

## Ethnobotany in Upper Northeastern Thailand

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**Keywords:** colon cancer, decoction, herpes, medicinal massage, paralysis, snake bite

### Abstract

Some rural people residing in the villages of upper northeastern Thailand still use herbs for preventing and curing many diseases. According to the interviews from traditional healers and elders living in seven villages in three provinces of Thailand, the medicinal plants are used in five ways – used as a rubbing or poultice, a decoction, an alcoholic tincture, a massage or eaten fresh. Rubbing is the common application used for plants such as; (1) slender amaranth (*Amaranthus viridis*) leaf is applied for removing pain, reducing swelling and pain of insect bites, (2) crushed hophead Philippine violet (*Barleria lupulina*) and phaya yo (*Clinacanthus nutans*) are applied for herpes (ngu-swat), (3) immature dry black fruit of sugar apple (*Annona squamosa*) called mummy is scrubbed and externally applied on suppurated skin as an effective suppurant. Examples of the fresh ingestion or similar methods are – (1) crushed fresh Siam weed (*Chromolaena odorata*) leaf with alum is chewed and applied on the wound as an antidote for snake bite, (2) veld grape (*Cissus quadrangularis*) vine with ripe tamarind pulp is eaten for curing hemorrhoids, (3) root and vine of khruea sai tan (*Aganosma marginata*) is eaten to get rid of schizophrenia. An example of a decoction is khi non (*Uraria crinita*) which is an effective remedy for severe colon cancer. An example of massage is the mixture of Indian sarsaparilla or thao en on (*Cryptolepis buchanani*), derris (*Derris scandens*), Thai ginger (*Zingiber montanum*) and turmeric (*Curcuma longa*) are applied to paralysis. Alcoholic tincture of krachai dam (*Boesenbergia rotunda*) roots is used as sex-stimulant.

### INTRODUCTION

Nowadays, medical technology is well developed. This development is good for human beings to have good health and better quality of life, however, the cost of many medicines is too high for most people residing in the rural areas. Many people, therefore, still use traditional medicinal plants for curing diseases. Knowledge of medicinal plants provides people with low cost health care, and this knowledge is passed through generations.

Isaan people in northeastern Thailand have many unique traditional medicines and cultural customs. Isaan life depends on natural plant resources of neighboring forests for food, medicine, and house and home instruments. The area of the study comprises the Korat plateau, a broad, shallow basin which lies 100-200 meters above sea level, between latitude 14-19°N and longitude 101-106°E. The floodplains of the Mun, Chi and Songkram rivers cover most of the region but a low line of hills rises 700 to 1000 meters between Udon Thani and Mukdahan and mountains ring the south and the west sides of the plateau in the Petchabun and Phanom Dongrak Ranges respectively. The northern and the eastern borders are delineated by the Mekong region, the recipient of most of the region's drainage. Overall, this is a region of poor soils, low rainfall and many people. The Korat plateau is largely devoid of forest cover except in the hills and land that is not cultivated supports only grasses and scrub. But the peripheral mountains and their species are spectacular and the three river plains contain many lakes, ponds and marshlands that sustain a winter-season influx of waterfowl (OEPP, 1999). The climate of this area is under monsoon climate and average temperature is 26.6°C. and the average annual

rainfall is 90-150 cm. The main forest is deciduous forest (dry dipterocarp forest).

## **MATERIALS AND METHODS**

A study of ethnobotany in upper northeastern part of Thailand was conducted between 1999 and 2002. Seven villages of 4 provinces; Udon Thani, Ngong Kai, and Ngong Bua Lampoo; were surveyed. Eight Isaan traditional healers and elder persons were interviewed and accompanied to the forests. The interviews were about the local names, uses of the plants, which parts of plant were used and how they were used. Patients were also interviewed in some cases. Photographs of plants were taken and morphology of each plant was characterized. Finally, the scientific names were identified according to Smitinand (2001) and The Forest Herbarium in "Flora of Thailand" (1984).

## **RESULTS AND DISCUSSION**

Some Thai people residing in the villages still use traditional medicines for curing themselves. Most of these traditional medicines are used for relieving pain and reducing swelling and fevers, and as a laxative or purgative. A single species may be used for many purposes. Some plants could be used alone but some are used in mixtures. Plants were used in 5 different ways: used as a rubbing or poultice, a decoction, an alcoholic tincture, a massage, or eaten fresh. Most people know how to remedy common ailments like pains, burns, cuts and fevers. Complicated diseases and ailments are treated by western medicine but some still use traditional medicine especially for severe or prolonged sickness. Some people attribute diseases to supernatural powers. Some medicines seem to be suggested by ghosts.

### **Rubbing Plants**

Plants for rubbing or poultice are shown in Table 1. Applications of these plants were easy. Plant leaves were crushed or rhizomes were pounded and applied directly to cuts, boils, and swellings. Tannaratana (2002) suggested that crushed Siam weed (*Chromolaena odorata*) (Fig. 1) leaf with alum could be applied to snake bites. Both hophead Philippines violet (*Barleria lupulina*) (Fig. 2) and phaya yo (*Clinacanthus nutans*) (Fig. 3) leaves could be used as a herpes remedy. Juice from leaves of *Aloe vera* was commonly rubbed on burns. The ashes of sugar cane (*Saccharum officinarum*) stem were applied to wounds or oral cankers.

### **Fresh Eaten Plants**

For fresh eaten medicinal plants, some were used as vegetables and some were applied as remedy. Plants that can be freshly eaten were shown in Table 2. Siam weed leaves with alum were eaten as antidote for snake bites. Veld grape (*Cissus quadrangularis*) (Fig. 4) cover with tamarind pulp or banana was effective for hemorrhoid remedy. Khrua sai tan (*Aganosma marginata*) (Fig. 5) shoot and root were eaten for schizophrenia. Sugar cane juice was used to relieve coughs. Somboon (1999) recommended that sugar cane was used for many purposes such as relief of coughs, blood clot, and rich of vitamin B and C .

### **Plant Decoctions**

Plants used as a decoction were shown in Table 3. Some plants could be eaten as vegetables, these plants were boiled in water and liquid then drunk as a remedy or tonic to give one strength. Sesban (*Sesbania grandiflora*) flowers were edible and could reduce a fever caused by a change of seasons. Fresh sesban bark could also be used as antibiotic for toothaches and sores on the feet. Tannaratana (2002) used khi non (*Uraria crinita*) decoction for a few days to treat severe colon cancer and then used bach bo (*Stemona tuberosa*) and khao yen nuea (*Smilax corbularia*) decoction after that. Andrographis (*Andrographis paniculata*) (Fig. 6) was common drink instead of tea in some rural areas. It was also fresh eaten but is quite bitter. Yanang daeng (*Bauhinia strychnifolia*) leaf decoctions were a common drink for neutralization of toxic substances in some areas.

Yanang daeng is endemic species of Thailand. Tea was made from its leaves and given to a person who had eaten bad food (Pichiansunthorn, 2001; The Forest Herbarium, 1984).

### **Alcoholic Tincture**

Some plants were infused in ethyl alcohol for one month before utilization. The most popular one was krachai dam (*Boesenbergia rotunda*). The *Boesenbergia rotunda* alcoholic tincture was a sex stimulant (Kanpermpool, 1999). Do mai ru lom (*Elephantopus scaber*) was also used for this purpose. Plants used as an alcoholic tincture are listed in Table 4.

### **Paralysis Remedy**

Some ailments were treated by combinations of many medicines. A paralysis remedy was a combination of application of medicinal herbs and massage. The traditional medicine were used for remedy of paralysis included massage cream, medicinal ball, and decoction. The components of each kind of medicine were shown in Table 5. The massage cream ingredients were mixed together and fried. The mixture was filtered and the filtrate was used for massage. The procedure for making a medicinal ball was following: pound all ingredients, mix together with ripe tamarind pulp and salt, ball them to be a small bullets about 1 cm diameter and dry them before eating. The decoction is composed of 12 species of medicinal plants (Table 5). All the ingredients are wrapped with a thin cotton cloth and boiled in the water until the volume of water was decreased to half the original volume.

By using these traditional medicines for paralysis remedy, many patients have overcome paralysis. According to Chamrat Maneechot (2000), many patients were permanently cured. Pranot Kong-nguen, 75 years of age, got an accident from motorcycle being treated for 3 months and he recovered completely. Tam Tosalee and Daeng Tosalee, 66 and 64 years of age, had got sick for 2-3 years because of hard work. They were treated for 2-3 months and they recovered completely. Somnuek Aranyapan and Nikom Kamsomwong, 69 and 92 years of age, got sick for 2 years from drinking and smoking. They were treated for 3-6 months and recovered completely.

### **CONCLUSIONS**

Medicinal plants used in upper northeastern part of Thailand were quite the same as species found in other parts of Thailand. Tamarind pulp was eaten as a laxative, *Curcuma longa* for skin disease remedy, *Andrographis paniculata* as a stomachic, *Barleria lupulina* and *Clinacanthus nutans* as herpes remedy, and veld grape (*Cissus quadrangularis*) was eaten for hemorrhoids remedy (Sritaporn, 2001; Promabut, 2002; Sorasit, 2002). The medicinal plants were recommended by Medicinal Herbs Research Institute of Thailand are *Andrographis paniculata*, *Barleria lupulina*, *Cissus quadrangularis*, *Clinacanthus nutans*, *Curcuma longa*, *C. zedoaria*, *Myristica fragrans* and *Zingiber officinale* (Medicinal Herbs Research Institute, 2001). The differences were found in the methods that the plants were prepared and consumed.

*Aloe vera*, *Boesenbergia* spp. and *Elephantopus scaber* were also used by Akha tribes who lived in northern Thailand (Anderson, 1986). Most of the traditional medicines were the mixtures of many plants, so one medicine should remedy several diseases. Examples of such medicines are following. Pepper (*Piper nigrum*), tup mup (*Kaemperia* spp.), ya haew mu (*Cyperus rotundus*), bua bok (*Centella asiatica*) and honey were used as a tonic to prolong life. Elephants foot (*Elephantopus scaber*) and ma kra thuep rong (*Ficus foveolata*) infused in ethyl alcohol and alcoholic tincture was drunk as a sex stimulant. Paralysis remedies were also mixtures of many plants.

The prominent traditional medicines found in this study were the antidote for snake bite made from siam weed (*Chromolaena odorata*) leaf, alum and khi non (*Uraria crinita*), a decoction for cancer remedy was suggested by Somkuan Tannaratana (2002), and paralysis remedy which suggested by Chamrat Maneechot (2000).

## **ACKNOWLEDGEMENTS**

Thanks to Applied Biology and Biology students for data gathered and all eight traditional healers, who gave the information.

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## Tables

Table 1. Plants used by rubbing or poultice for releasing pain and reducing swelling.

<b>Utilization</b>	<b>Common Name</b>	<b>Local name</b>	<b>Scientific name</b>	<b>Family</b>	<b>Part(s) used</b>
Reduce pain of insect bites	Slender amaranth	Phak khom	<i>Amaranthus viridis</i> L.	Amaranthaceae	flesh leaf
	Joint-whip ginger	Kha ling	<i>Alpinia conchigera</i> Griff.	Zingiberaceae	rhizome
Remedy for herpes	Hophead Philippine violet	Salet phang phon tua phu	<i>Barleria lupulina</i> Lindl.	Acanthaceae	leaf
	Phaya yo	Salet phang phon tua mia	<i>Clinacanthus nutans</i> (Burm.f.) Lindau	Acanthaceae	leaf
Suppurant	Sugar apple, Custard apple	Mak khiab	<i>Annona squamosa</i> L.	Annonaceae	dry young fruit
Wounds, blood clotter	Christmas bush, Bitter bush, Siam weed, baby tea	Sap suea	<i>Chromolaena odorata</i> (L.)R.M.King&H.Rob.	Compositae	leaf
Canker of the moth itching, burns	Sugar cane, Noble cane	Oi daeng	<i>Saccharum officinarum</i> L.	Gramineae	ash
	Aloe, Lily of the desert	Wan hang chora khe	<i>Aloe vera</i> (L.) Burm.f.	Liliaceae	gel
Antibiotic, dyspepsia, blood clotter	Indian borage	Hu suea, Niam hu suea	<i>Plectranthus amboinicus</i> (Lour.) Spreng.	Labiatae	leaf
Sprains	Thai ginger	Wan fai, phlai	<i>Zingiber montanum</i> (Koenig) Link ex Dietr.	Zingiberaceae	rhizome

Table 2. Medicinal plants eaten fresh.

<b>Utilization</b>	<b>Common name</b>	<b>Local name</b>	<b>Scientific name</b>	<b>Family</b>	<b>Part(s) used</b>
Hemorrhoids	Veld grape	Phet sangkhat	<i>Cissus quadrangularis</i> L.	Vitaceae	Vine, plant
Laxative	Tamarind	Makham	<i>Tamarindus indica</i> L.	Leguminosae	pulp
	Banana	Kluai namwa	<i>Musa sapientum</i> L.	Musaceae	pulp
Schizophrenia	-	Khruea sai tan	<i>Aganosma marginata</i> (Roxb.)G.Don	Apocynaceae	shoot and root
Cough remedy	Sugar cane, Noble cane	Oi daeng	<i>Saccharum officinarum</i> L.	Gramineae	juice

Table 3. Plants used by decoction.

Utilization	Common name	Local name	Scientific name	Family	Part(s) used
Fever after season changing	Sesban, Cork wood tree, West Indian pea	Dok khae	<i>Sesbania grandiflora</i> (L.) Desv.	Leguminosae	flower
Colon cancer	-	Khi non	<i>Uraria crinita</i> (L.) Desv. ex DC.	Leguminosae	root
	Bach bo	Non tai yak	<i>Stemona tuberosa</i> Lour.	Stemonaceae	root
	-	Khao yen nuea	<i>Smilax corbularia</i> Kunth	Smilacaceae	root
Antibiotic, sore throat	Andrographis, King of bitters	Fa thalai chon	<i>Andrographis paniculata</i> Zburm.f.Xwall.ex Nees	Acanthaceae	Shoot and leaf
Neutralize toxins	-	Ya nang daeng	<i>Bauhinia strychnifolia</i> Craib	Leguminosae	leaf

Table 4. Plants used as alcoholic tincture.

Utilization	Common name	Local name	Scientific name	Family	Part(s) used
Aphrodisiac	-	Krachai dam	<i>Boesenbergia rotunda</i> (L.) Mansf.	Zingiberaceae	rhizome
	Elephants foot	Khing fi nok kum, Do mai ru lom	<i>Elephantopus scaber</i> L.	Compositae	root
	-	Ma kra thuep rong	<i>Ficus foveolata</i> Wall.	Moraceae	wood

Table 5. Medicinal plants for paralysis remedy.

Medicine form	Common name	Local name	Scientific name	Family	Part(s) used
Massage cream	Thai ginger	Wan fi, Plai	<i>Zingiber montanum</i> (Koenig) Link ex Dietr.	Zingiberaceae	rhizome
	Turmeric	Khamin chan	<i>Curcuma longa</i> Linn.	Zingiberaceae	rhizome
	Derris	Tao wan priang	<i>Derris scandens</i> (Roxb.) Benth.	Leguminosae	vine and leaf
	Indian sarsaparilla	Tao en on	<i>Cryptolepis buchanani</i> Roem.	Asclepiadaceae	vine and leaf
	Coconut	Maprao	<i>Cocos nucifera</i> L.	Palmae	oil
	Sesame	Nga	<i>Sesamum orientale</i> L.	Pedaliaceae	oil

Table 5 (Continued). Medicinal plants for paralysis remedy.

Medicine form	Common name	Local name	Scientific name	Family	Part(s) used
Medicinal ball	Zedoary, Hidden cone ginger	Khamin khuen, Kamin oi	<i>Curcuma zedoaria</i> (Berg) Rosc.	Zingiberaceae	rhizome
	Turmeric	Khamin chan	<i>Curcuma longa</i> Linn.	Zingiberaceae	rhizome
	Thai ginger	Wan fi, Plai	<i>Zingiber montanum</i> (Koenig) Link ex Dietr.	Zingiberaceae	rhizome
Decoction	Pepper	Phrik thai	<i>Piper nigrum</i> L.	Piperaceae	fruit
	Asafoetida, Persian aza	Mahahing	<i>Ferula foetida</i> L.	Umbelliferae	Gum resin
	Tamarind	Makham	<i>Tamarindus indica</i> L.	Leguminosae	pulp
	-	Po pit	<i>Helicteres isora</i> L.	Sterculiaceae	young fruit
	-	Cha phlu	<i>Piper sarmentosum</i> Roxb.	Piperaceae	leaf
	Scarlet leadwort, Coccinea – pink plumbago	Chetta mun phloeng daeng	<i>Plumbago indica</i> L.	Plubaginaceae	stem and root
	White leadwort, Chitra	or Chetta mun phloeng khao	<i>Plumbago zeylanica</i> L.	Plubaginaceae	stem and root
	Beal fruit tree, Bengal quince, Bilak	Matum	<i>Aegle marmalos</i> (L.) Correa ex Roxb.	Rutaceae	young fruit
	Eagle wood	Kritsana	<i>Aquilaria crassna</i> Pierre ex Lecomte	Thymelaeaceae	wood
	Nutmeg tree	Chan thet	<i>Myristica fragrans</i> Houtt	Myristicaceae	wood
Ginger	Khing	<i>Zingiber officinale</i> Roxc.	Zingiberaceae	rhizome	
Lotus	Bua luang	<i>Nelumbo nucifera</i> Gaertn.	Nelumbonaceae	stamen	
-	Saraphi	<i>Mammea siamensis</i> Kosterm	Guttiferae	flower	
Ironwood	Bun nak Mali, Jasmine	<i>Mesua ferrea</i> L.	Guttiferae	flower	
		<i>Jasminum sambac</i> (L.) Ait.	Oleaceae	flower	
Bullet wood, Spanish cherry, Tanjung tree	Phi kun	<i>Mimusops elengi</i> L.	Sapotaceae	flower	

## Figures



Fig. 1. Siam weed (Sapsuea) *Chromolaena odorata*.



Fig. 2. Hophead Philippine violet (*Barleria lupulina*).



Fig. 3. Salet phang phon tua mia or Phaya yo (*Clinacanthus nutans*).



Fig. 4. Veld grape (*Cissus quadrangularis*).



Fig. 5. Khrueta sai tan (*Aganosma marginata*).



Fig. 6. Andrographis (*Andrographis paniculata*).