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Home grown ethnomedicinal plants of Mizoram: A review

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Abstract
Plants are used by various communities for centuries. One of the areas of ethnobotany, ethno pharmacology is considered as the scientific evaluation of traditional medicinal plants. Research suggested ethno-directed sampling is most likely to succeed in identifying drugs used for various purposes. The plant kingdom is a virtual goldmine of potential drug targets. The study on ethnomedicine plays a crucial role in drug discovery process. This review work relates to the use of various plant parts in traditional Mizo folkloric system of medicine. A total of 53 ethnomedicinal plants were recorded in our study along with the plant names, parts used and with their traditional uses. The use of 51 genera, belonging to 39 families together with their local names and other uses have been enumerated.

Keywords: ethnobotany, ethnopharmacology, folkloric

1. Introduction

The Northeast region of India despite representing only 7.9 percent of geographical area of the country accounts for nearly one-fourth of the country's forest cover. It is one of the 25 biodiversity hotspots of the world due to these rich forests. The region comprise of the states of Arunachal Pradesh, Assam, Meghalaya, Manipur, Tripura, Mizoram, Nagaland and Sikkim Mizoram has the highest percentage of forest cover with a characteristic of steep slopes. Mizoram is enriched with dense forests and diverse species of the flora and fauna [1].

The state is gifted with wide diversity of medicinal plants having high value for the treatment of various illnesses. It has been observed that wild edible plant species like *Clerodendrum colebrookianum*, *Colocasia esculenta*, *Eryngium foetidum*, *Hibiscus sabdariffa var.sabdariffa*, *Musa balbisiana*, *Parkia roxburghii*, *Solanum gilo*, *Spilanthesclava* have much market demand an d species like *Bruinsmia polysperma*, *Gnetum gnemon*, *Livistona chinensis*, *Maranta dichotoma*, *Marsdenia maculata*, *Persea americana* and *Zingiber officinale* fetch a good market value for their limited production in the state [2]

The ethnomedicinal plants of Mizoram have been reported by workers like Darlianthanga (1989) who reported medicinal plants used for the treatment of 97 diseases, Saptawna (1990) who reported 58 species of medicinal plants, Lallianthanga (1990) reported 128 plant species used in local medicine, Vailinga (1991) documented 165 diseases and their ethnomedicines and Chawngkunga (1996) documented 85 ethnomedicinal plants. Some other notable contributions were made by Lalramnghinglova and Jha (1997) and Lalnundanga *et al*. (1997). Lalramnghinglova (2003) documented 126 ethnomedicinal plants in his book Ethno-medicinal plants of Mizoram and Rozika (2003) documented 204 plants along with their uses [3].

Ethnobotany, the largest subdiscipline of ethnobiology, is generally defined as the “science of people’s interaction with plants.” Ethnobotany must have been the first knowledge acquired by man to satisfy his hunger,healing his wounds and curing various ailments. Ethnobotany is also defined as “the investigation and evaluation of the knowledge of all phases of life amongst the primitive societies and plant environment with respect to life, customs, beliefs and history of the tribal people. [4].

According to the World Health Organization as many as 80 percent of world’s population depends today on traditional medicine for their primary health care requirements [5].

During the last few decades,there has been an increasing interest in the study of medicinal plants and their traditional uses in different parts of the world [6]. The traditional healers are dwindling in large number and there is a great danger of our traditional knowledge disappearing soon,since the younger generations are not that interested to carry on this tradition. Therefore, it becomes the responsibility of the scientific community to unravel the information and to document it for availability to the whole world for the benefit of humanity /society [7].

Ethnobotanical information on Ethno-medicine has been considered a great treasure for regional economic development and for new drug development [8]

Study Area

***Source*:** Google Map

Fig 1

Mizoram is one of the states of North East India and also a part of the 25 mega biodiversity hotspots of the world (9). Aizawl, the state capital of Mizoram is located between 90º30' - 90º 60' E longitudes and 21 º 58' N and 28 º 85' N latitudes. The area stretches from Sihphir in the North and South Hlimen in the South, Zemabawk in the east and Tanhril and Sakawrtuichhun in the West covering an area of 128.98 sq km and situated at an altitude ranging from 800 – 1188 m a.m.s.l. The total population in the latest census was 1,091,014 persons.The area of the Aizawl district is 12588 km^2 [10].

2. Methodology

The ethno- medicinal plants were collected and documented and for further reference and they are preserved in the form of herbarium sheets. The information regarding the usages of plants for treating various ailments and diseases were gathered by directly interviewing an elderly learned, folk - healer, Mr. K. Lianthanga of Sihphir and with other traditional healers. Besides,the plants which were collected were identified through herbariums by Dr. Pankaj Chetia, Assistant professor, Department of Life Sciences, Dibrugarh University. The detailed information referring to their botanical names, local names, family names, mode of preparations and medicinal uses were stated in a tabular form (Table 1).

Table 1: Medicinal Plants/Herbs home grown in parts of Mizoram

Sl. No.	Scientific Name	Family	Local name (common/ name English)	parts used/ Mode of preparation	traditional uses
1.	*Aganope thyrsiflora* (Benth.) Polhill	Fabaceae	Hul-hu	Bark is crushed and is applied on the site which is wrapped around with cloth or bandage	Sprain
2.	*Aloe vera*	Xanthorrhoea-ceae	Aloe vera	Leave base is cut where the juice is taken out and is applied on the site	Sunburns and acne
3.	*Alstonia scholaris*	Apocynaceae	Thuamriat (Devil tree)	Bark is crushed and infused with water overnight and is filtered to obtain the juice only	Used in abnormal lactation (less secretion of milk after the delivery of an infant)
4.	*Ananas comosus*	Bromeliaceae	Lakhuihthei (Pineapple)	Young fruit are edible	Typhoid fever
5.	*Anogeissus acuminate*	Combretaceae	Zairum (Yon)	Bark is boiled in water and the cooled water is used for cleaning infected area	Burns, inflammations
6.	*Aporosa octandra*(Buch.-Ham. ex D.Don) Vickery	Phyllanthaceae	Chhawntual	Bark is boiled and administered orally after taking meal	Stomach-ache(gastritis)
7.	*Averrhoa carambola* L.	Oxalidaceae	Thei-herh-awt	Fruit is crushed to paste and is applied to the site Fruit is taken raw	Haemorroids Deficiency of vitamin C and Kidney problems
8.	*Azadirachta indica*	Meliaceae	Nim thing/Neem tree (Margosa)	Leaves are crushed and the juice is mixed with honey	Menstrual disorder
9.	*Begonia palmata*	Begoniaceae	Sekhupthur	Leaves are edible and taken raw	Haemorrhoids
10.	*Blumea lanceolaria*	Asteraceae	Buarze	Leaves– raw leaves Leaves are crushed and is directly applied on the skin with the space	Veterinary Medication as an anti-septic Bedsores (Decubitus)
11.	*Byttneria aspera* Collebr. ex Wall.	Malvaceae	Zawng-luang -hrui	Leaves are boiled and administered drop by drop on the infected area	Used in children suffering mouth ulcer (mouth disease)
12.	*Callicarpa arborea*	Lamiaceae	Hnahkiah	Bark is crushed and the juice is taken orally	Stomach-ache, vomiting
13.	*Camellia sinensis* (L.) Kuntze	Theaceae	Thingpui (tea plant)	Leaves are boiled and taken orally	Increases secretion of urine in kidney problem
14.	*Carica papaya*	Caricaceae	Thingfang-Hma (papaya)	Seeds are given orally to children Latex is applied directly to the skin Latex is mixed with milk are taken orally Unriped fruit- taken oally	Helminthiasis Skin disease (dermatitis) GERD (nausea & vomiting) Jaundice

15.	*Catharanthus roseus* (L.) G.Don	Apocynaceae	Kumtluang	Leaves are crushed and juice is taken orally	Treatment in various forms of cancer
16.	*Chromolaena odorata* R.M.King & H.Rob.	Asteraceae	Tlangsam (Common floss flower)	Leaves are crushed to produce juiceand are applied on the site which is covered with bandage	Haemostatice property(wounds &cuts)
17.	*Citrus limon*	Rutaceae	Ser(lemon)	Roots are prepared by decoction	Helminthiasis, constipation
18.	*Curuma longa*	Zingiberaceae	Aieng (Turmeric)	Rhizome is crushed and the juice is mixed with salt which is administered orally	Helmenthiasis
19.	*Dendrobium chrysotoxum* Lindl.	Orchidaceae	Banpui par/Nauban	Powder is applied directly to the infected area	Pus
20.	*Dichrocephala integrifolia*(L.f.) Kuntze	Asteraceae	Vawk-ek-a-tumtual	Leaves are crushed and the juice is taken orally	Diarrhoea
21.	*Elaeagnus pyriformis*	Elaeagnaceae	Sarzukte	Roots are crushed and juice is taken orally	Used in miscarriage (uterine tonic)
22.	*Eryngium foetidum*	Apiaceae	Bahkhawr (Wild coriander)	Roots and leaves are crushed properly and boiled with water and administered orally Roots and leaves are crushed and the paste is directly applied to the wound.	Stopmach-ache, Pruritus ani helminthiasis) Burns
23.	*Goniothalamus sesquipedalis*(Wall.) Hook.f. & Thomson	Annonaceae	Kham	Leaves are burnt and the smoke is Inhaled (used by cultivators/farmers of a field when they cannot sleep at night)	Induces sleep (Insomnia)
24.	*Hedyotis scandens* Roxb.	Rubiaceae	Kel-hnam-tur/Lai-king-tui-bur	Whole plant is used which is boiled and the water is taken orally. Rhizome is crushed and a paste is made for applying on the site	Renal calculi, Malarial fever Snake bite
25.	*Hydrocotyle sibthorpioides* Lam.	Araliaceae	Lambak Indian (Penny-wort)	Leaves are boiled and water is taken orally	Renal calculi, hypertension
26.	*Justicia adhatoda* L.	Acanthaceae	Kawldai	Young leaves are mixed with *Curcuma longa* equally and crushed to make a paste and is applied on the site.	For discharging pus (purulent)
27.	*Lonicera japonica*	Caprifoliaceae	Leihruisen	Bark is cut into pieces and boiled with water	Stomach-ache
28.	*Melocalamus compactiflora*	Gramineae	Sairil	Stem is cut off, juice of the plant is collected and applied on the infected area.	Hairfall
29.	*Mesua ferrea* L.	Calophyllaceae	Herhse (Iron-wood tree)	Bark is prepared by infusion in water mixed with ginger	Excessive perspiration
30.	*Mikania micrantha* Kunth	Asteraceae	Japanhlo	Leaves are cruhsed and paste is applied on the wound. Leaves are crushed and the juice are used for washing hair	Wounds and cuts Treatment of dandruff
31.	*Milletia pachycarpa* Benth.	Fabaceae	Rulei	Roots are crushed and the paste is kept in the mouth for sometime.	Toothache
32.	*Molineria crassifolia* Baker	Hypoxidaceae	Phai-phak	Rhizome is taken orally.	Diarrhoea
33.	*Mimosa pudica*	Fabaceae	Hlonuar (Sensitive plant or Touch-me-not)	Leaves are crushed and mixed with milk are administered orally. Roots are crushed and paste on the pain	Haemorrhoids Toothache (cavity)
34.	*Morinda citrifolia* L.	Rubiaceae	Noni	Leaves are boiled and the juice is taken orally.	Menstrual Disorder
35.	*Passiflora edulis* Sims	Passifloraceae	Sap-thei (Passion fruit)	Leaves are boiled with water.	Laxatives
36.	*Phyllanthus emblica* L.	Phyllanthaceae	Sunhlu (Amla)	Fruit is crushed and mixed with water and sugar. Fruit is taken orally Fruit is crushed and the juice is mixed with honey.	Anaemia Mouth ulcer and stomach-ache. Jaundice
37.	*Pentanura khasiana*	Asclepiadaceae	Thei-kel-ki	Roots are boiled and taken orally Leaves are washed and taken orally.	Uterine tonic Hepatitis C
38.	*Pramanthus scanders*	Asteraceae	Kawlho	Leaves are boiled and mixed with honey and administered orally.	Menstrual disorder
39.	*Prunus undulate*	Rosaceae	Thei-ar-lung	Leaves are crushed and juice is taken orally.	Heart disease
40.	*Pseudodrynaria coronans* (Wall. ex Mett.) Ching	Polypodiaceae	Awmvel	Rhizomes are crushed and the paste is applied on the infected area.	Herpes
41.	*Psidium guajava*	Mystaceae	Kawlthei	Young leaves are taken orally and kept in the mouth for sometime.	Anti-emetic agent (motion/travel sickness)

42.	*Punica granatum*L.	Lythraceae	Theibuhfai (pomegranate)	Fruits are taken orally. Bark is taken orally after it is boiled in water and cooled	Haematinic (Anaemia) Helminthiasis
43.	*Saraca asoca*	Fabaceae	Mual-hawih (Asoka tree)	Bark (cambium i.e. soft part) is crushed to make juice and is mixed with milk.	Leucorrhea,Uterine tonic
44.	*Sarcococca coriaceae*	Euphorbiaceae	Pawh-rual	Leaves are boiled and applied on the pain (to be rubbed)	Arthritis/Sprain
45	*Schima wallichii*	Theaceae	Khiang (Needle wood)	Leaves are crushed and the paste is applied to the skin and are also taken orally	Snake bite
46.	*Scorparia dulcis* L.	Scorphularia-Ceae	Perh-pawng-chaw(sweet broom weed)	Leaves are crushed and the juice is taken out and administered orally.	Renal calculi
47.	*Securinega virosa*	Euphorbiaceae	Sai-siak	Leaves are boiled and the warm water is taken for bathing.	Chicken-pox, Scabies
48.	*Solanum americanum*Mill.	Solanaceae	Anhling (Black night-shade)	Leaves are boiled in water and administered orally.	Renal Calculi (Urolithiasis), urinary problems, Laxative
49.	*Solanum anguivi* Lam.	Solanaceae	Samtawk-te Indian Night-shade)	Fruits juice are taken orally after boiling it in water.	Hypertension
50.	*Solanum torvum*	Solanaceae	Tawkpui	Seeds are crushed.	Tooth-ache (decay)
51.	*Trevetia palmata*(Roxb.ex Lindl.) Vis.	Araliaceae	Kawh-te-bel	Leaves are crushed and the juice is taken orally.	Hypertension
52.	*Zea mays*	Poaceae	Vaimim (maize/Indian corn)	*Zea mays* and gingers are crushed and boiled in water.	Food poisoning
53.	*Zingiber officinale*	Zingiberaceae	Sawhthing (ginger plant	Rhizome is cut into pieces and eaten rawRhizome is roasted and eaten.	Food poisoning Throat pain

3. Results

A total of 53 ethnomedicinal plants belonging to 51 genera and 39 families which were recorded. The family Asteraceae [5] comprised the maximum number followed by Fabaceae family [4], Solanaceae [3], Rubiaceae [2]. Apocynaceae [2], Zingiberaceae [2], Araliaceae [2]. The survey of these important medicinal plants and herbs were arranged alphabetically according to their scientific names. All of the plants as stated above have one or the other beneficial effects. Various parts of these plants are used in crude form.

After examining the plants used for treating different diseases, it is found that maximum number of plants(six)were used for treating kidney disease/ renal calculi, five plants each for stomachache and helminthiasis, four for each toothache and food-poisoning, three are used for discharging pus, burns,, haemorrhoids, menstrual disorder, diarrhoea, hypertension, uterine toner, and anaemia.

Our extensive data mining of the plants gave us an insight for extraction of the active phytoconstituents present in the plants. The study is in progress with few plants from this study for identifying the phytoconstituents present in the plant and their mechanism of action which might be helpful to find out new chemical entities responsible for their claimed traditional uses.

4. Discussion & Conclusion

Cultivating and maintaining medicinal plant species in home gardens is cost effective [11]. It provides an effective way of treating various ailments without having to consume costly drugs and pills. There is a stronger need of creating an awareness about medicinal plant values which are found in local home gardens with their method of administration/application. However, caution must be taken to understand the ecology of rural /urban home gardens with particular attention to distribution of other plant species contributing to their biodiversity.

A total of 53 ethnomedicinal plants belonging to 51 genera and 39 families of those plant specimens with herbarium which were contributed with their description in this paper. Though modern civilization let to the decline in the utilization of the medicinal herbs, many of these are still in use.

Some of the medicinal plants has the possibilities to deplete due to different factors like forest fire, urbanization pressure, illegal cutting of trees, uncontrolled industrial growth, etc.

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