Some Useful Medicinal Plants from Chipwi Township, Kachin State

Moat War Dine Naw[1] and Sanda Htun[2]

Abstract

Myanmar is recognized as one of the most biodiverse countries in the world. Kachin State, the northern part of Myanmar, has a wealth of natural resources. The forests are rich in valuable medicinal plants and many species of wild animals there. Most people depend on plants for their health care. However, the information and traditional knowledge of medicinal plants in this area are so far very little. This study deals with some medicinal plants used by the local people who live in Chipwi Township. Traditional herbal healers from twelve villages were interviewed and some medicinal plants were collected and identified. In the present study, 30 medicinal plants belonging to 24 families were reported. Scientific names, local names, habit, part used, preparation, administration and medical use of the plants are also presented. Eighty seven percent of medicinal plants are wild and 13% is cultivated. Some medicinal plants are rare but some are commonly found in the study area. The main causes of the depletion of useful or effective medicinal plants in this area are over-harvesting, trading and deforestation.

Introduction

All cultures from ancient times to the present day have used plants as a source of medicines. Today according to the World Health Organization (WHO), as many as 80% of the world's people depend on traditional medicine for their primary health care needs. The greater part of traditional therapy involves the use of plant extracts or their active principles. Many medicinal plants face extinction but detailed information is lacking. The conservation action is needed for most of the endangered medicinal plant species. According to literature, Myanmar has a great diversity of plant (Hundley and Chit KoKo. 1961, Kress. *et. al*, 2003)**.**

The study on the flora of Chipwi Township was carried out by SandaHtun (2009). She reported that Chipwi Township has great biodiversity. However, there is not a complete inventory of medicinal plants. Much of the knowledge on their use is held by traditional societies, whose very existence is now under threat.

Chipwi Township, located in the northeast of Myanmar, shares border with Yunnan Province of China. There are distinct zones of temperature on these mountains. The climate is temperate at the high altitudes, subtropical at medium

[1] Dr., Associate Professor, Department of Botany, University of Myitkyina
[2] Dr., Lecturer, Department of Botany, University of Myitkyina

altitudes, and tropical over the low mountains and hills and the lowlands. The highest mountains have cold winter season and vegetation of temperate zone species. These effects of temperature have most affect the species composition of the forest. The composition of these forest communities is so varied from place to place that it is difficult to give a list of typical trees. Due to the lack of botanical survey on the medicinal plants of Chipwi, which is a very unique and unfrequented area at the northern part of Myanmar, this research is conducted to provide reliable information and a practical field guide on the floristic area to the students of Botany. However, the information and traditional knowledge of medicinal plants in this area are so far very little. This study deals with some medicinal plants used by the local people who live in Chipwi Township, Kachin State. The other objective of the study is to alert the communities about the environmental issue like forest degradation and gradual loss of many species of natural vegetation, and hence to promote the public awareness of the medicinal plants.

The goal of this study is to conserve valuable medicinal plants in Chipwi Township, northern Kachin State. The objectives of this research are to collect medicinal plants resources, to identify the medicinal plants and to get the indigenous knowledge of medicinal plants usage of Lhaovo and Lacid ethnic group.

Materials and Methods

Study Area

Chipwi Township is situated at the confluence of the May kha or N' maiHka or Lawngbyit river, and the ChipwiHka on the east of the N' Mai Hka. It is 87 miles apart from the north-east of Myitkyina, the capital of the Kachin State. It is adjacent to or bound by the Republic of China on the east, N' Jangyang Township on the west, Waingmaw Township on the south and SawlawTownship on the north. It comprises distinctly different highlands, uplands, lowlands, mountain ranges, hill slopes and plains. The Chipwi Township is located at N 25° 52' 43.287", E 98° 07' 50.936". Various localities of Chipwi Township lie at a various elevation between 250 m and 3873 m above sea level. It has a warm, wet climate, the south-west monsoon rain generally occurs from May through October. The average annual rainfall is about 88 inches. The coldest months of Chipwi Township are December and January with average temperature being 18˚C, except Panwa having -4˚C and. April and May being the hottest with an average temperature ranging from 32˚C to 35˚C (Meteorology, Myitkyina).

Method

This study was carried out from January to April 2018. The interviews and discussions were organized with herbal healers and local people in Chipwi, Panwa and other ten villages such as Shankyaw, Tamu, Namawzup, Nam Oe, Magawng, Shi zaw, Jitlai, Yi jaw, Lang jaw, Loke pi. The interviewing method is semi-structured and key informants interview. At the end of interviews, specimens of the plants cited for their medicinal use were collected from natural forests or their gardens. The

collected specimens were identified with the help of the literature. The families of the specimens were determined by using a key to the plant of the world (Hutchinson, J.1967), Thonner's analytical key to the flowering plants (Thonner 1981) and the identification of flower in plant families (Peter and Cullen 1989). Identification of genera and species were carried out by referring to the available literature such as flora of British India Vol: 1-7 (Hooker 1875-1897), flora of Java vol: 1-3 (Baker & Brick 1962-1968), flora of Ceylon, Vol:1-14 (Dassanayake 1980-2001), flora of Hong Kong, (Qui-ming, 2007-2009) and flora of China (Wu, Z. Y. & P. H. Raven. 1994-2011). The names of medicinal plants were listed in the table and the photographs were presented in figures. Microsoft Office Excel was used to analyze the data.

Results

In this survey, it is found that almost all plants are used for medicinal purposes. People who live in small villages of this area trust folk medicine because modern medicine is unavailable. In most villages, certain men and women function as shamans. They have received the empirical knowledge of medicinal and toxic plants from previous generations practice folk medicine. Medicinal plants are collected or cultivated in and around home gardens or throughout forest openings, by patients, trades, collectors, and folk medicine practitioners.

The present survey gathered information on 30 species belonging to 24 families (Table 1). The species were arranged alphabetically in the table. The photographs of plants are shown in Figure 1. Three species belonging to family Acanthaceae. Ranuneulaceae, Menispermaceae , Ericaceae and Asteraceae have two species each. The families such as Lycopodiaceae, Angiopteridaceae, Ginkgoaceae, Lauraceae, Sterealiaceae, Cannabaceae, Hydrageaceae, Celastraceae, Euphorbiaceae, Rutaceae, Apiaceae, Gentianaceae, Apocynaceae, Solanaceae, Verbenaceae, Buddleaceae, Araceae, Smilaceae and Orchidaceae have one species each. Among these plants, 8species (26.6%) are herbs, 6 species (20%) are trees, 9 species (30%) are shrubs, 5 species (16.6%) are climber, 2 species (6.6%) are epiphytes. Of the plants inventoried, 21 (70%) are wild species, 5 (16.6%) are cultivated and 4 (13.3%) are semi-cultivated. The wild plants are *Lycopodium obscurum* L., *Angiopteris evecta* (G.Forst.) Hoffin., *Aconitum violaceum* Jacq.ex.Stapf. *Coptisteeta* Wall. *Dodecadenia grandiflora* E. Nepal., *Stephania venosa* (Bl.) Spreng., *Tinospora nudiflora* Kurz., *Abroma angusta* L., *Agapetes oblonga* Craib., *Rhododendron barbatum* Wall., *Hydrangia heteromalla* D. Don., *Euonymus attenuatus* Wall., *Phyllanthus emblica* L., *Zanthoxylum acanthopodium* DC., *Heracleum lallii* Norman., *Gentiana depressa* Bourg. *Alstonia scholasris* R.Br., *Clerodendrum japonicum* (Thumb.) Sweet., *Buddleja crispa* Benth., *Andrographis paniculata* (Burm.f.) Wall. ex. Nees., *Phlogacanthus curviflorus* Nees., *Artemisia vulgaris* L., *Senecio scandens* Buch. Ham. ex. D. Don., *Pothos scandens* L., *Smilax prolifera* Roxb., *Cymbidium aloifolium* (L.) Swartz. Among them, *Aconitum violaceum* Jacq.ex.Stapf. *Coptisteeta, Tinospora nudiflora* Kurz. and *Cymbidium aloifolium* (L.) Swartz. are semi-cultivated. Four species such as *Justicia adhatoda* L., *Cannabis sativa* L., *Ginkgo biloba* L., and *Solanum spirale* Roxb. are cultivated.

The major illnesses, which are treated by using plants in this area, include malaria, digestive disorders, injuries from falls and trauma, cancer, skin diseases, neurasthenic, rheumatism, respiratory problems and other diverse diseases. Often the

healers use more than one species either separately or mixed with other species. When taken orally, plant products are consumed raw or in the form of a decoction, powder, macerated material or as an infusion. When applied externally, they are prepared as the burnt products, ointments or raw paste.

The usage of medicinal plants (partly used, preparation, administration and medical use) are mentioned in Table 1. *Abroma angusta* L. is used as antidote and decoction of the root is medicine for diabetes.*Aconitum violaceum* Jacq.ex.Stapf., *Agapetes oblonga* Craib., *Ginkgo biloba* L. *Heracleum lallii* Norman. *Rhododendron barbatum* Wall are applied as a tonic. *Alstonia scholasris* R.Br. *Andrographis paniculata* (Burm.f.) Wall.ex. Nees, *Artemisia vulgaris* L., *Gentiana depressa* Bourg., *Tinospora nudiflora* Kurz. are used in treatment of malaria. *Buddleja crispa* Benth., *Dodecadenia grandiflora* E. Nepal.and *Zanthoxylum acanthopodium* DC. are used for the digestive system and as stimulate for appetite. *Justicia adhatoda* L.and*Solanum spirale* Roxb. are medicines for cough, asthma and tuberculosis. *Coptisteeta* Wall. *Cymbidium aloifolium* (L.) Swartz. *Pothos scandens* L. *Euonymus attenuates* Wall are applied to a wide range of ailments. The other species each have one to five uses. The dose depends on the patient's age, physical state, and health conditions. In addition, the units employed to measure the amount of the plant or plant parts used in the preparation of most of the remedies are rough estimates.

Herbal healers use fresh medicinal plants. If they like to preserve for a long time, they collect plants from December to February. The plants collected in this period cannot be decayed. Most of the medicinal plants are harvested from the wild. This also makes intense exploitation of medicinal plants unsustainable and results in many species becoming scarce. *Aconitum violaceum* Jacq.ex. Stapf., *Agapetes oblonga* Craib., *Euonymus attenuates* Wall. *Gentiana depressa* Bourg , *Pothosscandens* L. and *Coptisteeta* Wall. are not only the scarcest but also the most valuable species in the area. *Cannabis sativa* L. and *Ginkgo biloba* L. are cultivated in the farms. *Aconitum violaceum* Jacq.ex. Stapf and *Coptisteeta* Wall are grown in the traditionally protected forest at a high elevation of mountainous areas.

Table 1.List of Medicinal Plants Used by Local People in Chipwi Township

No.	Scientific Names	Local Names	Family Names	Habit	Part Used	Preparation	Administration	Medical Use
1	*Abroma angusta* L.	Maui daughtad'	Sterealiaceae	Shrub	Leave/Bark	Crushed	Poultice	Antidote/ Diabetes
2	*Aconitum violaceum*Jacq.ex. Stapf.	Myino	Ranunculaceae	Herb	Earthnut	Decoction/powder	Oral/ailment	Tonic/Cardiac/ Toxic
3	*Agapetes oblonga* Craib.	Sag nyhau	Ericaceae	Epiphyte	Whole plant	Decoction	Oral	Tonic
4	*Alstonia scholasris* R. Br.	N dung do	Apocynaceae	Tree	Bark	Decoction	Oral	Malaria/ Inflammation
5	*Andrographis paniculata* (Burm.f.) Wall. ex. Nees.	Cid kho	Acanthaceae	Herb	Whole plant	Decoction	Oral	Malaria/ Cough
6	*Angiopteri sevecta* (G.Forst.) Hoffin.	Mangkyi	Angiopteridaceae	Fern/Herb	Rhizome	Powder	Oral	Urinary canal
7	*Artemisia vulgaris* L.	Fin bau	Asteraceae	Herb	Leave/Root	Fresh juice/ Decoction	Oral	Malaria/ Vomit/ Diarrhea
8	*Buddleja crispa* Benth.	Zonyhug'	Buddleaceae	Shrub	Flower	Decoction	Oral	Fever/Digestive
9	*Cannabis sativa* L.	Jidmo"	Cannabaceae	Shrub	Leave/Flower	Tincture/extract	Oral	Pain/Analgesic
10	*Clerodendrum japonicum* (Thumb.) Sweet.	Auno	Verbenaceae	Shrub	Leave/ Root	Decoction	Oral	Heart/Headache
11	*Coptis teeta*Wall.	Falan	Ranunculaceae	Herb	Root/Rhizome	Decoction	Oral	Malaria/Eye infection
12	*Cymbidiumaloifoliu m*(L.) Swartz.	Laungzum	Orchidaceae	Epiphyte	Pseudo bulb	Decoction/Crushed	Oral/ Poultice	Inflammation
13	*Dodecadenia grandiflora* E. Nepal.	Magyam	Lauraceae	Tree	Bark	powder	Oral	Digestive system/Appetite
14	*Euonymus attenuates* Wall.	Masho	Celastraceae	Shrub	Leave	Decoction/paste	Oral	Anti-toxin/ Vomit
15	*Gentiana depressa* Bourg.	Sao kho	Gentianaceae	Herb	Whole plant	Decoction	Oral	Malaria/Cough
16	*Ginkgo biloba* L.	Kao qangshi	Ginkgoaceae	Gymno/Tree	Fruit/Leave	Decoction	Oral	Tonic/Dizziness
17	*Heracleum lallii* Norman.	Voqaung	Apiaceae	Herb	Root	Tincture/Decoction	Oral	Tonic/Hematinic
18	*Hydrangea heteromalla* D. Don.	Qidcug	Hydrageaceae	Shrub	Leave	Crushed/Paste	Poultice	Trauma
19	*Justicia adhatoda* L.	Kyiphyu	Acanthaceae	Shrub	Leave	Fresh juice	Oral	Respiratory problem/ Cough
20	*Lycopodim obscurum* L.	Bug go	Lycopodiaceae	Bryo/Herb	Whole plant	Decoction	Oral	Oedema/Hepatitis
21.	*Phlogacant huscurviflo rus* Nees.	Mai mo"	Acanthaceae	Shrub	Leave	Crushed/Paste	Poultice	Trauma/ rheumatism
22.	*Phyllanths emblica* L.	Shico	Euphorbiaceae	Tree	Bark/Fruit	Decoction	Oral	Antiseptic/Digestive
23.	*Pothos Scandens* L.	Saibya	Araceae	Climber	Whole plant	Decoction	Oral	Cancer/Epilepsy

24.	*Rhododendron barbatum* Wall.	Bam bin	Ericaceae	Tree	Root	Decoction	Oral	Tonic
25.	*Senecio scandens* Buch. Ham. Ex D.Don.	Myi no naui	Asteraceae	Climber	Leave	Crushed/Paste	Poultice	Trauma
26.	*Smilax proliferaR* oxb.	Khin	Smilaceae	Climber	Tuber	Decoction	Oral	Cancer
27.	*Solanum spirale* Roxb.	Khindau	Solanaceae	Shrub	Leave/Fruit	Decoction	Oral	Malaria
28.	*Stephania venosa* (Bl.) Spreng.	Kapaung	Menispermeaceae	Climber	Tuber	Decoction	Oral	Tonic
29.	*Tinospora nudiflora* Kurz.	Gyixonaui	Menispermaceae	Climber	Stem	Decoction	Oral	Malaria/Inflammation
30.	*Zanthoxylum acanthopodium* DC.	Khinzao	Rutaceae	Tree	Leave/Fruit	Decoction	Oral	Digestive system

Table 2. Categories of Medicinal Plants Based on Their Degree of Abundance

Rare	Moderate	Abundant
*Aconitum violaceum*Jacq.ex. Stapf.	*Abroma angusta* L.	*Alstonia scholasris* R.Br. .
Agapetes oblonga Craib.	*Angiopteris evecta* (G.Forst.) Hoffin.	*Andrographis paniculata* (Burm.f.) Wall. ex. Nees
Cannabis sativa L.	*Buddleja crispa* Benth.	*Artemisia vulgaris* L.
*Coptisteeta*Wall.	*Cymbidium aloifolium* (L.) Swartz.	*Clerodendrum japonicum* (Thumb.) Sweet.
*Euonymus attenuatus*Wall.	*Dodecadenia grandiflora* E. Nepal.	*Justicia adhatoda* L.
Gentiana depressa Bourg.	*Heracleum lallii* Norman.	*Lycopodium obscurum* L.
Ginkgo biloba L.	*Hydrangia heteromalla* D. Don.	*Phlogacanthus curviflorus* Nees.
Pothos scandens L.	*Rhododendron barbatum* Wall.	*Phyllanthusemblica* L.
	Stephania venosa (Bl.) Spreng.	*Senecio scandens* Buch. Ham. ex. D. Don.
	Zanthoxylum acanthopodium DC.	*Smilax prolifera* Roxb.
		Solanum spirale Roxb.
		Tinospora nudiflora Kurz.

Abroma angusta L. *Aconitum violaceum* Jacq.ex.Stapf. . *Agapetes oblonga* Craib. .*Alstonia scholasris* R.Br.

Andrographis paniculata(Burm.f.) .*Angiopteris evecta*(G.Forst.). *Artemisia vulgaris* L.*Buddleja crispa* Benth. Wall.ex. NeeHoffin

.

Cannabis sativa L.*Clerodendrum japonicum* (Thumb.)Sweet *Coptisteeta*Wall.*Cymbidium aloifolium* (L.) Swartz.

Dodecadenia grandiflora E. Nepal.*Euonymus attenuatus*Wall. *Gentiana depressa* Bourg *Ginkgo biloba* L.

Heracleum lallii Norman.*Hydrangia heteromalla* D. Don. *Justicia adhatoda* L. *Lycopodium obscurum* L.

*Phlogacanthus curviflorus*Nees.*Phyllanthusemblica* L.*Potho sscandens* L. *Rhododendron barbatum* Wall.

Senecio scandens Buch. Ham. *Smilax prolifera* Roxb. *Solanum spirale* Roxb. *Stephania venosa* (Bl.)Spreng.ex. D.Don

Tinospora nudiflora Kurz.

Zanthoxylum acanthopodium DC.

Figure.1 Photographs of Medicinal Plants in Chipwi Township

Discussion

The present research deals with the medicinal plants of Chipwi Township. The flowering plants are an essential group of plants for life. The plants provide not only food, shelter and clothing, but also medicinal value. The plants have medicinal value because they contain secondary metabolites such as alkaloids and glycosides and so on. Local people in Chipwi Township traditionally used varieties of plants. The biodiversity is high in the primary forest of Chipwi Township. In this forest varieties of medicinal plants grow abundantly. Now due to the practice of taungya cultivation, terrace cultivation and felling of trees for firewood, the hills are denuded of the primary forest. The local farmers engaged in shifting cultivation are used to exploiting the plots for one year or two successive years. After harvesting the crops, the plots are left abundant and farms are shifted to other places. Their rotation cycles become shorter in these years due to the increasing population. Some medicinal plants grow in primary forests and some are epiphytes on the large trees. These species, *Agapetes oblonga* Craib.,*Pothos scandens* L., *Cymbidium aloifolium*(L.) Swartz. cannot survive without large trees. Most of the medicinal plants are harvested from the wild. Over-exploration has resulted in some wild medicinal plants becoming rare and threatened, especially those valuable species such as *Aconitum violaceum* Jacq.ex. Stapf., *Agapetes oblonga* Craib., *Coptis teeta* Wall. *Euonymus attenuates* Wall.,*Gentiana depressa* Bourg., *Pothos scandens* L. and *Rhododendron barbatum* Wall.

Almost all informants agreed that more medicinal plants were used in the past than the number reported now. This situation results from the continued deforestation and degradation that took place in the area over several years. Furthermore, this has also resulted in the local loss of some medicinal plants and the associated knowledge of their use. The rich knowledge of medicinal plant use has nearly disappeared because most of the specialized healers did not properly pass on their knowledge to the next generation. They had a strong tendency to keep their knowledge secret.

It had been observed that human activities, such as fire, extraction of logs and other forest products and clearing for crop farms have reduced the natural forests. Thus, the types of forests in this study area are both natural and altered. Better understanding of botanical and environmental features of the various types these flora in this region is much needed to manage and conserve these plant resources. The medicinal plants should be conserved effectively for the future and that where medicinal plants are taken from the natural forests; they are taken on a sustainable basis. Some medicinal plants are cultivated at home gardens. *Aconitum violaceum* Jacq.ex. Stapf., *Coptis teeta* Wall. are cultivated in their traditional protected forests.

For the economic development of the region, real collaboration is needed among appropriate government authorities, research investigators and the indigenous people to protect medicinal species from extinction by excessive and unregulated exploitation. For the sustainable using of this important economic source, some technologies for cultivating, domesticating these valuable endangered medicinal plants is needed.

References

Akerele, O.V. Heywood and H. Synge (eds.) 1991. The Conservation of Medicinal Plants, Cambridge.

Hooker, JD. 1879. The flora of British India,Vol 1-7, L. Reeve & co. 5 Henrietta street, Covent Garden London.

Hundley, H.G and Chit KoKo. 1961. List of Trees, Shrubs, Herbs and Principal Climbers of Burma. Suptd. Govt. Printed in Burma.

Hutchinson, J.1959. The Families of Flowering Plants,Mecmillan&Co.,ltd. St. Martin's St., London.

Kress. J. *et. al*,. 2003**.** "A Checklist of the Trees, Shrubs, Herbs and Climbers of Myanmar Department of Systematic Biology Botany. National Museum of National History, Washing DC. U.S.A.

SandaHtun, 2009. Floristic study on Chipwi Township, Northern Kachin State, Ph.D Dissertation, Department of Botany, University of Mandalay.

Shi, Z., Chen, Y. S. Chen, Y. S.2008. Flora of China Vol. 11. Science Press, Beijing and Missouri Botanical Garden Press, St. Louis.

IUCN 2011. Selected Medicinal Plants of Chittagaung Hill Tracts.Wu, Z. Y. & P. H. Raven.1994. Flora of China Vol 1- 19. Science Press, Beijing and Missouri Botanical Garden Press, St. Louis.

Wu, Z. Y., P. H. Raven & D. Y. Hong. 2003-2011. Flora of China Vol 5 - 19. Science Press,Beijing and Missouri Botanical Garden Press, St. Louis.

WHO, ICUN and WWF 1986.Guidelines on the Conservation of Medicinal Plants.Castel Cary Press, Somerset, UK