Journal of
Environmental and Social Sciences

Open Science Publications

Volume 2, Issue 1 - 2015

www.opensciencepublications.com

Ethnomedicinal Uses of Host Plants of Wild Silk Moths in Mizoram

Research Article

Esther Lalhmingliani[1]*, G Gurusubramanian[1], N Senthil Kumar[2], Ruth Lalfelpuii[2], HT Lalremsanga[1] and Samuel Lalronunga[3]

[1]*Department of Zoology, Mizoram University, Aizawl - 796004, India*

[2]*Department of Biotechnology, Mizoram University, Aizawl - 796004, India*

[3]*Department of Environmental Science, Mizoram University, Aizawl - 796004, India*

***Corresponding author:** Dr. Esther Lalhmingliani, Assistant Professor, Department of Zoology, Mizoram University, Tanhril-796004, Tel: 9436195943/85745475947 (M), India; Email: es_ralte@yahoo.in

Article Information: **Submission:** 14/07/2015; **Accepted:** 12/08/2015; **Published:** 18/08/2015

Abstract

The paper deals with the host plants of wild silk moth of Mizoram having ethno medicinal values. The study provides medicinal usage of 22 species of the host plants of wild silk moths belonging to 14 families. They are listed along with their scientific name, local name, family, part used, methods of preparation and types of ailments treated. Documenting the indigenous knowledge through ethno botanical studies is important for the conservation and utilization of biological resources. This will not only safeguard our forest but would have direct impact on the conservation of food plants of different wild silk moths to ascertain the continued existence of these valuable entomofauna among other components of biodiversity.

Keywords: Wild silk moths; Host plants; Ethnobotany; Mizoram

Introduction

The use of plants and animals as a source of medicine and food is as old as humanity. Ethno medicine or herbal medicines are in great demand in both developed and developing countries like India in primary health care because of their great efficacy and little or no side effect [1]. According to the studies on ethno medicine and folk medicine, about 2000 species of plants have been newly identified as drug yielding plants and are well known for their use in about 4000 drug industries of various Indian system of medicine. It is estimated that about 7500 plants are used in local health traditions in mostly rural and tribal villages of India. Out of these the real traditional medicinal value of over 5000 plants is either little known or hitherto unknown to the mainstream population [2].

Arora reported that over 16000 species of higher plants are known to occur in India and out of these 9000 are economically useful whereas 7500 of these species are reported to be used for health care by various ethnic communities in India [3]. India officially recognizes about 2500 plants as having medicinal value and it has been estimated that over 6000 plants are used in traditional, folk and herbal medicine. The number of medicinal plants in India both indigenous and introduced has been variously put between 3000-3500 species of higher plants. About 255 of the drug prescribed worldwide come from plants, 121 such active compounds being in current use. Of the 252 drugs considered as basic and essential by World Health Organization (WHO), 11% are exclusively of plant origin and a significant number are synthetic drugs obtained from natural precursors [4]. More than 80% of world's population mostly in poor and less developed countries depend on traditional plant based herbal medicines for their primary health care needs [5,6]. The

ISSN: 2454-5953

north eastern region of Indian sub-continent harbours 50% of the plant wealth of India [7]. Mizoram is included under "Indo Myanmar Hotspot" and is very rich in the resource of folk medicine. According to the reports made by Lalramnghinglova [8], it is inferred that 95% of the rural population of Mizoram rely on traditional herbal medicine and 98% of raw materials are harvested from the wild plant resource or biological resources.

Wild silk moths belonging to the order Lepidoptera, family Saturniidae comprises of about 1861 species in 162 genera and 9 sub families [9,10]. They include such Lepidoptera as the giant silk moths, royal moths and emperor moths. Wild silk moths can be either univoltine or multivoltine depending on the geo-climatic conditions and are distributed in both temperate and tropical region [11]. The wild silkworms are polyphagus and feed on a wide variety of plants some of which have ethno medicinal value. They migrate from one area to another and breed continuously throughout the year.

Description of the study site

Mizoram is the southernmost state in North-east India bounded by Myanmar in the east and Bangladesh in the west, and by states of Tripura, Assam and Manipur in the North. Mizoram falls under the Indo-Burma biodiversity hotspot [12,13] and is rich in wild flora and fauna, both in variety and abundance [14]. It has an area of 21,081 sq km and lies between 21° 56′ N -24° 31′ N latitude and 92° 16′ E - 93° 26′ E longitudes. The topography of the state is characteristically hilly and the altitude varies from 28-2156 m from sea level. Vegetation is tropical forest and semi- evergreen forest according to Champion and Seth [15]. Three distinct seasons are observed in Mizoram viz. cold or winter season from November to February, warm or spring season from March till mid of May and rainy or summer season from second half of May to October [16].

Materials and Methods

Surveys were conducted throughout Mizoram from 2012-2014 to document the diversity of host plants of wild silk moths so as to study their possible ethno medicinal value. Extensive literature survey was done to collect information on the traditional use of the plants. Information on local name of medicinal plants, parts used, mode of preparations, routes of remedy administration were also recorded by consulting local traditional practitioners, elders and patients who were associated with the traditional healers from different parts of the state. Identification of the plants was done with the help of existing literatures, published books and specialists on the subject from Botanical Survey of India, Shillong [8,17-21].

Results and Discussion

The study revealed the ethno medicinal usage of 22 species of host plants of wild silk moths. All the plant species recorded during the study period are listed along with their scientific name, local name (mizo), part or parts used in the preparation and medicinal uses (Table 1).

A brief description of host plants of wild silk moth having ethno medicinal value is given below [8,17-21].

Cinnamomum verum

An evergreen aromatic tree, upto 18 m tall, with smooth grayish bark. Leaves red when young. The dried bark and buds are used as a spice.

Distribution: Common throughout Mizoram

Part used: Bark

Mode of used: Decoction of the bark is useful for cancer, asthma, diarrhoea and vomiting.

Curcuma longa

A perennial herb with bright-yellow tuberous rhizomes. The young flowers are eaten as vegetables.

Distribution: Common throughout Mizoram

Part used: Rhizome

Mode of used: Juice of the rhizome is used in cholera, diarrhoea, stomach ulcer and asthma.

Dillenia pentagyna

A middle-sized tree with very large leaves. It is a light demander and fire resistant. Growth moderately fast.

Distribution: Keifang and Maite.

Parts used: Bark & leaves.

Mode of used: Decoction of the bark and leaves is used for curing gastric problem, asthma and cancer.

Evodia flaxinifolia

Small to middle sized evergreen tree, strong smelling of caraway when bruised.

Distribution: Ruallung, Sialsuk, Chalfilh, Durtlang etc.

Part used: Fruit

Mode of used: The fruit is antipyretic and is used for treating dysentery.

Lyonia ovalifolia

A small tree with thick brown bark. Wood light reddish brown, soft.

Distribution: 900 - 1500 m.

Part used: Roots

Mode of used: Decoction of roots is used for cuts, sprain and rheumatism.

Litsea polyantha

Medium-sized tree, bark dark grey; leaves alternate, obovate: flowers pale greenish- yellow; fruits ellipsoid, seated on sauce- shaped perianth tube.

Distribution: Frequent throughout Mizoram, in tropical evergreen and semi-evergreen forests.

Parts used: Leaf & fruit

Mode of used: Leaf paste is applied on boils, ulcers and the fruit is used in rheumatism.

Citation: Lalhmingliani E, Gurusubramanian G, Kumar NS, Lalfelpuii R, Lalremsanga HT , et al. Ethnomedicinal Uses of Host Plants of Wild Silk Moths in Mizoram. J Environ Soc Sci. 2015;2(1): 113.

Table 1: Host plants of wild silk moths having ethnomedicinal value.

Sl.No.	Wild silk moth	Host plants	Local name	Family	Part used	Purpose
1.	*Actias maenas*	*Schima wallichii*	Khiang	Theaceae	Bark, sap, leaves & fruits	Antiseptic, aphthae and snake bite
2.	*Actias selene*	*Rhus semialata*	Khawmhma	Anacardiaceae	Fruits	Colic and diarrhoea
		Evodia flaxinifolia	Ching-it-suak	Rutaceae	Fruits	Dysentery
		Prunus cerasoides	Tlaizawng	Rosaceae	Bark	Fever
3.	*Antheraea assamensis*	*Litsea polyantha*	Nauthak	Lauraceae	Leaf & bark	Boils, ulcers and rheumatism
		Litsea cubeba	Sernam	Lauraceae	Fruits & oils	Stomachache, headache, dizziness, hysteria and memory loss
		Zyziphus mauritiana	Borai	Rhamnaceae	Bark, fruits, leaf & root	Haemoptysis, menstrual and other vaginal disorders, bilious and rheumatic infections and gingivitis
4.	*Antheraea mylitta*	*Lagerstroemia speciosa*	Thlado	Lythraceae	Bark	Dysentery
		Syzigium cumini	Lenhmui	Myrtaceae	Bark & seed	Diabetes, constipation, fever, bronchitis, asthma and dysentery
		Terminalia arjuna	Char-kung-mam	Combretaceae	Bark &leaves	Sores, ulcers and asthma
		Terminalia crenulata	Tual -ram	Combretaceae	Bark	Cough, bronchitis and ulcers
		Terminalia chebula	Re-raw	Combretaceae	Fruits	Diabetes & diarrhoea
5.	*Archaeoattacus edwardsii*	*Psidium guajava*	Kawlthei	Myrtaceae	Leaf & bark	Fever, toothache, gonorrhea, headache, Sore and rheumatism
6.	*Attacus atlas*	*Maesa indica*	Arngeng	Myrsinaceae	Leaf	Stomachache and fever
		Cinnamomum cassia	Thak-thing	Lauraceae	Bark	Fever, nausea, headache and toothache
		Curcuma longa	Ai-eng	Zingiberaceae	Juice of rhizome	Cholera, diarrhea and ulcer
7.	*Cricula trifenestrata*	*Mangifera indica*	Theihai	Anacardiaceae	Fruits, bark & tender leaves	Stomachache, fever, burns, diabetes, ulcerated tongue, cholera and toothache
8.	*Loepa katinka*	*Dillenia pentagyna*	Kaih-zawl	Dilleniaceae	Bark & leaves	Cancer and asthma
9.	*Saturnia thibeta*	*Lyonia ovalifolia*	Tlang-ham	Ericaceae	Roots	Cuts, sprain and rheumatism
10.	*Samia canningi*	*Ricinus communis*	Muṭih	Euphorbiaceae	Seed oils, leaves & roots	Swellings, boils and in joints affected with rheumatism, dried root is used as febrifuge
		Manihot esculenta	Pangbal	Euphorbiaceae	Leaf	Skin disease
		Zanthoxylum rhetsa	Ching-it	Rutaceae	Roots & leaves	Fever

Litsea cubeba

Small tree with greenish bark, aromatic.

Distribution: Frequent throughout Mizoram, up to 1800m

Part used: Fruits

Mode of used: Raw fruits are used to treat stomachache, headache, dizziness, hysteria and memory loss.

Lagerstoemia speciosa

Moderate-sized tree; bark grey; leaves ovate or elliptic – lanceolate; flowers large, conspicuous, mauve- purple in terminal pyramidal panicles up to 45cm long; fruits ellipsoid or sub- glubose.

Distribution: Frequent, in tropical wet evergreen and semi-evergreen forests, fairly frequent in South – western part of Mizoram. Also cultivated as ornamental plants.

Parts used: Bark & root

Mode of used: Decoction of root is taken for jaundice. Bark infusion is taken orally for diabetes, diarrhoea and dysentery.

Mangifera indica

Evergreen trees up to 15 cm; leaves oblong lanceolate; sepals ovate, hairy on back; petals oblong, white; disc 4-5 lobes.

Distribution: Common throughout Mizoram

Parts used: Fruits, bark & tender leaves

Mode of used: Bark is made into paste, mixed with water and is used to treat stomachache and fever. Tender leaves are dried and made into powder which is used for treating diabetes. Ashes of the leaves are good remedy for virus, burns and scalds. Gum is used for treating toothache. Stem and leaf powdered together is good for ulcerated tongue. Rind of unripe fruit mixed with curd is used for treatment of cholera. Cold water extract of the leaf was also used for diarrhoea and dysentery.

Manihot esculenta

A sub- herbaceous shrub with large tuberous roots and milky juice; Leaves alternate, palmately lobed, long petioled; flowers large monoecious in racemes males above, females below; calyx

Citation: Lalhmingliani E, Gurusubramanian G, Kumar NS, Lalfelpuii R, Lalremsanga HT , et al. Ethnomedicinal Uses of Host Plants of Wild Silk Moths in Mizoram. J Environ Soc Sci. 2015;2(1): 113.

campanuate 5 lobed; petals absent; stamens 10 in two whorls. Also cultivated for tubers.

Distribution: Common throughout Mizoram

Part used: Leaf

Mode of used: Juice is used as a remedy for skin disease.

Maesa indica

Evergreen shrub or small tree; berries pinkish white.

Distribution: Common throughout Mizoram

Part used: Leaf

Mode of used: Decoction of the leaves is used for bath in case of fever during convalescence. Tender leaves are used to treat stomachache.

Psidium guajava

A small evergreen or sub- deciduous tree with smooth pinkish brown bark exfoliating in thin flakes; leaves opposite oblong or elliptic oblong; flowers white; berry globose or pyriform varying in size and shape.

Distribution: Common throughout Mizoram

Parts used: Leaf & bark

Mode of used: Decoction of bark is used for stomachache, fever, headache, gonorrhea, menstrual disturbances and sores. The young leaves are used as tonic in diseases of digestive function. A decoction of young leaves and shoots is prescribed as febrifuge and antispasmodic baths. The pounded leaves are locally applied in rheumatism. A decoction of the leaves is used as gargle to relieve toothache and gum boils.

Prunus cerasoides

A moderate sized tree. Wood red, scented, moderately hard and durable.

Distribution: Common throughout Mizoram.

Part used: Bark

Mode of use: Decoction of bark is used in fever.

Ricinus communis

A tall glabrous annual, sometimes shrubby or subarboreous; leaves alternate, broad, palmate 7 to many lobed; flowers serrate, large in terminal sub- panicled racemes.

Distribution: Common throughout Mizoram

Parts used: Seed oil, leaves and roots

Mode of used: Oil is used as purgative. Leave are warmed and tied as bandage on swellings, boils and in joints affected with rheumatism. Dried root is used as febrifuge.

Rhus semialata

Small tree, leaves imparipinnate; leaflets 4-6 pairs, opposite, dentate, triangular or elliptic ovate; flowers numerous, greenish white or pale yellowish- green; fruits sub- glubose or orbicular, compressed, green when young, red brown when ripe.

Distribution: Common throughout Mizoram between 500 and 1200 m asl.

Part used: Fruits

Mode of used: The fruits are grinded and mixed with water and the mixture is used to cure colic and diarrhoea.

Schima wallichii

Medium size to large evergreen tree, young shoots silky pubescent; branches lenticellate; bark dark grey or brown with deep vertical cracks and small thick angular plates; leaves oblong-lanceolate or obovate, acute or acuminate, flowers white, fragrant, solitary, axillary on lenticellate pedicels; stamen yellow.

Distribution: Common throughout Mizoram, from tropical evergreen to sub- tropical hill forest

Parts used: Bark, sap, leaves and fruits.

Mode of use: Juice of crushed bark is applied externally on cuts and wounds as an antiseptic. The sap is used for aphthae. Decoction of dry fruits is taken orally as an effective remedy against snake- bite and the juice of crushed leaves is also prescribed for snake bite.

Syzigium cumini

Middle size or large evergreen tree with oblong or ellipsoid berries.

Distribution: Common up to 1500 m

Part used: Bark

Mode of used: Decoction of bark is used to treat constipation, fever, jaundice, urinary problem, asthma and dysentery.

Terminalia chebula

A middle-sized tree with ellipsoid or obovoid 5 ribbed fruits. Wood brownish grey, very hard, durable.

Distribution: Ascending to about 1500 m

Part used: Bark

Mode of used: Fruit is used for treatment of diabetes, diarrhoea and dysentery.

Terminalia arjuna

A large almost evergreen tree. Leaves sub-opposite, 7.5-14.5 x 3-9 cm, oblong, coriaceous with 2 glands at base, obtuse or rounded at apex. Flowers yellowish-white, in pedulous, axillary and terminal spikes; bracteolates linear. Fruits ovoid or oblong, fibrous, woody 5-winged.

Distribution: Introduced and planted along roadside.

Parts used: Barks & leaves.

Mode of used: Bark and leaves are used in treatment of sores, ulcer, asthma, wounds etc

Citation: Lalhmingliani E, Gurusubramanian G, Kumar NS, Lalfelpuii R, Lalremsanga HT , et al. Ethnomedicinal Uses of Host Plants of Wild Silk Moths in Mizoram. J Environ Soc Sci. 2015;2(1): 113.

Terminalia tomentosa

A moderate size or large deciduous tree.

Distribution: Thenzawl, Mamit, Kawrthah, Bunghmun, Sesawng, Thenhlum.

Part used: Bark

Mode of used: The bark is used in cough, bronchitis, ulcer, diarrhea and dysentery.

Zyziphus mauritiana

A small or middle sized, much branched deciduous tree armed with stipular spines.

Distribution: Common, ascending to an altitude of about 1,500 m.

Parts used: Bark, fruits & leaf

Mode of used: Fruits is prescribed for haemoptysis, menstrual and other vaginal disorders, for bilious and rheumatic infections. A decoction of bark is used as an astringent in gingivitis. A decoction of leaves is prescribed for loss of voice, giddiness and for piles.

Zanthoxylum rhetsa

A small to average sized evergreen tree; trunk, shoots and petioles armed with recurved prickles, strongly pungent smell; leaves imparipinnate; leaflets 5-10 pairs, oblong lanceolate, oblique at the base; flowers greenish-white in trichotomous cymes in large terminal panicles; fruits globose, reddish, rugose.

Distribution: Common, in tropical evergreen and semi-evergreen forest.

Part used: Roots

Mode of used: The roots are grinded, mixed with water and is used to treat fever.

Discussion

The present study provides medicinal usage of 22 species of the host plants of wild silk moths belonging to 14 families. These plants were used for the treatment of different diseases like burns, diabetes, dysentery, skin disease, rheumatism, cholera, fever, digestive disorders, constipation and other common ailments. Most of these plants were utilized in fresh state as decoction, paste, juice, etc. A detailed study on the chemical constituents of these plants is a must so as to investigate their pharmacological effect. Documentation and scientific surveying of the flora and fauna from any area is indispensable to any scientific study and conservation program. Ethno botanical plants are now under threats due to increasing urbanization, clearing of forest due to shifting cultivation, population explosion and unplanned exploitation. Therefore, urgent attention to create public awareness about the conservation of medicinal plant resources for sustainable utilization is needed which will help in maintaining the ecosystem. Documenting the indigenous knowledge through ethno botanical studies is important for the conservation and utilization of biological resources. This will not only safeguard our forest but would have direct impact on the conservation of food plants of different wild silk moths to ascertain the continued existence of these valuable entomofauna among other components of biodiversity.

Acknowledgement

The financial assistance provided by Central Silk Board, Ministry of Textiles (Govt. of India), Bangalore, is highly acknowledged. Authors sincerely appreciate various people for their help and co-operation during field collection. Gratitude also goes to the Head, Department of Zoology, Mizoram University.

References

1. Trivedi P C (2006) Medicinal plants: Ethnobotanical approach. Agrobios (India) Pub Jodhpur India.
2. Pushpangadan P (1995) Ethno-Biology in India: a status report. All Indian Coordinated Research Project on Ethnobiology. Moes, GOI, New Delhi.
3. Arora RK (1987) Ethnobotany and its role in the conservation and use of plant genetic resource in India. Ethnobotany 9: 6-15.
4. Rates SM (2001) Plants as source of drugs. Toxicon 39: 603-613.
5. Bajaj M, Williams JT (1995) Healing Forests Heeling people. IDRC Medicinal Plants Healing network, New Delhi.
6. WHO/IUCN/WWF (1993) Guidelines of conservation of medicinal plants IUCN. Gland, Switzerland.
7. Mao AA (1993) A preliminary report of the folklore botany of Mao nagas of Manipur (India). Ethnobotany 5: 143-147.
8. Lalramnghinglova H (2003) Ethno-Medicinal Plants of Mizoram. Bishen Singh Mahendra Pal Singh Publishers, Dehra Dun, India.
9. Minet J (1994) The Bombycoidea: phylogeny and higher classification (Lepidoptera: Glossata). Entomology Scandinavia 25: 63-88.
10. Lemaire C, Minet J (1998) The Bombycoidea and their relatives: Lepidoptera, Moth and Butterflies: Evolution, Systematics and Biogeography 321-354.
11. Regier JC, Grant MC, Mitter C, Cooks CP, Peigler RS, et al. (2008b) Phylogenetic relationships of wild silk moths (Lepidoptera: Saturniidae) inferred from four protein-coding nuclear genes. Systematic Entomology 33: 219-228.
12. Myers N, Mittermeier RA, Mittermeier CG, da Fonseca GAB, Kent J (2000) Biodiversity hotspots for conservation priorities. Nature 403: 853-858.
13. Mittermeier R A, Gil P K, Hoffman M, Pilgrim J, Brooks T et al (2005) Hotspots revisited. Preface by Seligmann, P. A. Washington, DC: Conservation International.
14. Lalthanzara H, Vanramliana, Lalramliana (2011) Pheasants of Mizoram (India): Present status of diversity and distribution. Science Vision 11: 218-223.
15. Champion SHG, Seth SK (1968) A revised survey of the forest types of India. Government of India Press, New Delhi.
16. Pachuau R (1994) Geography of Mizoram. R.T. Enterprise Aizawl, Mizoram. India.
17. Rozika R (2005) Ramhmul Damdawite (Medicinal Plants). Published by Medicinal Plants Board, Mizoram.
18. Sawmliana M (2009) Forester's Field Guide for E & F Dept, Mizoram. Publised by P.Zakhuma, Chanmari West, Aizawl.
19. Sawmliana M (2013) The book of Mizoram plants. Published by P. Zakhuma, Chandmari West, Aizawl.
20. Kumar S (2002) The Medicinal Plants of North - East India. Scientific Publishers (India), Jodhpur, Rajasthan.
21. Khare XP (2004) Encyclopedia of Indian Medicinal Plants. Springer.

Citation: Lalhmingliani E, Gurusubramanian G, Kumar NS, Lalfelpuii R, Lalremsanga HT , et al. Ethnomedicinal Uses of Host Plants of Wild Silk Moths in Mizoram. J Environ Soc Sci. 2015;2(1): 113.