

## CHAPTER 3

### RESULTS AND DISCUSSION

**Research results** were divided into two parts:

#### 3.1 Community background and ethnomedicinal plant use knowledge

##### 3.1.1 Community background

##### 3.1.2 Medicinal plants and their diversity in Sancharurn Village.

3.1.3 Knowledge of the medicinal plants use by the Mien, particularly in postpartum women at Sancharurn Village.

#### 3.2 Conservation and sustainable use of medicinal plant in the Mien community at Sancharurn Village

3.2.1 Integration of scientific knowledge into the Mien's indigenous knowledge for applied *ex situ* conservation, sustainable use and development of the Mien's medicinal plants using laboratory works.

3.2.2 Participatory action research processing to conserve medicinal plant use knowledge, and also medicinal plant diversity for sustainable use of medicinal plants in Sancharurn Village.

### **3.1 Community background and ethnomedicinal plant use knowledge**

#### **3.1.1 Community background**

As in literature review, for more than hundred years that Mein in Sancharurn located in Nan Province, Thailand, unless in early phase they lived among natural forests, live and dependent products from forest for food, apparel, agriculture

equipment, and medicine [43]. Especially the use of medicine, Mien familiar and use many herbal medicines for their healthcare in forms of herbal bath, tea, other tropical medicine. However, presently, Mien live among dynamic change's world. Globalization made a changing of cultural and their lifestyle [42]. Mien in Sancharurn Village are currently depending on modernization including communication that mobile phones are the widely used device in community, consumption that depend on goods from outside sources while dressing of young Mien also changes to modern styles, medical service of Mien in Sancharurn is leaning to use modern medicine even if in a easy case. These situations made Mien in Sancharurn try to increase their income by grow the cash crops, such as coffee, lichee and other orchards. The use of the chemical fertilizers and insecticides also has increased. Unless the development of modernization, made more toxic by chemicals and also more of extermination, but self dependency of Mien still is decreasing. Cultural knowledge that was accumulated for more than thousand years is also disappearing together with the decreasing of old shamans and herbalists. This situation impacts to long term biodiversity and cultural diversity. Conservation both cultural conservation and biodiversity to maintain their cultural and natural heritage for long time use then was concerned and established in this community. It was started from plant diversity and knowledge of medicinal plant used was surveys with shamans, herbalists, and old Mien women. The medicinal plant use knowledge data was recorded and listed to create the inventory of the Mien's medicinal plants.

### **3.1.2 Medicinal plants and their diversity at Sancharurn Village**

Medicinal plants near Sancharurn Village were surveyed to determine the remaining plants in the forests around the village. At 450-600 m. above sea level, and

about 1-5 km away from village, there are rice, corn and orchards fields. Along side of the river near villager's plantations are natural herbal habitats. Many riparian medicinal plants that are used for their healthcare can be collected from here. Native palms can also be found along the way to villager's plantations. Higher than 700-800 meters above sea level, coffee is cultivated. Some new plantations were modified from natural forests. It is noted that these areas are opened from natural forests even though many herbs were found here. However, almost all of the villagers never knew and were concerned about them. Moreover, at the time, it was difficult to find big trees or vines of medicinal plants in the general forests. Big trees can exist in deep chasms and/or high precipices only. Some plants were found only as a stump of roots and stems in the new plantations of the village. There are a few species that have been cultivated alongside fields such as herbs that can be consumed as tonic food supplements in postpartum women and/or plants used as emergency herbs such as for treating diarrhea, toothache, allergies, and for trauma wounds. The top of the mountain that is called "tom in de", at 1000-1500 m. above sea level, is a vast grass field. In the past hundred years, the top of this area was opium plantations. Currently, some villagers use these as houses for their cows. Plants such as *Eupatorium adenophorum* Spreng. and *Eupatorium odoratum* L. are common found there.

Transect walks in forest plots were carried out with herbalists to get information on the status of medicinal plants with regard to their habitat. The results indicate that randomized sampling of twenty quadrant plots (4 x 4 m<sup>2</sup>) at higher than 700 m. above sea level found the plants have dispersed in uniform distribution, the species diversity index was 2.3, and of these, *E. odoratum* L. and *E. adenophorum* Spreng. have been found to have the highest density, respectively while 10 quadrant plots at 450-600 m.

above sea level found “Mia Bua” to have the highest density. More than 168 species of medicinal plants were surveyed. These plants belonged to 78 families and 164 genera, including 131 species that were wild plants and 37 species of cultivated plants. There were two species, *Aeschynanthus longicaulis* Wall. ex R. Br. and *Tacca chantrieri* Andre. that are listed as a threatened species in Thailand [132]. Both species should be reintroduced in home garden in community and/or in botanic garden nursery.

From transect walks of the forest plots, it can be concluded that the species diversity index of medicinal plants in this area is less than in other parts of northern Thailand [133-136]. It is thought this is because it is now secondary forest where opium was cultivated for the past 100 years and now cash crops such as coffee, lichee, rice, and corn are grown. The medicinal plants in this area are being threatened by habitat destruction, leading to the medicinal plants and the knowledge of their use being currently endangered. Medicinal plants used by postpartum women are also threatened by the same ways. The species of plants that were found in this area are the species that are likely to grow in every burned area.

However, the climate at Sancharum Village is still suitable for cultivating medicinal plants. It should be urgently promoted to preserve these medicinal plants via *in situ* conservation in the form of home gardens and medicinal gardens near the project area before these medicinal plants become extinct forever.

### **3.1.3 Knowledge of the medicinal plants use by the Mien**

Knowledge of medicinal plant use of the Mien in Sancharum village can be divided into two groups: specific knowledge, which is held by herbalists and/or

shamans and general knowledge, or knowledge that is held by the villagers.

### **3.1.3.1 Specific knowledge of medicinal plants use of the Mien: data from interviews of four herbalists.**

From village contacts, four Mien herbalists hold almost all of medicinal plant knowledge. All herbalists said that they had learnt about medicinal plants from their ancestors by the oral tradition. Their knowledge has had more than 50% similarity, some indications of medicinal plants that held by the herbalist are a family secret. Since some villagers prefer to use modern medicine, but medicinal plant use is the alternative choice of treatment for them then current knowledge of use of the medicinal plants has diminished.

One hundred and sixty eight species of medicinal plants were used by herbalists. These plants could be classified into 19 categories [114]. Three of the most common usage categories were for birth related conditions (44 species, 26.2%), infections/infestations (27species, 16.1%) and pain (24 species, 14.3%). The other categories were also used such as digestive system disorders, inflammation, respiratory system disorders, skin/subcutaneous cellular tissue care, genitourinary system disorders, and injuries.

The most commonly used families were Rubiaceae (10 species, 6.0%), and Euphorbiaceae (9 species, 5.4). Of the part/parts used, the leaves were the most common part used (103 species, 61.3%), followed by the stem including bark and latex (91 species, 54.2%). The most common method of preparation was decoction for both oral and bathing uses (134 species, 79.8%). However, the route of administration by oral consumption was as a tea or food (119 species, 70.8%) while herbal baths (44 species, 26.2%) and poultices (25

species, 14.9%) were also common routes of administration. Only 1 species (0.6%) was inhaled. Species used by Mien herbalists with their indications, and other details are shown in Table 2.