

## Ethnobotanical Study on Some Plants in Zwe-ka-bin Mountain Area, Hpa-an Township

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### Abstract

The Present study deals with ethnobotanical observation of six Kayin Villages, near the Zwe-kapin Mountain, Hpa-an Township. During survey, traditional folk uses of flora were gathered via questionnaire, plant specimens were collected and photography was done for identification. In this context conservation of tribal flora and traditional folk knowledge demands serious attention. The present study, the local importance of each species will be calculated by using Family Importance Value (Ganesh *et al.*, 1996) and Use-Value (UV) indices (Phillips and Gentry, 1993). This study will be fruitful in future conservation strategies and will also assist plant scientists and other academic disciplines.

Key words: Ethnobotany, tribal flora, Family Importance, Use value

### Introduction

The term “ethnobotany” was first coined in 1896 by the American botanist John Harshberger as the study of plants used by primitive and aboriginal people. Ethnobotany is the study of how the people of a particular culture and region make use of indigenous plants,” while the ethnobotanist explores how plants are used as food, shelter, medicine, and clothing, for hunting, and in religious ceremonies. At present, ethnobotany has shifted its focus from people’s use of plants to the relationship between people and plants, which includes use, cognition, and ecology.

The two major parts of ethnobotany are encapsulated in the world itself : ”ethno” the study of people ,and “botany ”the study of plants. Such studies can also be used to identify the natural resource utilization and environmental sustainability.

### METHODOLOGY

#### Data Collection

Ethnobotanical studied of present work includes: *open-ended* and *semi-structured interviews*, on learning of traditional techniques to use plants in various purposes (Martins, 1995). The observation is based on the field condition. During this process, plants collection and utilization were observed and noted.

#### Data Analysis

Documented data will be evaluated by using Use Value (UV) method , Family Importance Value (FIV).

#### Family Importance Value (FIV)

Family Importance Value of medicinal plants are calculated by using the formula :

$$FIV = FC(\text{family})/N \times 100 \quad (\text{Ganesh } et \text{ al.}, 1996)$$

FIV = Family Importance Value of a species

FC = the number of informants mentioning the family

N = the total of informants participating in the study

#### Use Value (UV)

For each species the use value (UV), as adapted by Phillips et al. (2002) was calculated. The use value of each species is based on the importance attributed by the informants and does not depend on the opinion of the researcher (Ferreira et al., 2009). Use Value of medicinal plants are calculated by using the formula :

$$UV = \sum U_i/n \quad \text{Phillips et al. (2002)}$$

UV = use value of a species

U<sub>i</sub> = the number of uses mentioned by each informant for a given species

n = the total number of informants.

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## Study Area

Kayin State located between 15° 45' and 19° 25' N, 96° 10' and 98° 28' E. The climate is tropical monsoon climate. Kayin State is bounded by Mandalay Region and Shan State to the north, Kayah State to the northeast, Mon State and Bago Region to the West, and Thailand to the East. The capital of Kayin State is Hpa An which is situated on the eastern bank of the Thanlwin river, about 270 kilometres east of Yangon. Hpa An is surrounded by dramatic karst mountain scenery which just from the surrounding plains, and many of these mountains contain large and religiously significant **caves** and the most impressive example is the beautiful **Mount Zwegabin**.

The present study was near the Zwegabin Mountain, Hpa-An Township for the traditional uses of plant species on indigenous people

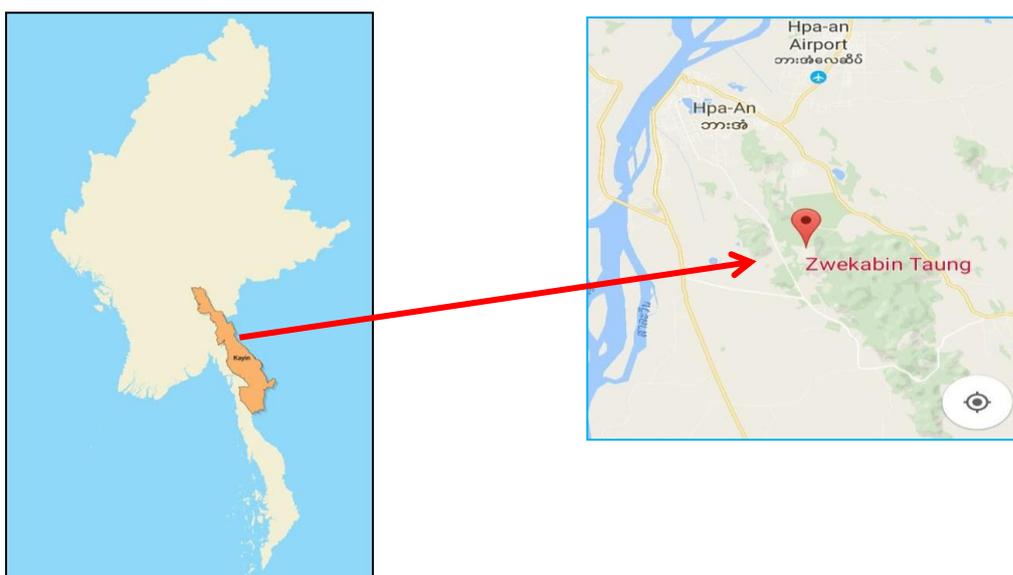


Figure (1) Location Map of Study Area

## RESULTS

In the present study, the data regarding the indigenous plants available in Kayin villages were collected by interviewing and 26 species of plants included 23 genera and 19 families were recorded.

### Plants used in house building and household utensils

#### House

The house built by, Kayin tribe of Hpa-an area, predominantly uses bamboo and wood in their construction. The walls of the house are also made up of bamboo mating *Dendrocalamus giganteus* Munro. (Wa-bo-gyi). The roof consists of split bamboo frames covered with thick thatch and some other kind of leaves. The floor of the Kayin's house is much above the ground, a ladder made entirely of a piece of bamboo is placed across the intervening space between the floor of the house and ground.



Bamboo House



Timber House

### Thatches

One of the most important thing for house building is roofing materials. In urban area roof is mostly used zinc sheath but in rural area the materials used for household are depend on the forest product. One species has been found for thatch in Study Area.

*D. tuberculatus* Roxb. (In) is one of the forest supply materials for house construction. Mature leaves were picked up from the ground and generally selected the large leaves and non porous. Besides leaves, small “skewer” or “hni” of bamboo culm were required for thatch making. The collected leaves were dried under bright sun light. Such kind of thatch is used as roof of house, hut in study area. Leaves are also commonly used as wrapping materials and timber.

### Floor

The floor of house is made of *Dendrocalamus giganteus* Munro (Wa-bo) and *Dendrocalamus hamiltonii* Nees & Arn. Ex Munro (Wa-bo-myet-san-kywe). The mature and large culm of bamboo was collected. The basal portion of bamboo was cut into required length and split vertically into two halves. The bamboo splits are pressed to make floor.

### Posts

Mature culms of *Dendrocalamus giganteus* Munro. (Wa-bo) or *Dendrocalamus hamiltonii* Nees & Arn. Ex Munro (Wa-bo-myet-san-kywe) were used as posts for house building. The mature culms with large diameter and thin walls were cut into required length.

### Walls

Walls of house were made from *Dendrocalamus giganteus* Munro (Wa-bo) or *Dendrocalamus hamiltonii* Nees & Arn. Ex Munro (Wa-bo-myet-san-kywe) or *D. tuberculatus* Roxb. (In).

### Ladder

Ladder is made from *Dendrocalamus giganteus* Munro (Wa-bo) or *Dendrocalamus hamiltonii* Nees & Arn. Ex Munro (Wa-bo-myet-san-kywe).

### Household utensil

#### 1. The stand for water pot

A pot of drinking water and a cup can be found standing near the ladder is a habit of Kayin tribe in study area. *Dendrocalamus giganteus* Munro. (Wa-bo) is used to make the stand for water pot.

## 2. Mats

Bamboo mats were made from various kinds of bamboo. *Bambusa tulda* Roxb. (Theik-wa) was used because of their softness and durability.

## 3. Basketry

Traditional people like to make baskets from bamboo for various purposes. Baskets were usually of two kinds, one to be kept in the house for storage purposes and the other to be carried on the basket for day-to-day used.

Kayin people made baskets from various kinds of bamboo but they especially preferred *Dendrocalamus giganteus* Munro (Wa-bo) and *Bambusa tulda* Roxb. (Theik-wa) were used as pole.

## 4. Fencing

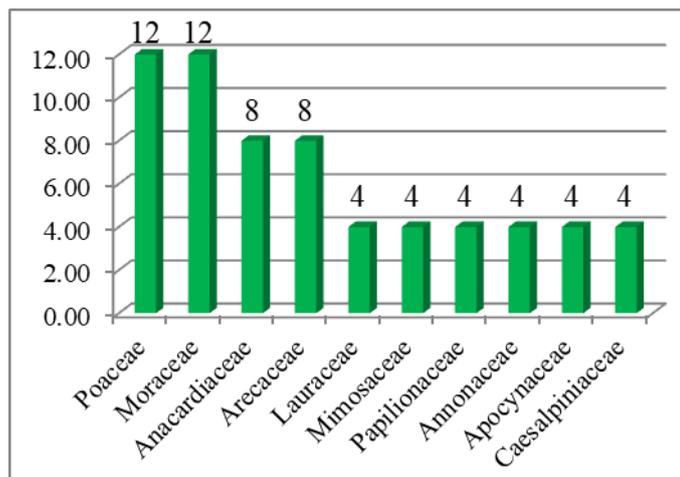
Fencing was made around animal enclosures and homesteads. The traditional way of fencing was piling up the branches of bamboo. Because of heavy rain, these types of bamboo fence can durable one to one and half years. The matted bamboos strips were also used as fences. The species mostly used - *Bambusa polymorpha* Munro. (Kyathaung-wa).

## 5. Fuel wood

The fuel is necessary for the rural life. Local people used wood of *Albizzia procera* Benth. (Sit), *Dendrocalamus giganteus* Munro. ( Wa-bo-gyi), *Dillenia pentagyna* Roxb. (Zin-byun), *Dipterocarpus tuberculatus* Roxb. (In), *Hevea brasiliensis* (Willd ex Jus) Mull. (Raba), *Hopea odorata* Roxb. (Thingan) and *Microcos paniculata* L. (Mya-yar).

Family	No. of Species	FIV(%)
Poaceae	4	12.00
Moraceae	3	12.00
Anacardiaceae	2	8.00
Arecaceae	2	8.00
Lauraceae	1	4.00
Mimosaceae	1	4.00
Papilionaceae	1	4.00
Annonaceae	1	4.00
Apocynaceae	1	4.00
Caesalpiniaceae	1	4.00

**Table 1. Ranking of Family Importance Value**



**Fig. 2, Ranking of Family Importance Value**

**Table 2. Ranking of Use Value for Top Ten Species**

Scientific Name	Family	No. of Uses	Use Value
<i>Dendrocalamus giganteus</i> Munro.	Poaceae	7	0.88
<i>Dendrocalamus hamiltonii</i> Nees & Arn. Ex. Munro.	Poaceae	5	0.63
<i>Artocarpus heterophyllus</i> Lam.	Moraceae	3	0.38
<i>Borassus flabellifer</i> L.	Arecaceae	3	0.38
<i>Dillenia pentagyna</i> Roxb.	Dilleniaceae	3	0.38
<i>Hevea brasiliensis</i> (Willd ex Jus)Mull	Euphorbiaceae	3	0.38
<i>Holigarna grahamii</i> (Wight)Kurz	Anacardiaceae	3	0.38
<i>Pterocarpus maurocarpus</i> Kz.	Papilionaceae	3	0.38
<i>Tamarindus indica</i> L.	Caesalpinaceae	3	0.38
<i>Terminalia chebula</i> Retz.	Combretaceae	3	0.38

## Discussion and Conclusion

The present study, 16 species were utilized by Kayin people of Study Area for construction and household utensil. Among these species, *Dendrocalamus giganteus* Munro. (Wa-bo) and *Dipterocarpus tuberculatus* Roxb. (In) were found to be used for different purposes.

The leaves of *Dipterocarpus tuberculatus* Roxb. (In) was used as roofing. The stem is used as timber to make household building. Most of the houses in study area

were made up of bamboo and *Dipterocarpus tuberculatus* Roxb. (In). In Indonesia, *Dipterocarpus tuberculatus* Roxb. (In) was produce commercially valuable medium hardwood and have the trade name Keruing. The woods are used to produce furniture, flooring and construction. (Ajesh *et al.* 2012)

In study area, bamboo are not only used for construction and household utensils including ladder, gutter, mats, bamboo cup, hat, container, packing materials, various types of baskets, supporting poles and fencing but also used for eating young shoot.

Most of the houses in study area are made up of bamboo which is also used as major construction materials, particularly in rural areas and used for almost all parts of houses. In China, basketry, handicrafts and furniture made from bamboo are also used (Yang, 2012). In most rural communities of Cambodia, bamboos provide a wide range of materials and daily in come. Bamboo shoots are important as daily food, especially for the local communities who freely collect shoots (Pandey. 2009).

It can be concluded that Kayin tribe in study area has high traditional knowledge on plant resources. So present study can be fruitful data for future programmed of the conservation and sustainable development of the plants based culture from study area.

**Table 3. Globally Threatened Species of Study Area**

Scientific Name	Common Name	Family	IUCN Criteria	Year assessed
<i>Alstonia scholaris</i> (L.)R.Br.	Taung-mayoe	Apocynaceae	Threatened	2010
<i>Bambusa tulda</i> Roxb.	Theik-wa	Poaceae	Threatened	2010
<i>Dipterocarpus tuberculatus</i> Roxb.	In	Dipterocarpaceae	Threatened	2010

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