plants growing in these tribal localities. Concerning with the *Adi*, *Idu* and *Khamba* tribes the documentary evidences of their knowledge or usage of such flora for different ailments is limited (Arunachalam *et al.*, 2001; Das and Hui, 2006; Patidar *et al.*, 2013). An effort has been made in this paper to enlighten the composition of plant species for preparing indigenous medicines and their mode of uses by the above mention tribes in DDBR.

Methodology

Extensive survey works were conducted during the year of 2000 to 2004 at Payum circle in West Siang, Tuting, Jenging and Singa circles of Upper Siang district, and Mipi, Anini in Upper Debang valley districts of Arunachal Pradesh that come under the DDBR. Among them first three circles are inhabited by the *Adi* and the last three is dominated by the *Idu* tribe. The study was undertaken in 20 villages namely Mollo, Payum camp, Payum village; Ramsing, Zido, Hongkong (Tuting), Naming; Silipu, Simuge, Old Singa, Singa, Simuling of Singa circle, Emuli, Mipi (H.Q.), Ebali of Mipi circle and Tapo, Alinye (L.G.), Gipuling, Angrim valley and Acheso of Anini circle. Several days were spent along with the local people in the study area. The village headman (*Gram bura*) and herbal practitioners were interviewed and various uses of the plants/plant parts along with their local names were recorded in the study field. Among the village experts, one person from each village was hired to help in survey and collections of the medicinal plants. To eliminate any chance of error in identification of specimen plants along with the medicinal values as gathered



from the village experts, the specimen plants were brought to the laboratory for further identification and kept in a herbarium with full information. The materials collected were kept on the Herbarium sheets giving botanical names, tribal names and uses. The specimens were thus dried, poisoned and mounted as per standard methods (Jain and Rao, 1977) and deposited as voucher specimens in Forestry Department, North Eastern Regional Institute of Science and Technology, Itanagar, Arunachal Pradesh.

Results and Discussion

Ethno medicinal plants have been arranged in alphabetical order of the scientific names. After scientific name, the family to which the plant belong has been given in parenthesis, the local name (s) recorded in the field was also provided, following it the parenthesis indicating the tribes in short form also. The names used by the *Adis* (A), the *Idus* (I), and the *Khambas* (Kham) of Biosphere Reserve along with the Assamese (As), Nepali(N), Kachari (Kach), Monpa (Mon), Nishi (Nis), Hindi, and Bengali (Beng) available for a species were also provided. Only important synonyms were given (Table 1). During field survey 55 plant species collected belonging to 49 genera and 36 families were found used for medicinal purpose by the tribes of DDBR. Of these, 30 species were also used for other purposes as well. 25 species seemed to be little known or unknown for their medicinal values; while the rest 30 species, though not all widely known, were already referred in literature (Dutta and Dutta, 2005; Khan, 2005). Among the medicinal plants, 14 species are in cultivation. About 93 formulations are prepared from 55 plant species. Some formulations are made from single plant, while the others are of more than one plant. The formulations are categorized into different types on the basis of the curative properties with which they are associated. These are for curing (i) Animal (including insect) bite, (ii) Contraceptive, (iii) Cut, wounds, swellings, (iv) Skin diseases, (v) ENT diseases, (vi) Dental diseases, (vii) Gastrointestinal disorders, (viii) Pain, fever and headache, (ix) Jaundice, (x) Leprosy, (xi) Cholera, (xii) Cancer, (xiii) Cough and cold, (xiv) Malaria, (xv) Ostiological problems, (xvi) Respiratory disorders and (xvii) others (Singh, 2012). Out of these formulations, some plants like *Coptis teeta*, *Musa velutina*, *Tephrosia candida*, *Melletia pachycarpa* and *Litsea cubeba* are used to cure worm parasite, *Aconitum ferox*, *Drymaria cordata*, *Polygonum capitatum*, *Prunus acuminata* etc. are commonly used to cure animal bite, *Zanthoxylum acanthopodium* used as female contraceptive, *Zanthoxylum*

acanthopodium, *Riccinus communis*, *Ageratum conyzoides*, *Hedychium spicatum*, *Pouzolzia viminea*, Bamboo sps., *Colocasia esculenta*, *Azadirachta indica*, *Fagopyrum tataricum* used for curing cut, wounds, swellings and skin diseases, *Solanum incanum* against dental diseases, *Musa* sp, *Musa velutina*, *Riccinus communis*, *Solanum torvum*, *Solanum nigrum*, *Zingiber officinale*, *Begonia* sp., *Garcinia pedunculata*, *Callicarpa arborea*, *Psidium guajava*, *Centella asiatica*, *Ananas comosus*, *Azadirachta indica*, *Fagopyrum esculentum*, *Hedychium spicatum*, *Mangifera sylvatica*, *Rhus semi alata*, *Swertia chirata* against gastrointestinal disorders, *Zanthoxylum acanthopodium*, *Zanthoxylum rhesta*, *Coptis teeta*, *Zingiber officinale*, *Callicarpa arborea*, *Aconitum ferox*, *Fagopyrum tataricum*, *Musa velutina*, *Rhus semi alata*, against pain, fever and headache, *Saccharum officinarum*, *Averrhoa carambola*, *Carex* sp. against jaundice, *Phrynium parviflorum* against leprosy, *Fagopyrum esculentum* against Cholera, *Zanthoxylum acanthopodium* against cancer, *Zingiber officinale*, *Trevesia palmata*, *Allium sativum*, *Fagopyrum esculentum* against cough and cold, *Coptis teeta* against Malaria, *Pothos scandens*, *Aconitum ferox*, *Plantago major* against Ostiological problems, and *Solanum torvum*, *Solanum intregrifolium*, *Clerodendron colebrookianum* against Blood pressure, *Solanum torvum*, *Begonia* sp., *Paris polyphylla* against fat degrading, *Acanthopanax aculeatum*, *Bidens biternata*, *Leucosceptum canum* against eye complain, *Zanthoxylum acanthopodium* against Boils, *Coptis teeta* against piles, *Zanthoxylum rhesta* against anorexia, *Musa* sp against appendicitis, *Riccinus communis* against fire burn, *Solanum torvum* against constipation, *Artemisia indica* against common diseases and rituals, *Syzygium cumini*, *Hedychium spicatum* against stimulant, *Houttuynia cordata* against body cooling (Ghosh, 2005). The results showed frequent use of the formulations against gastrointestinal disorders and were followed by those used against cut, wound, swelling and skin diseases. The formulations were also used whenever required to cure pain, fever, headache, animal bite, ostiological problems and other ailments. The study also revealed that the tribals mostly used the formulations orally. They also used the formulations as balm, ointment, bandage and smoking. Some plants have insecticidal properties too. Natural drugs can be extracted from such plants for proper chemical analysis. Many wonder drugs discovered during the last fifty years indicate that there are still untouched plants of unknown medicinal value, but used as tribal medicine (Das, 2012; Ghosh *et al.*, 2012; Singh, 2012).

Table 1: Ethno-medicinal plants used by the tribes of Arunachal Pradesh

Scientific name (Family)	Local name	Ailments	Mode of preparation and Administration
<i>Acanthopanax aculeatum</i> (Aiton) Seem. (Araliaceae)	<i>Tako-laksin</i> (A)	Eye complains	Few drops of stem extract is applied on the infected eyes.
<i>Aconitum ferox</i> Wallich ex. Serin g (Ranunculaceae)	<i>Embo</i> (A), <i>Mra</i> (I), <i>Chanduck</i> (Mem)	Snake bite antidote, boil, bone fracture, body pain and swelling	The tubers/leaves paste is applied on the bite area after pilling of the area.
<i>Ageratum conyzoides</i> Linn. (Asteraceae)	<i>Pakku</i> (A);	Check bleeding	Leaf juice is applied on wounds.
<i>Allium sativum</i> L. (Liliaceae);	<i>Jackok</i> (A), <i>Dilap</i> (A), <i>Elompra</i> (I)	Stomach trouble, cough and cold	Cloves are taken as raw.
<i>Ananas comosus</i> Merr. (Bromeliaceae)	<i>Dibechengki</i> (A);	Diarrhea and stomach problems	Small piece of fruit with salt and chillies is taken orally.
<i>Artemisia nilgirica</i> Wild	<i>Illumu</i> (I), <i>Titapati</i> (N)	Wound and nose bleeding	Whole plant especially leaf decoction is used during wound healing and nose bleeding.
<i>Averrhoa carambola</i> L (Averrhoaceae)	<i>Kordoi</i> (As), <i>Kamranga</i> (Beng.)	Jaundice	Fruit juice is taken with sugarcane juice.
<i>Azadirachta indica</i> A. Juss.	<i>Namsu</i> (A) (Meliaceae)	Stomach problem, check bleeding and environment purifier	The leaves are taken to cure stomach problem. The crushed leaves are used for blood clotting. The Adis preserve the bark during sickness of their family members.
<i>Bambusa pallida</i> Munro (Poaceae)/	<i>Badu</i> (I), <i>Makal/Jati bans</i> (As)	Check bleeding	The scrapped green epidermis of intermode is applied on wounds.
<i>Begonia</i> spp. (Begoniaceae)	<i>Abibying/ Buk</i> (A),	Diarrhea, dysentery, stomach pain andfat degradation	Boiled rhizome water/paste with cucurbit seeds is taken orally to cure diarrhea, dysentery. The whole plant aqueous paste is taken to cure excessive fat.
<i>Bidens biternata</i> (Lour.) Merr. & Sherff (Asteraceae)	<i>Tagam Nyeinyam/Takam</i>	Eye, ear and asthma	Fresh plant juice is used as eye and ears drops. Roots & seeds for asthma.
<i>Calliandra arborea</i> Roxb. (Verbenaceae)	<i>Pechi</i> (Nis) <i>Toti</i> (A)	Diarrhea, dysentery, stomach pain, fever and headache	The aqueous paste of young shoot with rhizome of <i>Zingiber officinale</i> and leaves of <i>Solanum torvum</i> are taken orally.
<i>Carex nubigena</i> D. Don (Cyperaceae)	Jaundice <i>Tabey</i> (A)	Stem extract of fresh plant is taken orally.	The twigs with fresh leaves (5-6) are chewed.
<i>Centella asiatica</i> (L.) Urban (Apiaceae)	<i>Loram/Kipum Yayum</i> (A)	Gastric problem	
<i>Clerodendron colebrookianum</i> Walp (Verbenaceae)	<i>Hoyun/Oyin</i> (A), <i>Kopak</i> (Mem), <i>Apusungung</i> (Kham), <i>Nephaphu</i> (As)	Blood pressure and Lice bite	Fruit paste alone or with young shoots cooked with rice is used. The extracted oil from seeds is used to kill lice.
<i>Colocasia esculenta</i> (Linn.) Schott (Araceae)	<i>Enge</i> (A), <i>Sona</i> (I)	Check bleeding	Crushed leaf is used over the wounds.
<i>Coptis teeta</i> Wall. (Ranunculaceae)	<i>Mishmiteeta</i> (A), <i>Manbai/ Ayaro/ Aro</i> (I)	Malaria, stomach pain, piles, tape and ring worm, snake bite and loose motion	Mature root boiled yellow cooled extract is used to cure malaria and as antidotes for tape and ring worm. Few drops of latex of <i>Euphorbia</i> sp. and young fruit juice of <i>Ricinus communis</i> is used for better cure of malaria. The root extract with bear liver juice is taken to cure piles problem. The root extract with paste of Zingiber rhizome is taken

Contd.

Scientific name (Family)	Local name	Ailments	Mode of preparation and Administration
<i>Dillenia indica</i> L. (Dilleniaceae); <i>Drymaria cordata</i> Wild (Caryophyllaceae)	<i>Chung/Otenga/Soh-kriban</i> (As) <i>Aku-taiim</i> (Kham)	Fever Leach bite	orally as well as ointment against snake bite. Juice is taken as cooling beverage in fever Leach bite wound is covered with little warm leaf paste as antidote. Grain paste suspension is taken orally.
<i>Fagopyrum esculentum</i> Moench. (Polygonaceae)	<i>Trogochocina</i> (<i>Mem/Khamb</i>), <i>Akka</i> (I)	Cough and cold, cholera, diarrhea and abnormal obstruction	Grains paste is taken as ointment for relieve from these problems. Water boiled extract of dry fruit pieces is taken orally on empty stomach. Paste/juice of freshly collected plant is applied on wounds.
<i>Fagopyrum tataricum</i> Gaertn. (Polygonaceae)	<i>Akka/Aabra</i> (A)	Joint pain, cut, wound and check bleeding	
<i>Garcinia pedunculata</i> Roxb. (Clusiaceae)	<i>Tabing-asing</i> (A)	Diarrhea, dysentery and stomach pain	
<i>Hedychium spicatum</i> Ham. (Zingiberaceae)	<i>Royik</i> (A)	Stop bleeding	
<i>Houttuynia cordata</i> Thunb (Saururaceae)	<i>Amuli</i> (I), <i>Gandey</i> (N)	Body cooling	Paste of boiled plant parts (<i>Halia</i>) is taken during summer.
<i>Leucoscepttrum canum</i> Sm. (Lamiaceae)	<i>Yubshing</i> (Kham), <i>Tote</i> (A)	Eye problem	Watery extract of stem is used to cure it.
<i>Litsea cubeba</i> (Lour.) Pers. (Lauraceae);	<i>Nyengma</i> (Kham)	Tape and ring worm parasite	Oil of dry fruits is taken orally to eliminate tape and ring warm. It is used as cream to protect from local insects (<i>Dumdim</i>).
<i>Mangifera sylvatica</i> Roxb. (Anacardiaceae);	<i>Pen-lokar/Tabing/Bon-am</i> (A)	Stomach pain	Aqueous of boiled dry fruit is taken orally.
<i>Mellettia pachycarpa</i> Benth. (Fabaceae)	<i>Tasmu</i> (A)	Worm parasite	The paste/powder is taken orally with water.
<i>Melia azedarach</i> L. (Meliaceae)	<i>Jungli neem</i> (A)	Diseases spread	Bark is kept in the room during sickness of family members. Leaf decoction is used in drinking purpose to cool the body and mind.
<i>Mentha arvensis</i> L. (Lamiaceae);	<i>Pudina</i> (A/I)	Cool felling	
<i>Musa velutina</i> Wendl and Drude. (Musaceae)	<i>Luro, Copack, Kodum</i> (A)	Dysentery, stomach pain, diarrhea, fever and dog bite antidote	Aqueous/powder of dried seeds is taken orally on empty stomach for appendicitis and stomach pain. The boiled juice of inflorescence and pseudo stem is taken to cure diarrhea and fever respectively. Along with it the seeds of <i>Tephorisa candida</i> are chewed as antidote against dog bite. The powder/paste with water is taken orally. The latex is used as ointment over the affected part or the tablets prepared from the corm are taken orally. The slightly fire heated rubbed leaves is tied on the affected parts. Fresh leaf extract is used as antidote to scorpion bite.
<i>Paris polyphylla</i> Sm. (Alismataceae)	<i>Dipogoik</i> (A)	High fat	
<i>Phrynium parviflorum</i> Roxb. (Musaceae)	<i>Ko-pat/ Hakoda</i> (A)	Leprosy	
<i>Plantago major</i> Linn. (Plantaginaceae)	<i>Arisapana</i> (I), <i>Achodina</i> (Kham)	Bone fracture	
<i>Polygonum capitatum</i> Ham. (Polygonaceae)	<i>Apu-mo</i> (I)	Scorpion bite	
<i>Pothos scandens</i> L. (Araceae)	<i>Lomangloset</i> (A)	Bone fracture	Fresh leaf paste is plastered on the affected part and covered with small pieces of bamboo.

Contd.

Scientific name (Family)	Local name	Ailments	Mode of preparation and Administration
<i>Pouzolzia viminea</i> Wedd. (Urticaceae)	<i>Oyek</i> (A)	Check bleeding	The fresh root bark is applied.
<i>Prunus acuminata</i> Hk.f. (Rosaceae)	<i>Amuchi</i> (I), <i>Tambur</i> (Mem/Kham)	Lice bite	Crude oil extracted from dryripen seeds is used.
<i>Psidium guajava</i> Linn. (Myrtaceae)	<i>Mundura</i> (As /I)	Diarrhea, dysentery and stomach pain	Freshly collected young leaf juice is taken orally on empty stomach.
<i>Pyrus pashia</i> (Rosaceae)	<i>Pisi</i> (I), <i>Chanese tanga</i> (N)	Stomach pain	Raw fruits are taken to cure it.
<i>Rhus semi alata</i> Murr. (Anacardiaceae)	<i>Amashi</i> (I), <i>Naga tenga</i> (As)	Fever, stomach pain, fatigues, body and muscle pain	Powder/juice of boiled dry seed is taken 1/3 tea cup orally thrice a day until pain is cured.
<i>Riccinus communis</i> Linn. (Euphorbiaceae)	<i>Toti/ Akirore</i> (A)	Burn, Diarrhea, dysentery and stomach pain	The latex is used as ointment over the burnt area to restore normal skin. Aqueous fruit powder is taken orally to cure diarrhea and dysentery.
<i>Solanum incanum</i> L. (Solanaceae)	<i>Cheteka Kara</i> (I)	Toothache and gum problems	Dry fruits are taken to smoke and crushed fresh roasted root is applied on gum to heal up the wound.
<i>Solanum integrifolium</i> L. (Solanaceae)	<i>Cheteka</i> (I)	Blood pressure	Fruits are taken as roasted or boiled vegetable.
<i>Solanum nigrum</i> Linn. (Solanaceae)	<i>Gangko</i> (Kham)	Stomach disorder	Tender leaves as are taken as boiled vegetable.
<i>Solanum torvum</i> Swartz (Solanaceae)	<i>Bangko/Baque/Bak</i> (A), <i>Bhita-tita</i> (As)	Constipation, high fat, blood pressure, diarrhea, dysentery and stomach pain	The aqueous fruit paste/ powder taken to cure constipation and fat problem. This paste along with tender shoot of <i>Callicarpa arborea</i> and rhizome of Zinger are taken to cure blood pressure.
<i>Spilanthes paniculata</i> Clarke (Asteraceae)	<i>Marsha</i> (A)	Stomach problem	Tender shoots are taken with dry meat and rice powder.
<i>Syzygium cumini</i> (Linn) skeels. (Myrtaceae)	<i>Yhanaha shingh</i> (Kham)	Stimulant	Raw fruit pulp is taken as stimulant.
<i>Swertia chirata</i> Ham. (Gentianaceae)	<i>Puwtik</i> (Mem), <i>Titta</i> (Kham)	Stomach pain	Water boiled extract of plant is taken orally at room temperature.
<i>Trevesia palmata</i> Vis (Araliaceae)	<i>Tang-gongs</i> (A)	Cold and Cough	A piece of wood with the rhizome of Zinger is chewed.
<i>Zanthoxylum acanthopodium</i> DC. (Rutaceae)	<i>Eyar-ma</i> (A)	Fever and headache, wounds, cancer,, boils, check pregnancy	The leaf paste is applied as ointment over the cancer affected and boils affected areas. The aqueous paste of both fruits and leaves is taken orally to check pregnancy, headache, fever and wounds.
<i>Zanthoxylum reshta</i> (Roxb.) DC. (Rutaceae)	<i>On-ear</i> (A)	Fever and headache	The suspension of immature fruit paste is taken orally.
<i>Zingiber officinale</i> Rosc. (Zigiberaceae)	<i>Take/Kekir</i> (A), <i>Anjitta</i> (I)	Fever, cough and cold, diarrhea, dysentery and headache	Rhizome paste is taken to cure fever, cough and cold. This paste along with cloves of <i>Allium sativum</i> and the liver of <i>Mithun</i> (<i>Bos frontalis</i>) are taken to cure headache.



The results of our study are in conformity with the above views. A wild indigenous germplasm of such important medicinal plants could be established to achieve the socio-economic and industrial development of the tribal areas without changing the environment. The *Idus* of Singa and Upper Debang Valley district of Arunachal Pradesh conserved the *Coptis teeta* (*Mishmi teeta*) in the hilly forests to be used as common medicine of some diseases. Other plants under cultivation are *Solanum torvum*, *Zingiber officinale*, *Psidium guajava*, *Saccharum officinarum* and *Musa* sp. which are used against some diseases. Medicinal plants used by ethnic communities could be considered as a substitute of allopathic medicine with proper conservation and cultivation measures. There is need to gear documenting process of vast knowledge of medicinal plants of the tribal people of Arunachal Pradesh scientifically and conserve the plants for better future of the human society of the world.

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