

*Full Length Research Paper*

# Lesser known ethnomedicinal plants of Mizoram, North East India: An Indo-Burma hotspot region

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**The present paper provides first-hand information of certain ethnomedicinal plants from an Indo-Burma hotspot region (Mizoram). A total of 57 less known ethnomedicinal plant species belonging to 52 genera and 36 families were recorded from tropical evergreen forest and protected areas of Mizoram. The medical applications and conservation status of recorded plants have been described.**

**Key words:** Traditional ecological knowledge (TEK), ethnobotany, ethnomedicinal plants, IUCN.

## INTRODUCTION

The practice of ethnomedicine is an important vehicle for understanding indigenous societies and their relationships with nature (Anyinam, 1995). According to the World Health Organization (WHO) as many as 80% of world's population depends today on traditional medicine for their primary health care needs (Azaizeh et al., 2003). Recent decades have seen significant changes occurring within several aspects of ethnomedicine as a result of environmental degradation and tremendous changes in modern, social, and economic systems (Anyinam, 1995). These factors in totality resulted in disappearance of ethnomedicinal plants at regional as well as global scale (Baillie et al., 2003).

Ethnomedicines are of particular relevance in developing countries like India (Ali, 1999; Jamir et al., 1999; Sharma et al., 2001; Buragohain, 2008; Ignacimuthu et al., 2008), where modern health service is limited. In Indian Himalayan region (IHR), the number of doctors and other medical staff is very low in comparison to the total population (Sharma et al., 2001). Moreover, the topography of IHR is responsible for the under developed communication system. Thus, the people of the IHR can-

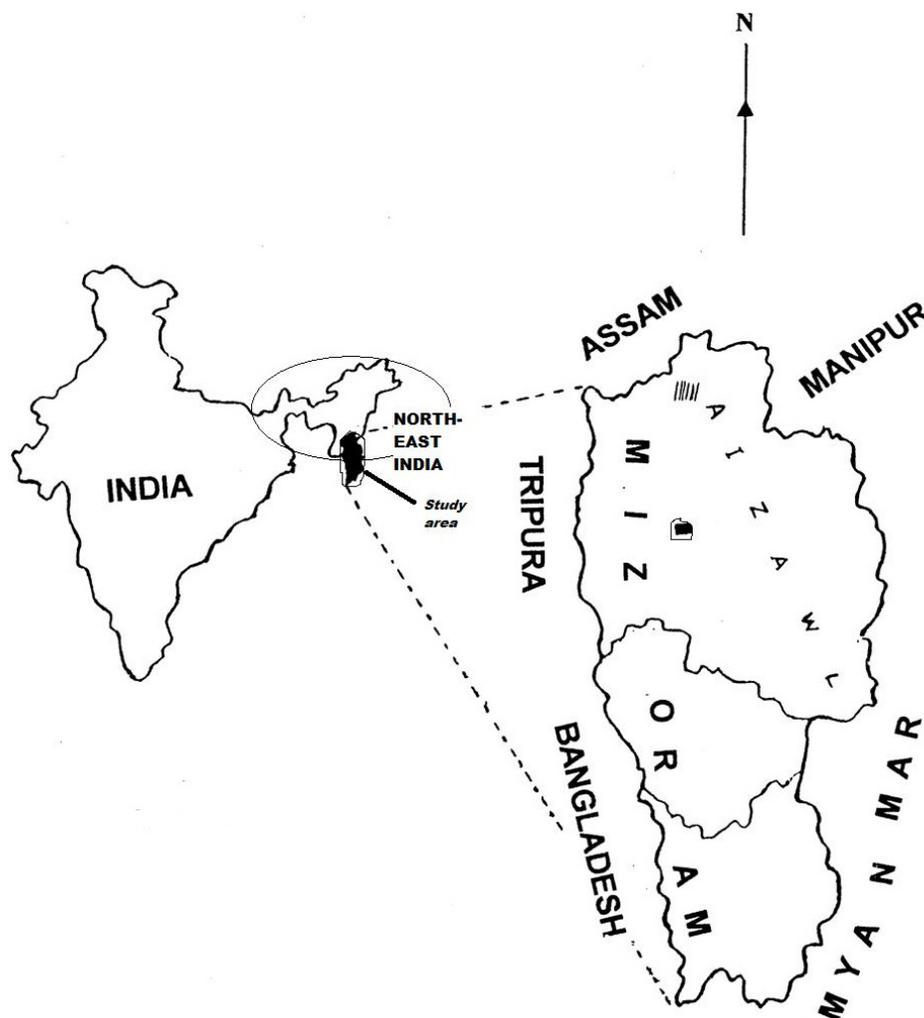
not avail of modern methods of treatment and they search for remedies from nature (Sharma et al., 2001).

The North Eastern (NE) IHR comprising 8 states harbour more than 180 major tribal communities of the total 427 tribal communities found in India (Sajem et al., 2008). A large part of the NE India is botanically under-explored or even unexplored (Jamir et al., 1999; Sharma et al., 2001). There is a great paucity of documentation of medicinal plants of Mizoram, a NE state. Moreover, in Mizoram the number of doctors and other medical staff is very low in comparison to the total population (ratio doctors to total population was 1:3415 (Sharma et al., 2001). In the light of these facts, present work aims to investigate the medicinal ethnobotany of Mizoram.

## Study area

Mizoram (extended between latitude 21° 58' - 24° 45' and 24° 35' N and between 92°15' and 93°29' E longitude) is an important state of north east India, sandwiched between Burma and Bangladesh (Figure 1) and also is a part of the 34 mega-biodiversity hotspots of the world (Rai, 2009). The altitude ranges from 500 to 2157 m. Mizoram is under direct influence of monsoon, with heavy rains from May to September and an average rainfall of 245 cm per year (Sharma et al., 2001).

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**Figure 1.** Location of study area (NE India: An Indo Burma Hotspot) and study site (Mizoram).

## MATERIALS AND METHODS

The indigenous peoples belonging to different Mizo tribes were interviewed quarterly pertaining to mode of use and identification in local name as per (Lalramnghinghlova, 2003). Details of the Mizo tribes with their photo plates are mentioned elsewhere (Lalramnghinghlova, 2003). During 2007 - 2008, we recorded these ethnomedicinal plants from tropical evergreen forests (Aizawl and Kolasib forest division) and protected areas (Ngengpui and Palak wildlife Sanctuaries) of Mizoram. Application of IUCN Criteria at Regional Levels was adopted for threat assessment (IUCN, 2003). Voucher specimens/plant samples were deposited in the herbarium of Mizoram University, Aizawl, India.

## RESULTS

A total of 57 ethnomedicinal plants from 52 genera and 36 families which have been documented for the first time from Mizoram have been listed in the present article (Table 1). Scientific name, local name, Family, their habit, IUCN conservation status in Mizoram, plant parts used are mentioned precisely. Maximum numbers of ethno-

medicinal plants were recorded from Zingiberaceae and Euphorbiaceae (each having four species belonging to four genera) followed by Fabaceae, Asteraceae, and Acanthaceae (each having three species belonging to two genera). Although numbers of families were quite high in relation to number of recorded plants, many families were represented by single ethnomedicinal plant. Further, mode of utilization and their specific role in curing different diseases is also given. Some of the 'Red Listed species' documented in the study area are marked (IUCN, 2009).

Out of 57 plants recorded, seventeen ethnomedicinal plants recorded for the first time from Mizoram belonged to different threatened categories (IUCN, 2003; IUCN, 2009) e.g. *Ardisia polycephala* (VU), *Begonia inflata* (NT), *Blumea lanceolaria* (VU), *Canarium strictum* (NT), *Cautleya gracillis* (EW), *Claoxylon khasianum* (NT), *Curcumorpha longiflora* (VU), *Dalbergia pinnata* (CR/VU), *Dendrobium ariaeflorum* (EN), *Garcinia lancaeaefolia* (EN), *Gelsemium elegans* (VU), *Helicia excelsa* (NT),

**Table 1.** List of first time reported ethnomedicinal plants from Mizoram (NE India): An Indo-Burma hotspot.

S.N.	Scientific name and voucher specimen number	Local/Mizo name	Family	Habit	Status	Part used	Mode of Utilization/Uses
1.	<i>Aeschynanthus sikkimensis</i> Stapf. EFPN LR 08186	Bawitehlantai	Gesneriaceae	An epiphytic undershrub	LR	Rootstock and flowers	Fever and pain; Juice of crushed leaves is applied for inflammatory glands; infusion of flowers is taken against tonsillitis.
2.	<i>Alpinia bracteata</i> Roxb. LR 08187	Aichal	Zingiberaceae	Herb	LR	Rhizome	Colic problems, dyspepsia, powdered rhizome with that of <i>Zingiber officinalis</i> with little salt is used for stomatitis and cough
3.	<i>Anacolosia crassipes</i> Kurz. LR 08171	Lushainatur	Olacaceae	Shrub	LR	Leaf	The leaves are boiled and the water is used for bathing children suffering from measles and skin eruptions
4.	<i>Angiopteris evecta</i> (Forst.) LR 08047	Arthladawnpui	Angiopteridaceae	Terrestrial fern	LR	Root-stock	Paste used in fracture of bone
5.	<i>Anogeisus acuminata</i> (Roxb.) LR 08188	Zairum	Combretaceae	Tree	LR	Bark	The bark is crushed & the juice is applied as antiseptic as well as haemostatics; decoction of the bark is taken against diarrhoea and beriberi
6.	<i>Aporusa octandra</i> (Buch Ham. Ex D. Don) Vick. LR 00081	Chhawntual	Euphorbiaceae	Small tree	LR	Bark	Decoction of bark taken at 50 ml. twice or thrice daily in case of stomachache and stomach ulcer
7.	<i>Ardisia paniculata</i> Roxb. LR 08081	Naunuar	Myrsinaceae	Small tree	LR	Root	Decoction of roots is used for rheumatism, Also crushed roots in combination with <i>Smilax ovalifolia</i> and <i>Bridelia tomentosa</i> is boiled with water and taken in jaundice
8.	<i>Ardisia polycephala</i> Wall. LR 08081a	Sialtuai	Myrsinaceae	Small tree	VU	Root	The roots with that of <i>Amaranthus caudata</i> Linn. Is crushed and taken with cold water when used for excess bleeding and with warm water for normal bleeding after child birth
9.	<i>Begonia inflata</i> Cl. LR08094	Sekhupthur-hmul	Begoniaceae	Herb	NT	Whole plant	The whole plant is being used in the form of infusion for patients troubled with kidney and urinary troubles
10.	<i>Blumea lanceolaria</i> (Roxb.) LR 08035	Buarze	Asteraceae	Shrub	VU	Leaves	Anti-cancer agent, pressed juice of leaves is applied on wounds and chronic ulcers, infusion of leaves is taken against dysentery
11.	<i>Blumea laciniata</i> (Roxb.) LR 08077	Khuanglawr	Asteraceae	Herb	LR	Root and leaves	Cardiac tonic; paste from root is used against snake bite; simultaneously, leaves are crushed and the juice is applied externally on the bitten part

Table 1. Contd

12.	<i>Bombax insigne</i> Wall. LR 08078	Pang	Bombacaceae	Tree	LR	Bark	The bark is boiled with that of <i>Mangifera indica</i> (equal part) and half cup of water is taken twice daily in case of tonsillitis and other throat infections
13.	<i>Canarium strictum</i> Roxb. LR 08062	Beraw	Burseraceae	Tree	NT	Bark	Used in rashes
14.	<i>Caulokaempferia linearis</i> (Wall.) Larsen LR 08190	Lung-ai-thing Lalram	Zingiberaceae	Herb	LR	Leaf	Chakma tribes apply crushed leaves on the head in vertigo
15.	<i>Cautleya gracilllis</i> (Smith) Dandy LR 08076	Pa-le	Zingiberaceae	Herb	EW	Rhizome	Infusion of rhizome is taken for flatulence, colic and hepatomegaly, the rhizome is eaten raw to relieve colic & hotness in the stomach & also used in cough
16.	<i>Claoxylon khasianum</i> Hook.f. LR 08119	Nagabang	Euphorbiaceae	Shrub/sm-all tree	NT	Root	The paste is applied externally tumour/cancer
17.	<i>Clerodendrum bracteatum</i> Vent. LR 08120	Phuihnam	Verbenaceae	Small tree	LR	Leaf and root	Used in diarrhoea
18.	<i>Colysis hemionitidea</i> (Wall.ex. Mett.) Presl. LR 08046	Kawkte-bet	Polypodiaceae	Fern	LR	Rhizome	The rhizome constitute one ingredient for the treatment of fracture of bone
19.	<i>Curcumorpha longiflora</i> Wall. LR 08133	Ailaidum	Zingiberaceae	Herb	VU	Rhizome	Infusion of rhizome taken in case of dysentery and diarrhoea
20.	<i>Dalbergia pinnata</i> (Lour.) LR 08089	Tengterehrui	Fabaceae	Tree	CR/VU	Root-bark	Stomach problems, hepatitis and toothache
21.	<i>Dendrobium ariafloerum</i> LR 08184	Naubanhlosen	Orchidaceae	Orchid/Shr-ub	EN	Stem	Used as narcotic
22.	<i>Desmos chinensis</i> (Lour.)* LR 08095	Zunindamdawi	Annonaceae	Scandent scrub	LR	Root and leaf	Combination of decoction of the roots is effectively used against painful urination. The medicine is taken ½ cup daily
23.	<i>Diplazium maximum</i> (D. Don) C. Chatt. LR 08048	Chakawk-ei-chi	Athyriaceae	Fern	LR	Root stock	The root stock is crushed and in combination the mixture is applied externally on fracture of bone
24.	<i>Dracena spitcata</i> Roxb. LR 08041	Phunhring	Dracenaceae	Shrub	LR	Root and young leaf	Stomach ache
25.	<i>Dysoxylum gobara</i> (Buch.-Ham.) Merr. LR 08192	Thingthupui	Meliaceae	Tree	LR	Leaf and Bud	Decoction of leaves and buds is used as against in diarrhoea and dysentery
26.	<i>Ficus semicordata</i> Buch-Ham. Var. <i>conglomerata</i> (roxb.) LR 08192	Thenpui	Moraceae	Small tree	LR	Bark and leaf	Liver ailment

Table 1. Contd

27.	<i>Garcinia lancaeaefolia</i> Roxb. LR 08194	Pelhte	Clusiaceae	Tree	EN	Leaf fruit	and	Stomach ache
28.	<i>Gelsemium elegans</i> Benth. LR 08144	Hnamtur	Loganiaceae	Tree	VU	Roots		Alkaloids exert analgesic and anti-inflammatory impact; Used in veterinary purposes
29.	<i>Helicia excelsa</i> (Roxb.) LR 08010	Sialhma	Proteaceae	Tree	NT	Bark		Decoction of bark is used In stomach problems
30.	<i>Jasminum nervosum</i> Lour. LR 08109	Hrukha	Oleaceae	Shrub	LR	Leaf		Stomach ache and fever
31.	<i>Laggera crispata</i> (Vahl.) Hep. and Wd. LR 08176	Runhthung	Asteraceae	Herb	LR	Leaf		Leafs are crushed and applied on sores
32.	<i>Lasianthus wallichii</i> Wight LR 08101	Ruih-thing	Rubiaceae	Shrub	LR	Leaf		Hallucinogenic
33.	<i>Lasianthus hirsutus</i> (Roxb) Merr. LR 08102	Changneithing	Rubiaceae	Large shrub/small tree	LR	Leaf		Juice of leaves applied as haemostatics
34.	<i>Lepidagathis incurva</i> F. LR 08166	Vangvattur	Acanthaceae	Herb	LR	Leaf		Haemostatic
35.	<i>Lepidagathis rigida</i> Dalz. LR 08167	Vangvattur	Acanthaceae	Herb	LR	Leaf		Used in tooth decay
36.	<i>Lepionurus sylvestris</i> Bl. LR 08168	Anpangthuam	Opiliaceae	Shrub	NT	Leaf		Decoction of leaves is taken for diabetes
37.	<i>Lindernia ruelloides</i> Pennell LR 08169	Thasuih	Scrophulariaceae	Herb	LR	Whole plant		Externally used for Rheumatism, sciatica, skin worms, wounds and also internally for eye problems
38.	<i>Lonicera macrantha</i> DC. LR 08163	Leihruisen	Caprifoliaceae	Climber	LR	Leaves		Effective in diarrhoea
39.	<i>Mallotus roxburghianus</i> Muell.-Arg. LR 08116	Zawngtenawhlung	Euphorbiaceae	Small tree	LR	Twigs		In jaundice and hepatomegaly- twigs are boiled and the soup is taken daily/drunk 1 cup (100ml) twice daily
40.	<i>Mallotus leucocarpus</i> (Kurz) Airy Shaw LR 08087	Sukiah	Euphorbiaceae	Small tree	LR	Root		Used in colic problems
41.	<i>Millettia pachycarpa</i> Benth. LR 08179	Rulei	Fabaceae	Shrub/climber	LR	Root		Infusion of root is used as lotion for wounds, swellings toothache and sprains; decoction of the root is used for washing scabies and itches
42.	<i>Millettia piscidia</i> Wt. (Endemic to NE India) LR 08179a	Ruteng	Fabaceae	Tree	NT	Root; fruit		Used in case of infertility; decoction of fruits (seeds) is used as abortifacient

**Table 1.** Contd

43.	<i>Mimosa pudica</i> Linn. LR 08138	Hlonuar	Mimosaceae	Herb	LR	Leaf and root	Leaves and root are used for pile and pistula; decoction of root is useful in gravelliest complaint
44.	<i>Musa glauca</i> Roxb. LR 08133	Saisu	Musaceae	Pseudo-tree	NT	Seed	Seeds are made into beads and put on children against convulsion
45.	<i>Pajenela longifolia</i> (Wall.)K. Schum. LR 08156	Ram-archangkawm	Bignoniaceae	Tree	NT	Leaf and stem	Leaf and stem paste used in fracture
46.	<i>Parbarium hookerii</i> Pierre LR 08122	Theikelkibawr	Apocynaceae	Climber	LR	Root	Decoction of roots taken as tea against placental disorders
47.	<i>Phlogacanthus thyriformis</i> (Hardw.) Mabb. LR 08127	Khumtiangkohha	Acanthaceae	Shrub	LR	Root	Used in ulcer in combination with other plants
48.	<i>Piper diffusum</i> Vahl. LR 08043	Pawhrual	Piperaceae	Climber	LR	Leaf	Stomach ache
49.	<i>Pseudodrynari-a coronans</i> Ching. LR 08142	Awmvel	Polypodiaceae	Epiphyte	LR	Rhizome	Stomach and tooth problem
50.	<i>Raphidophora hookeri</i> Schott. LR 08142	Thiallawm	Araceae	Climber	NT	Stem	Helpful in easy labour
51.	<i>Stereopermum neuranthum</i> Kurz LR 08145	Zihaw	Bignoniaceae	Tree	LR	Wood vinegar	Used in chronic ulcer
52.	<i>Tarenna odorata</i> Roxb. LR 08098	Khalagor song	Rubiaceae	Shrub	LR	Root	Paste of root applied on snake bite
53.	<i>Tetracera sarmentosa</i> Linn. LR 08019	Hruithingdeng	Dilleniaceae	Tree	LR	Bark	Decoction of bark taken orally for stomach ache
54.	<i>Tetrameles nudiflora</i> R.Br. LR 08038	Thingdawl	Tetramelaceae	Tree	LR	Bark/leaf	Juice of bark/leaves dropped into orifice against otorea
55.	<i>Trevetia palmate</i> Roxb. LR 08085	Kawhtebeil	Araliaceae	Small tree	LR	Leaf/root	The leaf is crushed and the juice is taken as an effective remedy for colic, stomach ache and high blood pressure
56.	<i>Vitex peduncularis</i> Wall. ex. Schauer. LR 08017	Thingkhawilu	Verbenaceae	Tree	LR	Bark	The bark is boiled and the water is drunk in case of typhoid and malarial fever
57.	<i>Vitis bifurcate</i> LR 08027	Hruiveikual	Vitaceae	Climber	LR	Root	Crushed roots used to produce mucous substance which is applied externally on swellings and sciatica

*Lepionurus sylvestris* (NT), *Millettia piscidia* (NT), *Musa glauca* (NT), *Pajenela longifolia* (NT) and *Raphidophora hookeri* (NT). One, *Cautleya gracillis* was extinct in wild, two were endangered, five were vulnerable and maximum

nine plant species were of nearly threatened status.

## DISCUSSION

The people of IHR have deep traditional ecological knowledge (TEK) in the form of ethnomedicines which concomitantly form a strong base for primary health care systems. Further, instead of plethora of policies, TEK of tribal people in Mizoram may be linked with modern scientific approaches, in order to sustain the practice of ethnomedicine and hence ethnobotany. Reporting lesser known threatened plants may draw an attention towards integrative conservation mechanisms of these plants in order to sustain their pharmacological applications.

## Conclusions

The destruction of tropical forests has meant, in many parts of the tropical region, increasing disappearance of native peoples who have been living in these areas and who have accumulated a compendium of folk knowledge about the usefulness of plants for curing various diseases (Anyinam, 1995). Policy makers should secure the TEK of tribal people, whose socio-economic life is interwoven with the forests from where they derive all their material requirements, including their healthcare needs and foodstuffs.

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