

**PHARMACEUTICAL ETHNOBOTANICAL STUDY OF
THAI-KHMER ETHNIC GROUP IN 2 VILLAGES IN THE KHUKHAN
DISTRICT, SI SA KET PROVINCE**

The seal of Mahidol University is a large, circular emblem in the background. It features a central golden crown-like symbol (Chhatra) surrounded by a blue ring. The outermost ring contains the university's name in Thai script: "มหาวิทยาลัยมหิดล" (Mahavithayalai Mahidol) at the top and "จุฬาลงกรณ์มหาวิทยาลัย" (Chulalongkornrajavidyalaya) at the bottom, separated by two small golden symbols.

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OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF SCIENCE
(PLANT SCIENCE)
FACULTY OF GRADUATE STUDIES
MAHIDOL UNIVERSITY
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Thesis
entitled

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THAI-KHMER ETHNIC GROUP IN 2 VILLAGES IN THE KHUKHAN
DISTRICT, SI SA KET PROVINCE**

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PHARMACEUTICAL ETHNOBOTANICAL STUDY OF THAI-KHMER ETHNIC GROUPS IN 2 VILLAGES IN THE KHUKHAN DISTRICT, SI SA KET PROVINCE

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ABSTRACT

This pharmaceutical ethnobotanical study of Thai-Khmer ethnic group in two villages in the Khukhan district, Si Sa Ket province, was conducted in 2006-2007 using qualitative methods. Five healers were interviewed and observed individually and in a group. The plants were collected, photographed, systematically identified, and confirmed with authentic specimens at the Bangkok Forest Herbarium (BKF), Ministry of Natural Resources and Environment, and at the Bangkok Herbarium of the Department of Agriculture, Ministry of Agriculture, and Cooperatives (BK). Local plant names, indications, parts used, preparations, and modes of administration were also recorded. The results concluded that the healers prescribed 81 herbal formulations and 35 single plants for adults, and two formulations and five single plants specifically for children. Thirty-six formulations and two single plants were the most frequently prescribed for post-labor conditions. Among those conditions, 23 formulations, and two single plants were used to treat *Kho sabun* (a broad spectrum of disorder occurring in women after delivery). For children, one formulation was used to treat *Saang* (fever with wounds in the mouth, loss of appetite, weight loss, and furred tongue). One formulation together with four single plants were used to treat fever, and one single plant was used to prevent fever. A total of 116 medicinal plants belonging to 110 genera and 53 families were recorded. Only the genus could be identified for two plants. The most frequently prescribed were Leguminosae (14 species), Apocynaceae (six species), Euphorbiaceae (six species), Rubiaceae (six species), and Rutaceae (six species). Fifty-one species were used in both Thai-Khmer folk medicine and Thai traditional medicine. However, only three species were reported to possess the same indications. The *Ma-Mod* ritual (dancing ritual) seemed to be conducted for psychological treatment with the families', relatives', and friends' encouragement. Eight plants were used in the ceremony. In conclusion, people in the study sites used medicinal plants, rituals and beliefs to maintain their health. The collection, documentation, and management of ethnobotanical data could preserve the folkloric knowledge for future research and sustainable uses.

KEY WORDS: PHARMACEUTICAL ETHNOBOTANY / MEDICINAL PLANTS / RITUAL / THAI-KHMER ETHNIC GROUP

238 pages

การศึกษาพฤกษศาสตร์พื้นบ้านทางเภสัชกรรมของชาวไทยเขมรใน 2 หมู่บ้าน อำเภอขุนซิ้ง จังหวัดศรีสะเกษ
PHARMACEUTICAL ETHNOBOTANICAL STUDY OF THAI-KHMER ETHNIC GROUPS IN 2
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บทคัดย่อ

การศึกษาวิธีการใช้พืชเป็นยารักษาโรคของชาวไทยเขมรในหมู่บ้านสองแห่งของอำเภอขุนซิ้ง จังหวัดศรีสะเกษ ระหว่างปี พ.ศ. 2549-2550 เป็นการวิจัยเชิงคุณภาพ โดยการสำรวจร่วมกับหมอสมุนไพรพื้นบ้าน 5 คน ร่วมกับการสังเกต และสัมภาษณ์ จำแนกชนิดชื่อท้องถิ่นของพืชด้วยหลักการทางพฤกษศาสตร์ ระบุสรรพคุณ ส่วนที่ใช้ และวิธีใช้ บันทึกภาพและเก็บตัวอย่างเพื่อใช้เปรียบเทียบกับตัวอย่างพรรณไม้ที่หอพรรณไม้ กรมป่าไม้ และพิพิธภัณฑ์พืชกรุงเทพ ผลการสำรวจพบว่าหมอพื้นบ้านไทยเขมรใช้สมุนไพรรักษาโรคในผู้ใหญ่ 81 ตำรับและสมุนไพรเดี่ยว 35 ชนิดและใช้เฉพาะในเด็ก 2 ตำรับและ 5 ชนิด ใช้สมุนไพรสำหรับสตรีหลังคลอด จำนวน 36 ตำรับและ 2 ชนิด โคนะฮุนเป็นโรคที่พบในสตรีหลังคลอด และมีอาการแตกต่างกันไป เช่น มีไข้ อ่อนเพลีย อาเจียนและเวียนศีรษะ ซึ่งพบว่าใช้สมุนไพรตำรับและสมุนไพรเดี่ยวรักษาถึง 23 ตำรับและ 2 ชนิด สำหรับสมุนไพรเฉพาะเด็ก มีการใช้สมุนไพรรักษาขางดาน 1 ตำรับ ใช้แก้ไข้ในเด็ก 1 ตำรับและ 4 ชนิด ใช้ป้องกันไข้ 1 ชนิด พบพืชที่มีการใช้เป็นยาทั้งสิ้น 116 ชนิด แยกเป็น 110 ชนิด จาก 53 วงศ์ จำแนกได้เฉพาะชื่อ 2 สกุล วงศ์ที่มีการใช้เป็นยามากที่สุด ได้แก่ วงศ์ถั่ว (14 ชนิด) วงศ์ตีนเป็ด (6 ชนิด) วงศ์เปเล้า (6 ชนิด) วงศ์เข็ม (6 ชนิด) และ วงศ์ส้ม (6 ชนิด) เมื่อเปรียบเทียบสรรพคุณระหว่างชาวไทยเขมรและการแพทย์แผนไทย พบว่ามีการระบุใช้ทั้งสองแผนจำนวน 51 ชนิด แต่มีสรรพคุณสอดคล้องกันเพียง 3 ชนิด รำเม้มดเป็นพิธีกรรมที่น่าจะใช้รักษาอาการป่วยทางด้านจิตใจ เป็นพิธีที่มีส่วนร่วมจากครอบครัว เพื่อนบ้านและชุมชน ใช้พืชเป็นส่วนประกอบในพิธีจำนวน 8 ชนิด จากการวิจัยสรุปได้ว่าการดูแลสุขภาพของชาวไทยเขมรอาศัยทั้งสมุนไพร พิธีกรรม และความเชื่อ การบันทึกและสืบทอดองค์ความรู้ควบคู่ไปกับอนุรักษ์พืชสมุนไพรในพื้นที่ จะเป็นรากฐานการค้นคว้าวิจัย เพื่อการใช้ประโยชน์อย่างยั่งยืนต่อไป

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CHAPTER I

INTRODUCTION

In the past, humans have relied on nature for their basic needs such as food, clothing, shelter, fuel, fragrance and, not the least, medicines. Nowadays, people still use medicinal plants for the treatments of various diseases. The relationship between plants and health has existed for thousands of years. The first record in Mesopotamia, dated from about 2600 BC was inscribed on clay tablets in cuneiform (1). In China, ‘Sheng-Nongs’ an herbal book was suggested to be one among the earliest sources of folk knowledge on the use of herbs (2). In Thailand, folk knowledge was documented on various materials such as palm leaves, ‘khai’ paper and marble tablets. In the nineteenth century, scientists began to extract the medicinal plants and purify for their active constituents. Many drugs were discovered, such as antipyretic “aspirin” from Willow bark (*Salix tetrasperma* Roxb.), anti-malarial drug “quinine” from Cinchona bark (*Cinchona ledgeriana* Bern. Moens ex Trimen) (3). Professor Dr. NR Farnsworth indicated in his study that more than half of prescriptions worldwide contained bioactive compounds and more than 50% of those drugs composed of important components from natural resources (4).

Thailand is rich in the plant biodiversity especially medicinal plants which attract scientists to discover new drugs. It is estimated that more than 1,000 species of vascular plants have been recorded to be used as the ingredients in traditional medicines (5).

The neighboring countries along the north eastern boundary of Thailand, from the north to the south, are The Republic of China, People's Democratic Republic of Laos and The Kingdom of Cambodia. They are inhabited over fifteen ethnic groups and among them Thai-Khmer is one of largest ethnic groups (6).

The influence of the Khmer civilization in this region began since the great ruler of ancient Khmer Empire, Jayavarman VII (1181 to probably about 1217 AD) (7). For the well being of his people, 102 hospitals called Arokayasala were built rest

throughout his kingdom and a numbers of medicinal plants had been recorded to be used since then. The first Khmer recorded evidence was inscribed in the stone tablets in Sanskrit (8). The Khmer Empire expanded further to the Korat Plateau in the north-eastern of Thailand (9). The decline of Khmer civilization began since 1430 when the Ayutthaya conquered Angkor. However, the Khmer knowledge on traditional medicine was still left as a heritage in northeast of Thailand. Most of Thai-Khmer groups have been settled down in the rural area of Surin, Buri Ram and Si Sa Ket provinces. Some are found scattered in Nakhon Ratchasima, Ubon Ratchathani, Maha Sarakham and Roi Et (10).

Although, Thai-Khmer groups have intercommunication with surrounding neighbor's ethnicity for long time especially Kuay ethnic group, their culture identities still maintain. They have superstitious beliefs, rituals and ceremonies related to their living and health. It has been noted that plants played important roles in those events (11, 12).

There are few documents about utilization of herbal medicine in Thai-Khmer ethnic groups. In the year 2002, Chuakul & Saralamp (13, 14) surveyed on the utilization of medicinal plants in Khok Phayuung village, Kaapchoeng district, Surin province. They reported that 149 and 147 species of medicinal plants, form 64 and 65 families were used to treat symptoms such as edema, fever and abscess.

In August 2005, I followed Assistant Professor Dr. Wichit Paonil and his colleagues to carry out an appraisal in Kanthararom and Lumpuck villages, Kanthararom sub-district, Khukhan district, Si Sa Ket province. Although the short visit did not allow me to establish rapport and blend into the community these areas were interesting and worth for long-term research based on several criteria as follows.

1. There are some traditional healers still using their expertise for the community health care.
2. Their cultural identity is retained and represented in daily life such as their language, costumes, dancing, music, beliefs and rituals.
3. Medicinal plants are still available around the village and used for medicinal purposes.

The objectives of my study

1. To study medicinal plant utilization of Thai-Khmer ethnic group in Kantharom Village and Lumpuk village.
2. To study medicinal plant related to the belief and ritual in this area.
3. To compare indications of medicinal plants used by Thai-Khmer with those records in traditional Thai medicine.

In my study, qualitative research was conducted. The field survey was carried out during August 2006 and December 2007.

Direct observation or non-participant observation was used to obtain the information. Direct observation was used to record the behaviors of healers during practice and collecting the herbs. Interview techniques, open-ended conservation and semi-structured interview were used to gather the data during walk-in-the-woods or home garden and during or after direct observation. The majority of questions were created during the interview and flexible to probe for details or discussion. Finally, the medicinal plants were identified, grouped and evaluated according to the medical indications for health benefit. We hope that this study would be a part of local knowledge conservation.

CHAPTER II

LITERATURE REVIEW

Ethnobotany

Ethnobotany has been defined as “the use of plants by local people” (15). The history of useful plants studies were date back to Greek, Roman, Islamic, and Chinese emperor times. Then in the colonial period, explorers, and adventures of Europe sought for plants used by local people. In the early period of study, the methods were observation and documentation. Until 19th century, this period was the peak of botanical exploration. In 1980, the escalation of ethnobotanical studies and collaboration with multidisciplinary became increasing. For example, the accurate taxonomic descriptions of continent’s flora became available in America. In the early period of the 20th century, the great methodological and conceptual reorientations were shifted from the row compilation of data (16).

Ethnobotany maintains a multidisciplinary discipline. It is derived from both biological and social science, and is composed of diverse fields of study to answer the relationship between people and plants including agriculture, anthropology, archaeology, biochemistry, cognitive studies, comparative religion, botany, evolution, medicine, history, linguistics, nutrition, pharmacognosy, sociology, and toxicology (17).

Pharmaceutical ethnobotany is considered as a subfield of ethnobotany. It is the study of the relationship between people or social groups and their use of local indigenous flora for medicinal purposes and deals with how human view and classify plants (18). It has proved to be beneficial in the future drug production and development such as in China and Himalayan countries (2).

The aims of ethnobotany are mainly divided into two phases:

1. To document facts about plant use and plant management
2. To elucidate the ethnobotanical text by defining, describing, and investigating ethnobotanical roles and processes (19).

Ethnobotanical study on ethnic groups in Southeast Asia

The studies of ethnobotany have been conducted in many countries such as: Indonesia, East Timorese, Brunei Darussalam, Vietnam, Malaysia, Lao, and Thailand.

Three studies have been conducted in Indonesia. Zumsteg & Weckerle (20) performed a study on “bakera” an herbal steam bath for postnatal care in Minahasa ethnic group. Sixty plant species were concluded from semi-structure interview with 14 midwives and 166 mothers. Twenty-one plants were mentioned by both groups. Among the 10 most frequently cited plants, eight were cultivated in the kitchen gardens, contained essential oil, and also used as spices. The important factors effected this traditional losing were the changes of lifestyle and the influenced of western medicine. The incorporation of “bakera” into the modern training courses of midwives was the attempt to maintain this tradition.

Roosita, et al. (21) conducted a study on medicinal plants used in Sundanese ethnic group. One hundred and seventeen species were recorded from semi-structure interview in 19 herbalist healers and 70 villagers. Ninety-six illness cases were mentioned and classified into 23 categories

Grosvenor, et al. (22) reported 114 species used in 24 villages in Talang Mamak and Orang Melayu ethnic group. It was noted that the villagers used external applications to treat internal conditions such as fever.

In East Timorese, Collins, et al. (23, 24) conducted two studies. The first were done in 2 ethnic groups, Laklei and Idate in 2006 and the second in Fataluku in 2007, using quantitative study and unconstructed interview respectively. Eighty-six species were reported with statistical data analysis and compared the uses of those overlapping medicinal plants between Laklei and Idate. In another paper, 40 plant species were gained from only one informant in Fataluku and grouped into twelve categories of illness. Thirty-five species were reported to be used in human, two as veterinary medicines and three as poisonous plants.

Only one study was conducted in Brunei Darussalam. Voeks & Nyawa (25) reported two hundred and forty-four plant species used as shelter, food and medicine by Dusun ethnic group. Those plants have been found in the disturbed area and old-growth forest.

Samuel, et al.(26) interviewed sixteen Semang, indigenous people in Orang Asli, Malaysia, which composed of three herbalists and four individual informants together with another nine villagers in one group discussion. 62 species belonging to 36 families were reported to be used as medicine and were collected from wild nature.

Ong (27) survey of the Malay ethno-medico botany in Machang district, Kelantan state, Malaysia by interviewed with healers, herbalists, shamans, midwives, collectors, traders and villagers. One hundred and forty six plant species were used as medicine. Eighty three plants were applied externally to treat both external and internal complaints, 16 plants were used for post-natal physical recovery.

There was one study in Lao PDR. The ethnobotanical data of the ethnic groups in district of Paksan, Bolikhansai province was collected. Fifty-five species were mentioned from healers and villagers to treat 16 ailments. Comparing to the previous reports of toxicity data, seven species were found to toxic and had LD 50 values of more than 1000 mg/kg body weight of the tested animals (28).

Ethnobotanical study on ethnic groups in Thailand

From literature reviews, the ethnobotanical studies on plant utilization were gradually increased in Thailand. Most of researches emphasized on the compilation of plant indigenous knowledge and normally categorized into medicinal plant, shelter, food, economic plants, and miscellaneous uses (29-35). The most common methods used for data collection were interviewing (13, 14, 33-49) and observation (38-41, 49). The informants were selected from folk healers and their assistants, villagers, patients, and some village health volunteer (13, 14, 29, 36, 37, 39-41, 44, 50-53). For medicinal plants, the data reported included local plant names, plant characters together with references, traditional uses, preparation methods, and routes of administration.

Thailand is a multi-ethnic country with more than 30 distinct ethnic groups. In the northern part, 13 ethnic groups in different localities were studied, composed of Karen (33, 34, 44-46), Hmong (29, 37, 46, 47), Lawa (30, 31, 38, 54),

Mien (29, 43, 46, 55), Tin (35, 54, 55), Akha (42, 46), Khmu (54, 55), Lahu (31, 48), Kachin (31), Mlabri (55), Tai Lue (29), Tai Yai (32), and Yunnanese (31).

In the central and western part, 3 ethnic groups were studied, composed of Hmong in Phetchabun (56) and Phitsanulok (57), Karen in Kanchanaburi (58) and Prachuap Khiri Khan (49), and Thaisongdum in Kanchanaburi and Nakhorn Pathom (59).

In the southern part, 2 ethnic groups, the folk knowledge of Moken in Phang Nga (60) and Sakai in Trang, Phapthalung, and Yala provinces (61) were reported.

In north-eastern Thailand, ethnobotanical studies of 6 ethnic groups were documented, composed Thai Lao (36, 50-53), Phu Thai (39, 40, 62), Bru and Kula (63), Kui(41), and Thai-Khmer (13, 14).

Neamsuvan (49) studied the folk knowledge in plant utilization in Kalang hill tribe, Pala-U village, Hua-Hin district, Prachuap Khiri Khan Province. Fifty one from 115 reported species were used as medicine. The rest were used as food, constructing materials, and household utensils.

Srithi, et al. (43) studied local knowledge and actual uses of medicinal plant among the Mien in northern Thailand. The traditional knowledge has been orally passed down from family members. The informants knew many more useful plants than they actually used, 21% of those use-reports had never been prescribed. The factors were the expansion modern education and accessibility of western medicine together with the changing of life style. The lack of systematic documentation also enabled the extinction of Mien medicinal plant knowledge.

Inta, et al. (42) studied local knowledge of medicinal plants used in three Akha villages in Thailand and another two in China, emphasized on the effect of geographic separation. Total 95 species were recorded, 51 plants used in Thailand and 60 used in China. Sixteen species were reported in both Thai and Chinese Akha villages and among those only 12 possessed similar uses. This suggests a strong influence of the environment on the traditional Akha plant medicine. The Information Agreement Ratios (IARs) were similar in the Chinese and Thai Akha villages, which suggested that Akha brought with them a strong cultural tradition from China. Ecological divergence influenced them to apply their knowledge by using a different set of plant species.

Virapongse (41) performed the Kui people ethnomedical study in six districts of Surin, Si Sa Ket, and Ubon Ratchathani provinces. Thirty Kui healers were interviewed and reported 374 plant species, 9 preparation methods for 100 indications. It was concluded that similar natural plant resources of those locations led to the similarity of their knowledge. The major endangered factors were secrecy and restrictions, loss of respect and belief, and loss of natural resources.

Pannet (39) studied medicinal plants used by the Phu Thai ethnic group in Don Mai Khum village, Kalasin province. A total of 108 species belonging to 98 genera and 51 families were gathered. The predominant symptoms were bodily discomfort (24 species), sprain (18 species), and flatulence (seven species). Apart from healers, the villagers also gained their own herbal knowledge from their experiences and their ancestors.

Ethnobotanical study on Thai-Khmer ethnic group in Thailand

Chuakul & Saralamp (13) published two papers on Thai-Khmer folk knowledge, performed in Khok Phayuung village, Kapchoeng district, Surin province. By interviewing four herbalists, 149 species from 64 families were used as medicines. Eighteen medicinal plants belonged to Leguminosae, the most predominant family. Twenty-three plants were prescribed for fever, 14 for food poisoning, and eight as blood tonic. Fifty-eight herbal formulations and their indications were also recorded. Later, they (14) also reported 147 medicinal plants from 65 families recommended by the same herbalists. Thirty plants were overlapping reported with both same and different parts used and indications.

CHAPTER III

KANTHARAROM AND LUMPUK VILLAGES

The study site, Kanthararom (Moo 1) and Lumpuk (Moo 10) villages are situated in Kanthararom sub-district, Khukhan district, southwest of Si Sa Ket province. The influence of four ethnic cultures Nyeu, Lao, Suay, and Thai-Khmer, covered this area and made Si Sa Ket an historical area that plays a significant role in the social development of ancient communities.

The border between Thailand and Cambodia is approximately 800 kilometers, from Ubon Ratchathani, Si Sa Ket, Surin, Buriram, Sa Kaeo, Chanthaburi to Trat. The long history of relations between the Thais neighboring countries, especially Laos and Khmers were created through migration and trading (64).

The following information describes geographical backgrounds, fundamental facilities, life style, and culture which influence the health of the people in the study area.

The historical background of the study site

Si Sa Ket is one of the nineteen provinces in the north-eastern part of Thailand. Neighboring provinces are (from west clockwise) Surin, Roi Et, Yasothon, and Ubon Ratchathani, to the south it borders is Cambodia (Figure 1). Many Khmer ruins found in this province indicated its potential to the Khmer empire at least by the 12th century, although probably sparsely populated (9). According to local legend, Si Sa Ket was known as Sri Nakorn Lamduan (ศรีนครลำดวน) and later called Muang Khukhan. It was built in the late 15th century A.D. during the reign of the King Boromaratcha 3rd of Ayutthaya. In 1904, Si Sa Ket was changed to Khukhan and still retained this name until 1938 when it was renamed Si Sa Ket Province (64).

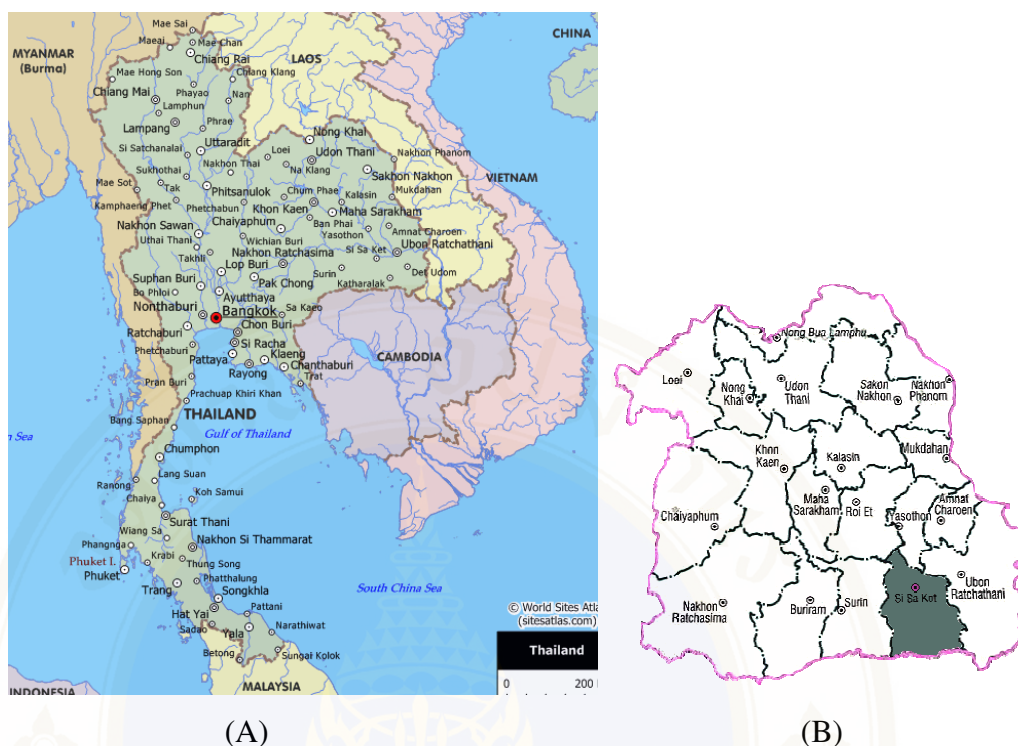


Figure 3.1 Map of Thailand: (A) and north-eastern provinces, emphasized Si Sa Ket province, (B) (Modified from <http://www.sitesatlas.com/Maps/Maps/tha-pol.htm>.(65), Ministry of Science and Technology (66))

The province is subdivided into 22 districts. The districts are further subdivided into 206 sub-districts and 2411 villages (11). From preliminary survey, Kanthararom (Moo 1) and Lumpuk (Moo 10) village, Kanthararom sub-district, Khukhan district were selected for further investigation.

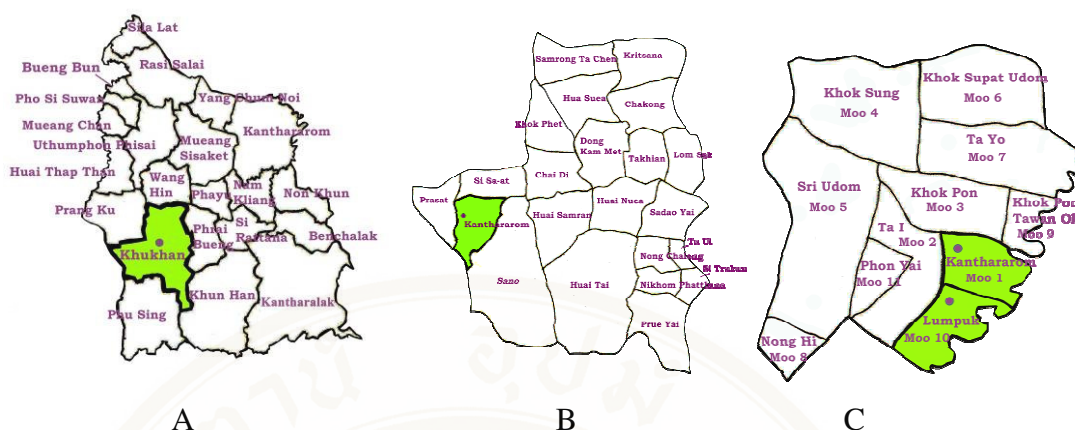


Figure 3.2 Locations of the area studied: (A) Si Sa Ket province, (B) Khukhan district, (C) Kanthararom sub-district, showing Kanthararom village (Moo1) and Lumpuk village (Moo 10) (Modified from <http://www.sisaket.go.th/amphur/khukhan.html>.(67), Kanthararom subdistrict administrative organization (68))

Ecological and geographical background

Kanthararom (Moo 1) and Lumpuk (Moo 10) villages are located in the southwest of Khukhan district. The geographical features of Kanthararom and Lumpuk villages are similar, the plateau. The major vegetation type is mixed deciduous forests, characterized by the present of *San bai lek* (*Dillenia ovata* Wall. ex Hook.f. & Thomson), *Maduk* (*Siphonodon celastrineus* Griff), *Makok* (*Spondias pinnata* (L.f.) Kurz.) (68). The climate that can be divided into three seasons; monsoon or rainy season (from May to September), cold season (from the middle of September to February), and summer (from March to April) (69). An averaged temperature is 28 °C (70). The mean annual precipitation is approximately 1289.8 mm/year. The soils are low fertility and drainage (68, 70).

Village life in Kanthararom and Lumpuk villages.

In the year 2008, the population in Moo 1 were 487 from 95 households, males was 241 and female was 246 while the population in Moo 10 was 865 from 159 households, males was 410 and female was 455 (68).

The major occupations were farming, raising, and handling cattle. Some were government officers, employees, and sellers (68). The major crops were rice, cayenne pepper or Phrik khinu, cassava, and Po kaeo. Their living relied on environment and natural resources, especially food. In the past years villagers started to grow eucalyptus around their rice field and sold for paper production.



Figure 3.3 Wat Sophonwihan

Even though the people in both villages were Buddhist, there was only one temple, *Wat Sophonwihan* (วัดโสภณวิหาร) in Moo 1. One kindergarten called Pre-elementary children center (ศูนย์อบรมเด็กก่อนเกณฑ์), has also been established in this temple and turned to be only one school in the two villages.

For education and health service, the villagers share with Moo 3, Khok pon village, 1 and 3 kilometers in the north of Moo 1 and Moo 10 respectively. There were Khok pon primary and secondary schools and Khok pon community health center (ศูนย์สุขภาพชุมชนโคกโพธิ์) in Moo 3. This health center also served the people in Kanthararom sub-district. There were nine staffs including two health technical officers, one assistant health technical officer, two registered nurses, one technical nurse, one dentist, one Thai traditional doctor, and one janitor. On Tuesday, a doctor from khukhan hospital came to take care of the patients in this health center.

For local trading, there were groceries, papaya salad, and noodle shops, barbershop, tailor's shop, garage, and junk shop which owned by the villagers. It was noticed that there was no fresh market in both villages. They preferred to buy fresh food such as vegetables, fruits, pork, meat, curry, and dessert from peddle-pickup or *Rot Pum Puang* (รถพุ่มพวง) in the morning.



Figure 3.4 Villager's life: (A) Fishing and paddy field, (B) Junk shop

Family system

Two family system types were found in villages, the nuclear family and extended family. The nuclear family consisting of a pair of parent and children while extended family consisting of the nuclear family, living together with extra-nuclear family members such as grandparents, aunts and uncles, cousins and nieces and nephews. The father or sometime parent went to big city for lucrative job or short term employment after sowing a field with rice and harvesting and returned home only once or twice a year. The children stayed together with extra-nuclear family members in villages. This factor changed the household structure.

Like in other Asian countries, the way of living was definitely assigned. Men were the leader of the family, performed hard work such as construction, plowing, etc. Women's household tasks were quit busy, taking care of their parents and children, cooking, cleaning, and helping in the rice field etc.

Cultural ceremony

Ceremony has been a part of the Thai-Khmer life in both study sites and passed through generations together with Buddhism. They normally combined Khmer beliefs to the Buddhist teaching and expressed in all life cycle rites (baby ceremonies, weddings, cremations, and temple festivals). For the example, “*San Don Ta*”, in which the patients always paid respect to healers, would be described in detail. *San Don Ta* was one of the special 12 month ceremonies in Thai-Khmer ethnic group. The patients usually paid respect to their healers with offering or money. The details of this ceremony were concluded as followed.

Most of the villagers working in other places returned home in New Year, *Songkran* (Thai New Year) and *San Don Ta* festivals. The word “*San*” mean worship while “*Don*” and “*Ta*” mean female and male ancestors.

San Don Ta was held on the 13th to 15th day of the waning moon of the tenth lunar month. On this occasion, villagers expressed their gratitude to their parents, elders, monk, and respectable persons, and venerated their ancestral spirits. They believed that their ancestral spirits possessed the ability to influence the fortune of the living.

On the first day, they prepared the offerings which composed of food such as roast chicken and beef, hand of bananas, sticky rice wrapped in banana or coconut leaves, silk fabric, some desserts, and money. The second day was the day to pay respect to both living elders and ancestral spirits. The ceremony started before lunch, younger family members took the offerings to their parents and the elders would give back silk fabric in return. Other two sets of offering were arranged, first was offered to the monks at the ancestral pagoda in the temple and the second was venerated the ancestral spirit in their house.



A

B

Figure 3.5 Paid respect on second day of *San Don Ta* festivals: (A) A man gave offering to elder, (B) Veneration of the ancestral spirits in the house

The ritual on third day began early at about 1 o'clock. The offering foods were taken to temple and divided into two sets, one to show respect and honor to the monks and other for the ancestral spirits.



Figure 3.6 The offering foods were placed on ancestral pagoda

In the afternoon, *Tak Bat Dokmai* (ตักบาตรดอกไม้), merit-making traditions in Buddhist lent, was held in the temple. Offerings composed of money and other necessities for monks.



Figure 3.7 A procession of *Tak Bat Dokmai*

Thai-Khmer language

“Khmer lue or Upper Khmer or Khmer Surin language” was one of Khmer dialects which had been spoken by about 1.3 million people north of the Dangrek Mountains in Srisaket, Surin, and Buri Ram in north-eastern part of Thailand (71). The villagers used this dialect to communicate among their groups and spoke Thai as the official language to contact with government officers or others. However elderly ones above 80 years could speak only Khmer lue language.

Eventhough this ethnic language has been used by local people along the boundary between Thai and Cambodia, the hierarchy or ranking order was important in their speech. The choice of words varies according age, gender, and status of a person etc.

Khmers have their own script or alphabet. Normally, only the monks and novices studied principle of Buddhism and teachings of Gautama Buddha in Khmer-lue language. Most of the villagers could speak but could neither read nor write. Thai-Khmer language center was planned to be establish in *Wat Sophonwihan* to conserve this language for the next generation.



A



B

Figure 3.8 Thai-Khmer scriptures: (A) palm leaf manuscript in Khmer alphabets, (B) the monk preached on Thai-Khmer palm leaf manuscript

Thai-Khmer costumes

Western style suits were available in the market and suitable for modern life-style. Anyway, in the special occasions or ceremonies, the traditional costumes were popular among both young and elderly peoples.

On those special occasions, the villagers, both men and women, usually worn with wrap-around skirt called *Sam Puat* or sarong and collarless shirt, hanging *Sa Bai* or loincloth loosely on their shoulder. Man's sarong and loincloth was colorful while long sleeve shirt was dark. Woman wore hand-made, silk sarong with black or white *Sa Bai*. Old women decorated with golden earrings with floral motif to praise their beauty.



A



B

Figure 3.9 Thai-Khmer traditional dresses: (A) a man wearing *Sam Puat* and loincloth, (B) women, wearing silk-sarong and *Sa Bai*

Discussion and conclusion

From the present study, Thai-Khmer villagers in the study site could retained their ancestor culture and belief. Many external factors, such as the environment and modern culture, affected their living. The changing of the world climate results in a longer period of drought and reduces rice production. According to the western dressing style, particularly the younger people start to dress in T-shirts and jeans or shorts and wear flip flops.

Most of the villagers were poor and their lifestyles were quite relaxed. The government facilities were not enough to serve their needs. A temple is still a center of education, religious, ceremony, and rituals. People in the two studied areas share healthcare service with nearby town, Khok pon. Many villagers of middle age move away to a bigger city to earn money for their family, and only visited home once or twice a year on Songkran Festival in April and *San Don Ta* in September. They left the children to be raised by the grandparents. However, they still communicated in Khmer lue or Upper Khmer or Khmer Surin language. Most of them behaved in a friendly manner and shared the public resource.

CHAPTER IV

FOLK MEDICINE AND MEDICINAL PLANTS IN KANTHARAROM AND LUMPUK VILLAGES

The field study was carried out six times in the study sites during August 2006 and December 2007. The social information and medical aspects were collected.

Methods and techniques

The first step of the field work was literature reviewed of detailed knowledge about ethnobotanical studies of ethnic groups in Thailand, and foreign countries, history of Thai-Khmer ethnic group, medicinal plants founded in the north-eastern part, together with the geographical conditions of the study site.

In the step of planning, basic information on the feasibility in the study area was compiled. About a week prior to the field study, a pilot survey was conducted in order to evaluate methods that would be used to collect the information in the field study. The methods include direct observation, group interviews, short simple questionnaires, and report writing. Also the maps of the two areas were drawn. Interview techniques, open-ended conservation, and semi-structured interview were used to gather the data during walk-in-the-woods or home garden and during or after non-participant observation. Most of the questions were created during the interview and flexible to examine for details or discuss issues.

To compile an ethnobotanical data, key informants were selected. Head of sub-district administrative organization and some villagers were begged to name well-known folk healers in their villages. Before starting the fieldwork, all key informants had been informed about the objectives, the observation, and interview techniques. They were requested for their permission to interview and report their folkloric knowledge. The interview form included local plant names, indications, plant parts used, processing methods, and modes of administration together with their personal histories.

The equipments used to record geographic information, take photographs and interview were GPS, camera, Mp3, and recorder. The plant specimens bearing flowers and fruits were used to prepare the herbariums. The plant specimens in the press were sun-dried or put in an oven at 50°-70°C until they were completely dried. The specimens were then mounted on white herbarium paper size 11.5x16.5, and labeled with all essential data. The herbarium specimens were used for systematic identification.

The methods of identification included the use of diagnostic keys, floras, books, and websites such as flora of Thailand (72-88), flora of Manila (89), flora of British India (90-94), flora of Java (95-97), flora of China (98-106), flora of Ceylon (107-111), the manual of cultivated plants (112), Thai Plant Names (113), www.ipni.org (114) and www.tropicos.org (115), and expert identification (Professor Dr. Wongsatit chaukul, Department of Pharmaceutical Botany, Faculty of Pharmacy and Dr. Thaya Jenjittikul, Department of Botany, Faculty of Science Mahidol university). The collected samples were compared with authentic specimens at two national herbaria: Forest Herbarium, National Park, Wildlife, and Plant Conservation Department, Ministry of Natural Resources, and Environment (BKF) and Bangkok Herbarium of the Department of Agriculture, Ministry of Agriculture and Cooperatives (BK). Voucher herbarium specimens were deposited at Mahidol University Herbarium (PBM), Department of Pharmaceutical Botany, Faculty of Pharmacy, Mahidol University.

Finally, an ethnobotanical datas were compiled, rechecked, grouped according to the western system of diseases and compared to Thai traditional medicine and other research papers.

Results and discussion

Traditional belief and health care

Eventhough their ancestors moved to settle in Thailand for hundred of years, they still retained their ethnic identity, religious beliefs, rituals, and ceremonies related to their living, and health. They combined the teaching of Buddhism with indigenous ancestor-spirit worship, animism, and shamanism.

There were 4 main concepts that were the causes of illness.

1. Belief in Buddhism: Most of the villagers were Buddhism which influenced their belief and ritual. They believed in right and wrong actions which lead to good or bad outcomes or karma. Karma would manifest itself to the human either in the present or future life. They also believed that a sin or wrong moral karma could be one of the causes of pain and illness, matricide, patricide, etc.

2. Supernatural belief: Every culture possessed folk beliefs to interpret events that occur in everyday life especially illness. Thai-Khmer culture revealed no different from other cultures. The villagers believed in the existence of special spirits both good and bad (called ghost) together with “*Sai ya sat*” (ไสยศาสตร์) or black magic. All secret events in *Sai ya sat* were prohibited to talk about because it might be the cause of bad luck. All these beliefs have been transferred from generation to generation. In times of misfortune and sickness, they rather turned to spirits for help and kept away evil ghosts. Spirits were widely regarded as good and benevolent but if they do not get sufficient respect, they might become nasty and caused illness or even danger.

For example, *Kong rak sa* (ของรักษา) was a spirit which dwells in small close container and might be adopted to be one's guardian. To pay the respect, blood and innards of animals were offered to *Kong rak sa*. If the offering food was not enough, *Kong rak sa* would act in badly behaviors. The worst situation might be eaten its owner, then the owner will become a devil called *Tha mob* (ทอมบ) or *Pop* (ปอบ). If the owners of *Kong rak sa* could firstly realized such uncontrollable tragedy, they would forsake their *Kong rak sa* in the field or by the waterside far from their home. *Kong rak sa* will become a flying mass of brilliant light.

Another powerful spirit was *Ma-Mod* (แม่มด), ancestor spirit which played important roles in villager's life. *Ma-Mod* might be male or female. *Ma-Mod* was believed to possess the power to protect their descendants from bad things. In contrary, they would do harm or caused illness if their descendants did something wrong and made them angry.

Evil things or Khong (ของ) was a special thing produced by witches and could do harm, made nervous breakdown or even killed the victim. Villagers believed that *Khong* could move itself into victim's body. Later, victim would be crazy or suffer and finally died from *Khong*.

Ya Sang (ยาสั่ง) was a special poison produced by witches and could do harm or even killed the victim. Villagers believed that there were many kinds of *Ya Sang* which its effect and time to cause death depended on the producers. The victims would die so sudden and the detoxification was very difficult.

3. Lifestyle and environment: Most of the villagers were farmers and workers. They worked hard almost all the year for their living income. Common ailments were muscular pain, joint pain, influenza etc. The poor sanitation and eating behavior such as rare cooking food were the cause of diarrhea and parasite especially fluke worm.

Healers believed that human's health could be influenced by surrounding habitat. The changing of the environment affected the health problems. For example, polluted water might cause rash or severe chronic itching.

4. Poisons from plants and animals: Some poisonous plant was regarded as the cause of illness such as *Dong dueng* (*Gloriosa superba* L.). Some animals are also toxic such as poisonous snake, centipede.

Personal histories of the key informants

Five healers were included in this study. Most of them were spiritual healers and used both magic and medicinal plants in the healing process. The villagers called their healers "*Mor*" (หมอ). *Mor pao* (หมอเป่า) is a kind of spiritual healer who used blowing magic phrase together with medicinal plants for treatment of specific diseases

Mor Yian chewed Mak (*Areca catechu* L), chanted “*Om maha phaya yo, Job mon mue ni, Ku cha tang, Luk dang ku cha tob, Om pra mahaphab, Om sri sawaha*” (โอมมหาพญาขอ จอบมนมือนี่ กูจะแทง ลูกแดงกูจะตบ โอมพระมหากาฬ โอมศรีสวาทะ) and blew over inflamed area of the neck.

Mor Liad Saosila or *Po Liad* (พ่อเลียด), 86 years old, was born in Khok pon village, Kanthararom sub-districts, Khukhan district, Si Sa Ket province. His main jobs are farmer and raising pigs. He practiced his medicinal knowledge and black magic from well-known monk in north eastern provinces, *Luang Pu Suang* (หลวงปู่สว่าง). He was identified as herbalist. His exertses were indigenous massage therapists, magic healer, and herbalist especially in treatment of gynecological diseases, hemorrhoids and *Pradong* (ประโดง).

Mor Phayak Thongpha or *Po Chin* (พ่อจีน), 53 years old, born in 1957 in Khanthararom village, Khanthararom sub-districts, Khukhan district, Si Sa Ket province. He works as a staff of subdistrict administrative organization and raising cattle and farmer. He was identified as herbalist in gynecological diseases.

Mor Yian Panchan or *Po Tot* (พ่อโต๊ด), 74 years old, was born in Ban kro village, Si Sa-at sub-districts, Khukhan district, Si Sa Ket province. He completed compulsory education (Grade Four) from the village school and entered the monkhood at *Wat Sophonwihan* for further study. After leaving the monkhood, he earned his money by raising and handling cattle. When he was twenty-three years old, he started to learn about medicinal plants with well-known herbalist at that time. He was identified as blowing healer and expertist in preventing miscarriages, treatment of *Saang* (ซาง) and snakebite in cattle.

Mor Sawoei Sukchaloem or *Po Sawoei* (พ่อเสวย), 53 years old, was born in Khok Sung village, Khanthararom sub-districts, Khukhan district, Si Sa Ket province. He married with *Mrs. Kid Sukchaloem*, an herbalist. He completed compulsory education (Grade six) from the village school. His main jobs were farmer, raising pigs and cattle. He was identified as blowing healer and herbalist in treatment of gynecological diseases.

Mor Kid Sukchaloem or *Mae kid* (แม่คิด), 54 years old, was born in Kanthararom village, Kanthararom sub-districts, Khukhan district, Si Sa Ket province. She completed primary education (Grade Four) from the Khok Phon School. Her main jobs were farmer, raising cattle and pigs. She was identified as blowing healer and herbalist in treatment of poison from animals.

Diagnostic method

The diagnostic methods depended on the healer experiences and practices which mainly composed of interviews and observation. If the herbalists realized that the condition was beyond their experiences, the patient would be advised to treat by other healer or go to the hospital.

Before the treatment, patients will set up the offering bowl or tray to expressing their gratitude to the healer. The offering bowl contained five incense sticks, five candles, five pairs of white flower in cone shaped of banana leaves, and some money. Sometimes, the offering was arranged according to the advice of the healer.



Figure 4.1 The offering bowl

After that, the healer started his therapy and prescribed the herbal medicine, gave some advices for his patients, such as the preparing method, administration dose, the adverse effects and the next appointment. If first formulation was ineffective, he would change to another formula based on patient's symptom. In

case of *Mor Phayak*, the patient's birthday was another factor which was considered in the diagnostic purpose.

Collecting sites of raw materials

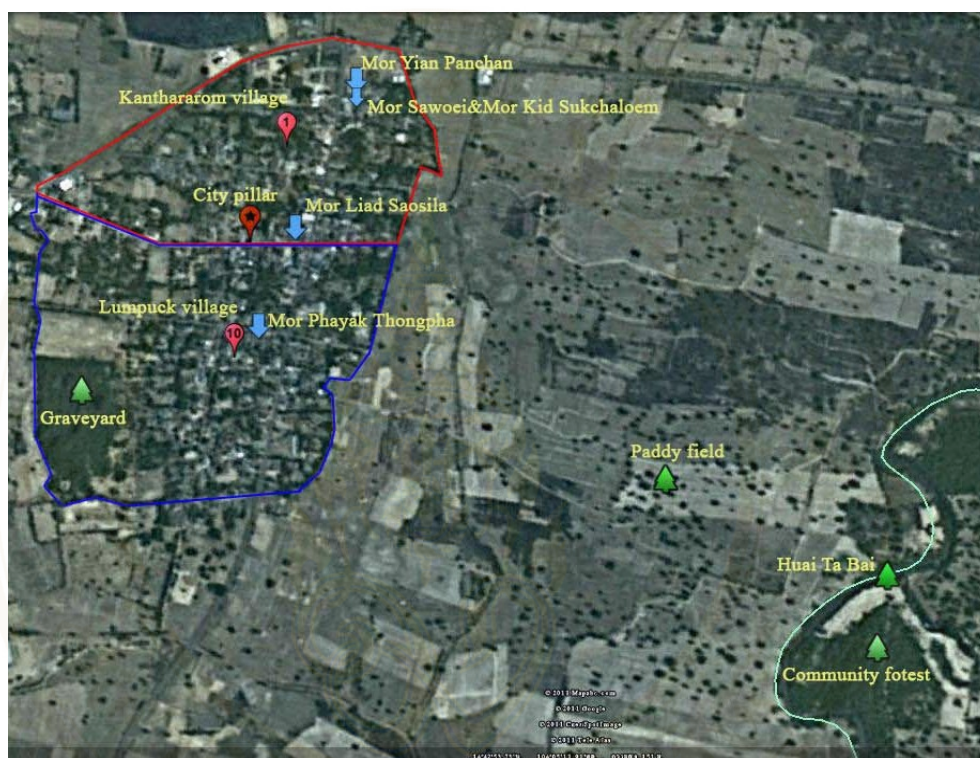


Figure 4.2 Geographical areas of Kanthararom and Lumpuk villages, showing the housing locations of the healers and collected locations.

From the observation and discussion with herbalists, the medicinal plants were usually collected from the wild. The collecting sites were classified as followed:

1. Along the roadsides and around their house: Medicinal plants were commonly found in the wild area and housegarden, such as *Ya khat bai yao* (*Sida acuta* Burm.f), *Ya chao chu* (*Chrysopogon aciculatus* (Retz.) Trin) and *Ya nguang chang* (*Heliotropium indicum* L.). Some were planted in their houses such as *Nat yai* (*Blumea balsamifera* (L.) DC.), *Lamduan* (*Melodorum fruticosum* Lour.), and *Khrop chakkawan* (*Xantonnea parvifolia* (Kuntze) Craib). Due to the deforestation and increasing in the rice field area, the healers cultivate medicinal plants for their uses, especially herbs and shrubs.



Figure 4.3 Collecting site of medicinal plants: Along the roadsides and around the house

2. Paddy fields: Around the paddy fields, large trees were conserved for shading. Naturally grown shrubs and herbs can be found and used as medicine. Some farmers also grew other edible or medicinal plants such as *Thanon chai* (*Buchanania siamensis* Miq.), *Chiang phra nang ae* (*Carallia brachiata* (Lour.) Merr.), and *Ka phrao* (*Ocimum tenuiflorum* L.).



Figure 4.4 Collecting site of medicinal plants: Paddy fields

3. Graveyard: There was a graveyard in the south-west, outside Lumpuck village which the villagers used to bury unnatural death ones. Large trees, small shrub, and climbers were observed in the graveyard. In the frontal boundary, there were small cluster of brushes and shrubs of medicinal plants, such as *En a khon* (*Osbeckia stellata* var. *crinita* (Benth. ex Naudin) C. Hansen.) C. Hansen.) and *Chingchi* (*Capparis micracantha* DC.).



Figure 4.5 Collecting site of medicinal plants: Graveyard

4. Community forest: This area situated in the southeast of Kanthararun and Lumpuk villages. Many years ago, the land was shift to commercial plantation and later abandoned due to low price and increasing of water pollution. After that the forest has slowly gained back its diversity and potential to be wild resource for food and medicine, for example *Khan thong phayabat* (*Suregada multiflora* (A.Juss.) Baill.), *Hatsa khun* (*Micromelum minutum* Wight & Arn.) and seasonal mushrooms.



Figure 4.6 Collecting site of medicinal plants: Community forest

5. Huai Ta Bai forest (ป่าห้วยตาใบ): Long time ago, *Ta Bai* (ตาใบ) was the owner of this area. This swampy location was too difficult for agriculture and has turned to be public space and opened usage throughout the community. Some medicinal plants which could be collected here were *Ueang mai na* (*Costus speciosus* (J. König) Sm.) and *Salaeng phan thao* (*Bauhinia pulla* Craib).



Figure 4.7 Collecting site of medicinal plants: *Huai Ta Bai*

6. Outside of village: *Mor. Liad* gathered medicinal plants from another area such as the mountain in *Phu pra bat* sub-district, Si Sa Ket province, for example *Pradong lueat* (*Spatholobus harmandii* Gagnep.), *Som poi* (*Acacia concinna* (Willd.) DC.) and *Ma phok* (*Parinari anamensis* Hance).



Figure 4.8 Collecting site of medicinal plants: *Phu pra bat* sub-district, Si Sa Ket province

Method of collecting

There were many instruction and rituals followed in collection, preparation and administration of medicinal plants (116). In the study area, herbalists generally collected the medicinal plants only on Tuesday and Thursday and dressed in white costumes. During collecting process, the avoidance of one's shadow on medicinal plants was seriously believed. Herbalists complained that medicinal plants appeared to be gradually decreased, so they started to cultivate medicinal plants near their house. Mor. Liad decided to seek for an alternative by seeking for some plant outside the villages.

Methods of preparation and administration

After collection, the plants were washed and reduced to small pieces for freshly used or sun-dried preservation for later uses. Normally, the healers preferred to use dried crude drugs because they believed that it is the way to maintain its quality. The medicinal plants were prepared as followed.

Decoction or boiling: The decoction or boiling was commonly used by the healers. In general, plants were coarsely reduced to 8-15 cm long and placed into a clay or stainless steel pot. Some plants were burnt or roasted before boiling. After that, water was added until covered the ingredients or as stipulated in the recipe. The mixture was boiled until the final volume reduced by one-third, the supernatant was decanted and orally taken when lukewarm, one bowl three times a day or as directed. This herbal preparation would be boiled again everyday in the same method and continuously used until the mixture became almost no taste or flavor.

Only *Mor Liad* suggested that the incantation would be recited over medicinal plants before boiling. He first paid respect to Lord Buddha, “*Na mo, tat sa, Pha kha wa to, A ra ha to, Sam ma, Sam phut, Tas sa* (3 times). (นะโม ตัสสะ อะระหะโตะ อัมมะ พุทธัสสะ (3 ครั้ง), then begged Lord Buddha to help the patient in the treatment, “*Om puk luk, Ku cha pluk ton ya, Chong ma chuai rak sa, Pati se wa mi*” โอม ปุก ลุก กุจะ ปลุก คันชา จงมาช่วยรักษา ปกิเสวามิ). Among boiling process, he again chanted over a clay pot. First he paid respect to Lord Buddha as before and later mentioned the helpful of the Buddha, Dharma (his teachings) and the monks, *Phut tang, Khun pen mor, Tham*

mang, Khun pen ya, Saang kang, Pen khuntha raksa, Pati se wa mi” (พุทธรัง คุณเป็นหมอ
ธรรมมัง คุณเป็นยา สังคัง เป็นคุณรักษา ปฎิเสวามิ).

Expressing: Fresh herbs were cut into pieces, crushed or pounded with small amount of water, the juice was then squeezed out and used as directed, such as orally taken or applied on the affected area.

Grinding: The plants were usually cut into fine piece, ground with added small amount of water in mortar and pestle, or in clay lid or on grinding stone and orally taken or applied on the affected area.

Pills: The plants were sliced, sun-dried and ground to fine powder, mixed thoroughly with honey and shaped into round balls, sun-dried again and stored in closed container, orally taken.

Soaking: The plants were usually cut into fine piece, soaked in water as recommended; the supernatant was decanted and orally taken or applied on the affected area.

Herbal bath: The plant ingredients were chopped or crushed first before adding to the bath water or strong boiling with water and added more bath water.

Herbal compress: Small pieces of raw materials were wrapped in a piece of muslin, steamed over boiling bath and externally applied on affected area.

Smoking: The plants were cut into small pieces, sun-dried, wrapped with paper as a cigarette and smoke through nostril.

Normally, the healers would not dispense the herbs to newborns until one year old children. They prescribed the herbal formulations to the mother instead. They believed that the active compounds would pass from mother to her child via lactation.

Payment to the healers

Normally, the healers were humble and would not request for payment, so what he got in return usually up to patient's income. Most of the patients paid some money to the healers but some might offered utility items, for example a bottle of rice whisky, food, cloths, etc., on *San Don Ta* day, a special time to pay respect to their ancestor, elders and respectable ones.

Sometimes the healer fee could be specially set up. *Mor Liad* might travel to other places out of Si Sa Ket province to search for rare medicinal plants. In these cases, the patient might pay more than usual.

In fact, the healers' income was inconsistent and this was the reason why most of them earned their living by doing other jobs, such as raising and handling cattle, farmer or traditional message.

The transmission of the knowledge

All healers wished to transmit their knowledge to relative. *Mor Yian* and *Mor Liad* handed down medicinal knowledge to their daughter and *Mor Phayak* decided to pass on his knowledge to his nephew. In case of *Mor Kid* and *Mor Sawoei*, they want to teach their knowledge to younger daughter but unfortunately she did not show her intention to study.

Medicinal plants in Kanthararom and Lumpuk villages, Si Sa Ket province

Five key informants in the study sites used both polyherbal formulations and single plants in their treatments. From the interview, 116 medicinal plants were collected and prepared herbarium specimens for further identification. The voucher herbarium specimens were deposited at Pharmaceutical Botany Mahidol Herbarium (PBM), Department of Pharmaceutical Botany, Faculty of Pharmacy, Mahidol University. From those data, 40 plants (Table 4.1) were used individually to treat the illness and 130 plants were mentioned to be the ingredients of 83 formulations. The initial data included parts uses, indications and preparations together with their combination. Some formulations and single plants have been used for more than one symptom. The common diseases got the names in local dialect, Thai-Khmer or Khmer lue language but it was too difficult for phonetic spelling. To solve this problem, the informants were asked for description of symptoms

Traditional medical terminology

The common diseases which were traditionally treated with medicinal plants in the study site got the names in Thai-Khmer or Khmer lue language which were clarified during the interviewed. After verification, they were described alphabetically as followed.

<i>Bok</i> (โบท)	Abscesses
<i>Cha cha nam</i> (แซชนำ)	Dysmenorrheal, irregular menstruation
<i>Chiam cheng pe ta mueng</i> (เซียม เจงเปทะมึง)	Bleeding gum
<i>Chok pua</i> (จกปัว)	Constipation
<i>Chue choeng</i> (ชือเจิง)	Muscular pain
<i>Chue ka lia</i> (ชือกะเลียะ)	Joint pain
<i>Chue mun</i> (ชือมุน)	Dysenteric(diarrhea with watery stool)
<i>Chue pua tom</i> (ชือปัวทม)	Treatment of swelling and pain in abdomen
<i>Dak ka nia</i> (แด็กกะเนีย)	Loss of appetite
<i>Ho pua</i> (โฮปัว)	Diarrhea
<i>Ho pua sa-ok sakuam</i> (โฮปัว สะอ็อก สะกวม)	Diarrhea, abdominal bloating and weight loss
<i>Hoem</i> (เฮิม)	Bruise and sprains
<i>Kan sa lak</i> (คันสลัก)	Neck swelling, sore throat, loss of secretion of salivary, in severe cases might progress to unable to speak, difficult breath and death
<i>Kat chiam</i> (กัตเซียม)	Stop bleeding
<i>Kho sabun</i> (โคสะบุน)	Broad spectrum of disorder occurring in woman after delivery, typically included weakness, loss of appetite, weight loss, abdominal bloating and pain, vomit, constipation, anxiety, bodily pain and vertigo, in severe cases progressing to eyes inflammation, fever, chilled, mental disorder, and might be the cause to death
<i>Kliak a so</i> (เกลี้ยกอะซอ)	Leukorrhea
<i>Klon</i> (กลอน)	Gall stone
<i>Kom ka nong</i> (กอมกะนอง)	Chest pain and bleeding per anus
<i>Kra dao kra nong</i> (กระเดากระนอง)	Suffer from excessive internal heat due to body toxic
<i>Kra-sai</i> (กระซัย)	Muscular pain, tendon pain in severe cases progressing to loss of the ability to move
<i>Krun pa do sai</i> (กรุนปะโดซาย)	Fever
<i>Num chue</i> (นุ้มชือ)	Dysuria
<i>Plai</i> (พลาย)	Insomnia or sleeplessness

<i>Ploeng chae</i> (เพลิงแชะ)	Burns
<i>Pradong</i> (ประโดง)	Pain in bone, joint swelling
<i>Pue</i> (ปื)	Fever, excessive internal heat, aphthous ulcer, vertigo and vomit
<i>Pa soet pun</i> (ปะเส็ดปูน)	Mushroom poisoning
<i>Sa dong</i> (สะโดง)	Hemorrhoids, swollen and inflamed anus with or without rectal bleeding
<i>Sa dong cha mo</i> (สะโดงจะมะ)	Polypsis (polyps in the nose) or wound lesion in nasal cavity
<i>Sa rok chiam</i> (สะรอกเชียม)	Congest lochial after delivery
<i>Sa wiang pa naek</i> (สะเวียงพะแนก)	Blur vision
<i>Saang</i> (ซาง)	Fever with wound in the mouth, loss of appetite, weight loss and furred tongue
<i>Ta mao ru rui</i> (ตะมารูรูย)	Infected wound
<i>Ta nai krahom</i> (ตะไนกระห่อม)	Infection in the eyes
<i>Win muk</i> (วินมุก)	Vertigo

Single plant remedy

The initial data included plant name, parts uses, indications and preparations. From taxonomical identification, scientific name and family were added. Forty plant species were alphabetically arranged as followed.

Table 4.1 List of single plant remedies used by the Thai-Khmer people in two villages of Khukhan district, Si Sa Ket province

No.	Scientific name	Family	Plant part used	Folkloric use
1	<i>Acacia concinna</i> (Willd.) DC.	Leguminosae – Mimosoideae	Dried fruit	Externally used to treat dandruff (Mor Liad)
2	<i>Acacia farnesiana</i> (L.) Willd.	Leguminosae – Mimosoideae	Fresh or dried branch	Externally used to treat fever in children (Mor Sawoei)
3	<i>Ananas comosus</i> (L.) Merr.	Bromeliaceae	Young fresh leaf	Externally used to relieve abscesses (Mor Liad, Mor Kid)
4	<i>Annona squamosa</i> L.	Annonaceae	Fresh leaf	Externally used to kill head-lice (Mor Phayak, Mor Kid)

Table 4.1 List of single plant remedies used by the Thai-Khmer people in two villages of Khukhan district, Si Sa Ket province (cont.)

No.	Scientific name	Family	Plant part used	Folkloric use
5	<i>Artabotrys siamensis</i> Miq.	Annonaceae	Fresh root	Orally taken to treat <i>Saang</i> in both children and adult (Mor Liad)
6	<i>Barleria strigosa</i> Willd.	Acanthaceae	Fresh whole plant	Orally taken to treat fever in children (Mor Phayak)
7	<i>Bauhinia pulla</i> Craib	Leguminosae – Caesalpinioideae	Fresh leaf	Externally used to reduce body fat (Mor Liad)
8	<i>Boerhavia diffusa</i> L.	Nyctaginaceae	Fresh whole plant	Externally used to treat fever in children (Mor Liad)
9	<i>Borassus flabellifer</i> L.	Palmae (Arecaceae)	Fresh young leaf	Applied in oral cavity to treat of bleeding gum (Mor Phayak)
10	<i>Breynia vitis-idaea</i> (Burm.f.) C.E.C.Fisch.	Phyllanthaceae (Euphorbiaceae)	Fresh or dried stem	Orally taken to treat <i>Kan sa lak</i> (Mor Phayak)
11	<i>Brucea javanica</i> (L.) Merr.	Simaroubaceae	Fresh root	Orally taken to treat <i>Pue</i> (Mor Liad)
12	<i>Buchanania siamensis</i> Miq.	Anacardiaceae	Fresh or dried stem and root	Externally used to treat fever in children (Mor Liad)
13	<i>Cayratia trifolia</i> (L.) Domin	Vitaceae	Fresh twig	Externally used to relieve abscesses (Mor Phayak, Mor Sawoei)
14	<i>Chromolaena odoratum</i> (L.) R.M.King & H.Rob.	Compositae (Asteraceae)	Fresh leaf	Externally used to stop bleeding (Mor Liad, Mor Phayak, Mor Kid)
15	<i>Crinum asiaticum</i> L.	Amaryllidaceae	Fresh leaf	Externally used to relieve bruise and sprains (Mor Liad, Mor Kid)
16	<i>Derris scandens</i> (Roxb.) Benth.	Leguminosae–Papilionoideae	Fresh or dried stem and root	Externally used to relieve muscular pain (Mor Phayak)

Table 4.1 List of single plant remedies used by the Thai-Khmer people in two villages of Khukhan district, Si Sa Ket province (cont.)

No.	Scientific name	Family	Plant part used	Folkloric use
17	<i>Gnetum montanum</i> Markgr.	Gnetaceae	Fresh stem	Externally used to treat <i>Kho sabun</i> : talk too much (Mor Liad)
18	<i>Harrisonia perforata</i> (Blanco) Merr.	Simaroubaceae	Fresh fruit	Applied in oral cavity to clean the teeth (Mor Phayak)
19	<i>Hoya kerrii</i> Craib	Apocynaceae-Asclepiadoideae	Fresh latex from stem	Applied in oral cavity to treat of bleeding gum (Mor Liad)
20	<i>Jatropha curcas</i> L.	Euphorbiaceae	Fresh latex from branch	Externally used to treat <i>Saang</i> in both children and adult (Mor Yian)
21	<i>Jatropha multifida</i> L.	Euphorbiaceae	Fresh latex from branch	Externally used to stop bleeding (Mor Phayak, Mor Sawoei, Mor kid)
22	<i>Leea macrophylla</i> Roxb. ex Hornem.	Vitaceae (Leeaceae)	Fresh root	Externally used to treat <i>Saang</i> in both children and adult (Mor Yian)
23	<i>Leonotis nepetifolia</i> (L.) R.Br.	Labiatae (Lamiaceae)	Fresh or dried root	Orally taken to treat <i>Pue</i> (Mor Liad)
24	<i>Lepisanthes rubiginosa</i> (Roxb.) Leenh.	Sapindaceae	Fresh or dried root	Externally used to treat <i>Chue pua tom</i> (Mor Liad)
25	<i>Lygodium flexuosum</i> (L.) Sw.	Lygodiaceae	Fresh or dried root	Orally taken to treat <i>Pue</i> (Mor Liad)
26	<i>Memecylon edule</i> Roxb.	Melastomaceae	Fresh stem bark	Orally taken as Tonic (Mor Phayak)
27	<i>Nauclea orientalis</i> (L.) L.	Rubiaceae	Dried leaf	Used as cigarette, smoking to treat <i>Sa dong cha mo</i> (Mor Phayak)
28	<i>Oroxylum indicum</i> (L.) Kurz	Bignoniaceae	Dried stem bark	Externally used to treat <i>Saang</i> in both children and adult (Mor Liad)

Table 4.1 List of single plant remedies used by the Thai-Khmer people in two villages of Khukhan district, Si Sa Ket province (cont.)

No.	Scientific name	Family	Plant part used	Folkloric use
29	<i>Phyllanthus amarus</i> Schumach. & Thonn.	Phyllanthaceae (Euphorbiaceae)	Fresh root	Externally used to treat <i>Saang</i> in both children and adult (Mor Yian)
30	<i>Phyllodium pulchellum</i> (L.) Desv.	Leguminosae– Papilionoideae	Dried leaf	Used as cigarette, smoking to treat <i>Sa dong cha mo</i> (Mor Phayak)
31	<i>Polyscias fruticosa</i> (L.) Harms	Araliaceae	Dried root	Orally taken to treat <i>Pue</i> (Mor Kid)
32	<i>Psidium guajava</i> L.	Myrtaceae	Fresh twig	Orally taken to treat diarrhea (Mor Sawoei)
33	<i>Scoparia dulcis</i> L.	Scrophulariaceae	Fresh or dried leaf and stem	Orally taken as tonic (Mor Liad)
34	<i>Sesbania grandiflora</i> (L.) Pers.	Leguminosae– Papilionoideae	Fresh stem bark	Orally taken to treat diarrhea (Mor Liad)
35	<i>Spondias pinnata</i> (L.f.) Kurz	Anacardiaceae	Fresh stem	Orally taken to treat <i>Saang</i> in both children and adult (Mor Phayak)
36	<i>Tamarindus indica</i> L.	Leguminosae– Caesalpinioideae	Fresh or dried stem	Orally taken to treat <i>Kho sabun</i> : weakness, loss of appetite and vertigo (Mor Sawoei)
37	<i>Tetracera loureiri</i> (Finet & Gagnep.) Pierre ex Craib	Dilleniaceae	Fresh latex from stem	Used as eye drops to treat infection in the eyes (Mor Liad)
38	<i>Thunbergia laurifolia</i> Lindl.	Acanthaceae	Fresh root	Orally taken to treat <i>Pue</i> (Mor Liad)
39	<i>Willughbeia edulis</i> Roxb.	Apocynaceae	Fresh latex from stem	Externally used to treat infected wound (Mor Sawoei)
40	<i>Zingiber montanum</i> (König) Link ex A. Dietr.	Zingiberaceae	Fresh rhizome	Externally used to prevent fever in children, normally new born baby up to 1 years (Mor Kid)

From this table, it could be concluded that 26 plants (65%) were applied externally to treat 17 symptoms, such as reduced fever (4 species) and *Saang* in children (3 species), applied to the affected gum to treat the bleeding (2 species) or chewing *Harrisonia perforata* (Blanco) Merr. fruit to clean the teeth. Seven species were prescribed for skin diseases such as abscesses and wound. Another 14 plants (35%) were orally taken to treat 6 symptoms such as fever, diarrhea, *Saang* or as tonic. It was recognized that the healer preferred only externally used to relieve fever in children.

Four plants have been described by two healers to treat the same symptoms, composed of young fresh leaf of *Ananas comosus* (L.) Merr. and fresh twig of *Cayratia trifolia* (L.) Domin to relieve abscesses, fresh leaf of *Annona squamosa* L. to kill head-lice and fresh leaf of *Crinum asiaticum* to relieve bruise and sprains. Three healers also used fresh leaf of *Chromolaena odoratum* (L.) R.M.King & H.Rob. and fresh latex from branch *Jatropha multifida* L. to stop bleeding.

Treatment with herbal formulations

List of 83 herbal formulations were arranged alphabetically according to the symptoms, as followed. The identified medicinal plants in those formulations were documented in scientific names. The rest, unidentified plants still reported in common or local names (recognized by * symbol). These plants could be collected in other districts or bought from the drug store and were now turned to be rare species in the study site and needed conservation. The name of formulation owner, the healer, was also noted.

Formula 1 (F1)

Abdominal bloating

Mor Phayak Thongpha's

1. *Kam phaeng chet chan* (กำแพงเจ็ดชั้น) (*Salacia chinensis* L.) fresh or dried stem
2. *Khan thong pha ya bat* (ขันทองพญาบาท) (*Suregada multiflora* (A.Juss.) Baill.) fresh or dried stem
3. *Ma duk* (มะดูก) (*Siphonodon celastrineus* Griff.
4. *Oi* (อ้อย) (*Saccharum officinarum* L.) fresh or dried stem
5. **Ong kot kha mao* (องคตชะเมา) fresh or dried stem

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 2 (F2)

Abscesses

Mor Liad Saosila's

1. *Lam phong ka salak* (ลำโพงกาสลัก) (*Datura metel* L. var. *fastuosa* (Bernh.) Danert) dried root
2. *Noina* (น้อยหน้า) (*Annona squamosa* L.) dried root
3. *Ya pan yot* (หญ้าปันยอด) fresh leaf (*Mimosa pudica* L.)

Preparation and administration: Ground one root of No.1 and two roots of No.2 with stone grinder then applied the powder on abscesses five minutes later, ground five or seven fresh leaves of No.3 and put on the abscesses

Formula 3 (F3)

Blur vision

Mor Liad Saosila's

1. *Phlap phla* (พลับพล) (*Microcos tomentosa* Sm.) dried stem
2. *Ya nguang chang* (หญ้าวงช้าง) (*Heliotropium indicum* L.) dried stem

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 4 (F4)

Mor Liad Saosila's

Bruise and sprains

1. *Ma kong khao* (มะก่องข้าว) (*Abutilon indicum* (L.) Sweet var. *indicum*) fresh root
2. *Ya chao chu* (หญ้าเจ้าชู้) (*Chrysopogon aciculatus* (Retz.) Trin.) fresh root
3. *Ya hao mu* (หญ้าเหวหมู) (*Cyperus rotundus* L.) fresh corm

Preparation and administration: Ground a handful of each crude drug, wrapped in a sheet of muslin, steamed and applied externally to the affected area

Formula 5 (F5)

Mor Liad Saosila's

Burns

1. *Ma la ko fa rang* (มะละกอฝรั่ง) (*Jatropha multifida* L.) fresh branch
2. *Wan hang chora khe* (ว่านหางจระเข้) (*Aloe vera* (L.) Burm.f.) fresh leaf

Preparation and administration: Mixed the mucilage and latex, put on the burning area

Formula 6 (F6)

Mor Phayak Thongpha's

Chest pain and uncomfortable breathing

1. *Phe ka* (เพกา) (*Oroxylum indicum* (L.) Kurz) dried stem
2. *Pip* (ปีป) (*Millingtonia hortensis* L.f.) dried stem

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 7 (F7)

Mor Phayak Thongpha's

Congest lochial after delivery

1. *Rak dam* (รักดำ) (*Diospyros curranii* Merr.) fresh or dried stem
2. **Chuea ploeng* (เชื้อเพลิง) fresh or dried stem or root
3. **Kan tui ka no* (กันตวยกะนอ) fresh or dried stem
4. **Kra bao* (กระเบา) fresh or dried stem
5. **Mi miang* (มีเมียง) fresh or dried stem or root

Preparation and administration: Two handful of No.4, a handful of No.1-3, 5, decoction, taken the supernatant

Formula 8 (F8)

Mor Phayak Thongpha's

Congest lochial after delivery

1. *Ka phrao* (กะเพรา) (*Ocimum tenuiflorum* L.) fresh root
2. *Ma kham* (มะขาม) (*Tamarindus indica* L.) fresh wood
3. **Kra tim* (กระเทียม) or garlic bulb
4. **Ma rit* (มะริต) or pepper dried fruit
5. **Ta chek kran* (ตะเจกก้าน) or asiatic pennywort fresh root

Preparation and administration: Two or three roots of No.1, two roots of No.5, a clove of No.3, two pieces of No.2, one teaspoonful of No.5, decoction, taken the supernatant

Formula 9 (F9)

Mor Liad Saosila's

Constipation with indigestion

1. *Tong taek* (ตองแตก) (*Baliospermum solanifolium* (Geiseler) Suresh) dried stem and fresh leaf
2. **Khamin hua sung* (ขมิ้นหัวสูง) fresh rhizome
3. Alum

Preparation and administration: A handful of No.1-2, ground with small amount of alum and water in stone grinder or clay lid and taken the suspension

Formula 10 (F10)

Mor Liad Saosila's

Constipation with lower abdominal and waist pain

1. *Lan thom* (ลั่นทม) (*Plumeria rubra* L.) fresh or dried stem
2. *Ma kham* (มะขาม) (*Tamarindus indica* L.) fresh or dried stem

Preparation and administration: Three pieces of each ingredient, decoction, taken the supernatant

Formula 11 (F11)

Mor Phayak Thongpha's

Dandruff

1. *Kham rok* (คำรอก) (*Ellipanthus tomentosus* Kurz var *tomentosus*) fresh leaf
2. **Pun la ra weng* (เป็นลาระเวง) fresh fruit

Preparation and administration: A handful of No.1, three or four fruit of No.2, fermentation for 1 week and used as hair shampoo

Formula 12 (F12)

Mor Phayak Thongpha's

Mushroom poisoning

1. *Khae pa* (แคป่า) (*Markhamia pierrei* Dop) dried root
2. **A lok* (อะโลก) dried root

Preparation and administration: Ground a root of each ingredient with small amount of water in stone grinder or clay lid and taken a suspension

Formula 13 (F13)

Mor Phayak Thongpha's

Difficult urination

1. *Lin kwang* (ลั่นกวาง) (*Ancistrocladus tectorius* (Lour.) Merr.) dried root
2. *To sai* (ต่อไส้) (*Allophylus cobbe* (L.) Raeusch.) dried root
3. **Tra sai* (ตระไซ) or bamboo dried bud

Preparation and administration: Seven roots of No.1-2, seven buds of No.3, decoction, taken the supernatant

Formula 14 (F14)

Mor Phayak Thongpha's

Dysenteric

1. *Luk tai bai* (ลูกใต้ใบ) (*Phyllanthus amarus* Schumach. & Thonn.) fresh whole plant
2. *Khae ban* (แคบ้าน) (*Sesbania grandiflora* (L.) Pers.) fresh stem bark or root

Preparation and administration: Two or three whole plants of No.1 and three or four pieces or two roots of No.2, soaked all crude drugs in water for 30 minutes, taken the supernatant

Formula 15 (F15)

Mor Liad Saosila's

Dysmenorrhea; irregular menstruation; leukorrhea

1. *Nom sa wan* (นมสวรรค์) (*Clerodendrum paniculatum* L. var. *paniculatum*) dried root
2. *Ueang mai na* (เอื้องหมายนา) (*Costus speciosus* (J. König) Sm.) dried rhizome
3. **Kra bao* (กระเบา) dried wood or root

Preparation and administration: Three pieces of each ingredient, decoction, taken the supernatant

Formula 16 (F16)

Mor Liad Saosila's

Fever in both children and adult

1. *Lep khrut* (เลียบครุฑ) (*Polyscias fruticosa* (L.) Harms) dried root
2. *Sangwan phra in* (สังวาลพระอินทร์) (*Cassytha filiformis* L.) fresh stem
3. **Mali* (มะลิ) or jasmine dried root

Preparation and administration: Ground the roots No.1-2 with small amount of water in stone grinder or clay lid and taken the suspension and crushed a handful of No.3 with water, soaked the cloth then wiped the patient's body

Formula 17 (F17)

Mor Liad Saosila's

Fever in both children and adult

1. *Ma sang* (มะสัง) (*Feroniella lucida* Swingle) fresh or dried stem
2. *Manao phi* (มะนาวผี) (*Atalantia monophylla* DC.) fresh or dried stem bark
3. *Phlai* (ไพล) (*Zingiber montanum* (König) Link ex A. Dietr.) fresh or dried rhizome

Preparation and administration: A handful of each ingredient, decoction, added more water, used as herbal bath

Formula 18 (F18)

Mor Yian Panchan's

Fever in both children and adult

1. *Fak thong* (ฟักทอง) (*Cucurbita moschata* Duchesne) dried receptacle of fruit
2. *Ma phok* (มะพอก) (*Parinari anamensis* Hance) dried fruit
3. **Pot* (โพด) or corn dried cob

Preparation and administration: A receptacle of No.1, a handful of No.2, a cob of No.3, warmed all crude drugs over ember, soaked in water for 10-15 minutes, filtered and taken the filtrate

Formula 19 (F19)

Mor Phayak Thongpha's

Fever in children

1. *Ma prao* (มะพร้าว) (*Cocos nucifera* L. var. *nucifera*) or coconut juice
2. *Ma huad* (มะหาด) (*Lepisanthes rubiginosa* (Roxb.) Leenh) fresh stem bark
3. *Ma sang* (มะสัง) (*Feroniella lucida* Swingle) stem bark

Preparation and administration: Four pieces of No.2 and one of No.3, soaked all crude drugs in No.1 for 10 minutes, filtered and taken the filtrate

Formula 20 (F20)

Mor Liad Saosila's

Gall stone: difficult urination with abdominal pain and cloudy urine

1. *Chum saeng* (ชุมแสง) (*Xanthophyllum lanceatum* J.J.Sm.) fresh or dried stem
2. *Rak dam* (รักดำ) (*Diospyros curranii* Merr.) fresh or dried stem
3. *Thao pra song* (เถาประสงค์) (*Streptocaulon juvenas* (Lour.) Merr) fresh or dried root
4. *Thao ya nang* (เถาย่านาง) (*Tiliacora triandra* (Colebr.) Diels) fresh or dried stem

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 21 (F21)

Mor Liad Saosila's

Gall stone: difficult urination with abdominal pain

1. *Ma prao* (มะพร้าว) (*Cocos nucifera* L. var. *nucifera*) or coconut dried receptacle
2. *Phak khom nam* (ผักขมหนาม) (*Amaranthus spinosus* L.) dried root
3. *Tan* (ตาล) (*Borassus flabellifer* L.) dried male inflorescence

Preparation and administration: Burned a handful of each ingredient into ash, boiled ash with water, filtered and taken the filtrate

Formula 22 (F22)

Mor Phayak Thongpha's

Head-lice

1. *Sa dao* (สะเดา) (*Azadirachta indica* A.Juss. var. *siamensis* Valetton) dried fruit
2. *Noina* (น้อยหน่า) (*Annona squamosa* L.) fresh leaf

Preparation and administration: A glass of No.1, a handful of No 2., ground all crude drugs with small amount of water, squeezed, applied on the hair thoroughly for 30 minutes to 1 hour and washed hair carefully

Formula 23 (F23)

Mor Liad Saosila's

Hemorrhoids with abdominal and muscular pain and bloody stool

1. *Lam phong ka salak* (ลำโพงกาสลัก) dried root (*Datura metel* L. var. *fastuosa* (Bernh.) Danert)
2. *Lan thom* (ลั่นทม) dried wood (*Plumeria rubra* L.)
3. Alum
4. Potassium permanganate

Preparation and administration: Boiled a handful of crude drugs with water in 1:2 ratios, together with small amount of alum and potassium permanganate until obtained viscous solution and applied externally on anus after defecation in the morning (one time per day), Prescribed with F 24

Formula 24 (F24)

Mor Liad Saosila's

Hemorrhoids with abdominal and muscular pain and bloody stool

1. *Ma duk* (มะตุ๊ก) (*Siphonodon celastrineus* Griff) dried stem
2. *Phe ka* (เพกา) (*Oroxylum indicum* (L.) Kurz) dried stem

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 25 (F25)

Mor Liad Saosila's

Hemorrhoids with bloating, stomach pain and bloody stool

1. *Hatsa khun* (หัตถ์ขุ่น) (*Micromelum minutum* Wight & Arn) fresh root
2. *Khrop chakkawan* (ครอบจักรวาล) (*Xantonnea parvifolia* (Kuntze) Craib) fresh root
3. *Ma prao* (มะพร้าว) (*Cocos nucifera* L. var.) or coconut fresh root
4. *Mak* (หมาก) (*Areca catechu* L.) fresh root
5. *Song fa dong* (สองฟ้าแดง) (*Clausena harmandiana* (Pierre) Guillaumin) fresh root
6. *Tan* (ตาล) (*Borassus flabellifer* L.) fresh root

Preparation and administration: Three or five roots of each ingredient, decoction, taken the supernatant

Formula 26 (F26)

Mor Phayak Thongpha's

Ho pua sa-ok sakuam: diarrhea, weight loss, abdominal bloating and enlargement

1. *Chai hin* (ไชหีน) (*Droogmansia godefroyana* Schindl.) fresh or dried root
2. *Khem fa rang* (เข็มฝรั่ง) (*Ixora coccinea* L.) fresh or dried root
3. *Oi* (อ้อย) (*Saccharum officinarum* L.) fresh stem

Preparation and administration: Two roots of No.1-2, three pieces of No.3, decoction, taken the supernatant

Formula 27 (F27)

Mor Phayak Thongpha's

Increase milk secretion after delivery

1. *Karawek* (การเวก) (*Artabotrys siamensis* Miq.) fresh or dried root
2. *Nom wua* (นมวัว) (*Anomianthus dulcis* (Dunn) J. Sinclair) fresh or dried root
3. *To sai* (ต๋อไต้) (*Allophylus cobbe* (L.) Raeusch.) fresh or dried root

Preparation and administration: Two handful of No.1-2, a handful of No.3, decoction, taken the supernatant

Formula 28 (F28)

Mor Phayak Thongpha's

Increase milk secretion after delivery: loss of appetite

1. *Faep nam* (แฟปน้า) (*Hymenocardia punctata* Wall. ex Lindl.) fresh or dried stem
2. *Nom wua* (นมวัว) (*Anomianthus dulcis* (Dunn) J. Sinclair) fresh or dried stem
3. Sugar

Preparation and administration: Two or three handful of No.1-2, decoction, added a little amount of sugar and taken the supernatant

Formula 29 (F29)

Mor Liad Saosila's

Increase milk secretion after delivery with back pain and waist pain

1. *Hatsa khun* (หัตถ์คุณ) (*Micromelum minutum* Wight & Arn.) fresh or dried root
2. *Khan thong pha ya bat* (ขันทองพญาบาท) (*Suregada multiflora* (A.Juss.) Baill.) fresh or dried stem
3. *Lan thom* (ลั่นทม) (*Plumeria rubra* L.) fresh or dried stem
4. *Rak dam* (รักดำ) (*Diospyros curranii* Merr.) fresh or dried stem
5. *Song fa dong* (ส่องฟ้าแดง) (*Clausena harmandiana* (Pierre) Guillaumin) fresh or dried root
6. **Kra nab chang en* (กระหนับจั้งเอร์) fresh or dried stem
7. **Ai ka no* (ไอกะนอร์) fresh or dried stem
8. **Ong kot kha mao* (องกตชะเมา) fresh or dried stem

Preparation and administration: Three pieces of each ingredient, decoction, taken the supernatant

Formula 30 (F30)

Mor Liad Saosila's

Increase milk secretion after delivery with back pain and waist pain

1. *Rak dam* (รักดำ) (*Diospyros curranii* Merr.) fresh or dried stem
2. **Ai ka no* (ไอกะนอร์) fresh or dried stem
3. **Chuea ploeng* (เชื้อเพลิง) fresh or dried stem
4. **Kra bao* (กระเบา) fresh or dried stem

Preparation and administration: Three pieces of each ingredient, decoction, taken the supernatant

Formula 31 (F31)

Mor Liad Saosila's

Increase milk secretion after delivery with chest and waist pain; congest lochial after deliver

1. *Chiang phra nang ae* (เถียงพ้านางเอ) (*Carallia brachiata* (Lour.) Merr.) dried wood
2. *Ma phok* (มะพอก) (*Parinari anamensis* Hance) dried wood
3. **Pun la ra weng* (ป็นลาระเวง) dried wood

Preparation and administration: Three pieces of each ingredient, decoction, taken the supernatant

Formula 32 (F32)

Mor Liad Saosila's

Increase milk secretion after delivery with chest pain and dry cough

1. *Chiang phra nang ae* (เถียงพ้านางเอ) (*Carallia brachiata* (Lour.) Merr.) dried wood
2. *Ma phok* (มะพอก) (*Parinari anamensis* Hance) dried wood
3. **Cha mok* (ชะมอก) dried wood

Preparation and administration: Three pieces of each ingredient, decoction, taken the supernatant

Formula 33 (F33)

Mor Liad Saosila's

Increase milk secretion after delivery with excessive internal heat and thirsty

1. *Ma kok* (มะกอก) (*Spondias pinnata* (L.f.) Kurz) fresh or dried stem
2. *Ueang mai na* (เอื้องหมายนา) (*Costus speciosus* (J. König) Sm.) dried rhizome
3. *Ya kha* (หญ้าคา) (*Imperata cylindrica* (L.) Raeusch.) fresh or dried root

Preparation and administration: Three pieces of No.1-2, three roots of No.3, soaked in water for 30 minutes, filtered and taken the filtrate

Formula 34 (F34)

Mor Liad Saosila's

Increase milk secretion after delivery with tendon pain

1. *Ma kham* (มะขาม) (*Tamarindus indica* L.) fresh or dried stem
2. *Op choei* (อบเชย) (*Cinnamomum bejolghota* (Buch.-Ham.) Sweet) fresh or dried stem
3. *Rak dam* (รักดำ) (*Diospyros curranii* Merr.) fresh or dried stem
4. **Ai ka no* (ไถกษณอร) fresh or dried stem
5. **Kra bao* (กระเบา) fresh or dried stem

Preparation and administration: Three pieces of each ingredient, decoction, taken the supernatant

Formula 35 (F35)

Mor Liad Saosila's

Insomnia or sleeplessness

1. *Khoei tai* (เขยตาย) (*Glycosmis pentaphylla* (Retz.) DC.) fresh leaf
2. *Nat yai* (หนาดใหญ่) (*Blumea balsamifera* (L.) DC.) fresh leaf

Preparation and administration: Crushed a handful of each ingredient, soaked in water and used to take a bath

Formula 36 (F36)

Mor Liad Saosila's

Insomnia or sleeplessness

1. *Hatsa khun* (หัตถ์คูน) (*Micromelum minutum* Wight & Arn.) fresh root
2. *Kra chae* (กระแจะ) (*Naringi crenulata* Nicolson) fresh root or stem
3. *Kra thin thet* (กระถิ่นเทศ) (*Acacia farnesiana* (L.) Willd.) fresh root
4. *Phrik nai phran* (พริกนายพราน) (*Tabernaemontana bufalina* Lour.) fresh root
5. *Song fa dong* (ส่องฟ้าดง) (*Clausena harmandiana* (Pierre) Guillaumin) fresh root
6. **Sang tum hum* (สังตุมหุ่ม) fresh stem

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 37 (F37)

Mor Liad Saosila's

Intestinal worms (not for use by children under 8 years of age)

1. *Lamduan* (ลำดวน) (*Melodorum fruticosum* Lour) fresh root
2. *Ma prao* (มะพร้าว) (*Cocos nucifera* L. var. *nucifera*) or coconut fresh fruit
3. **Ma kluea* (มะเกลือ) or ebony tree fresh fruit

Preparation and administration: Pounded three or five roots of No.1, fruits of No.3 (one per year of age, up to maximum of 20) with mortar and pestle, soaked in a fruit of *Ma prao*, decoction, filtered and taken the filtrate in the morning

Formula 38 (F38)

Mor Liad Saosila's

Intestinal worms

1. *Ma klam ta nu* (มะกล่ำตาหนู) (*Abrus precatorius* L.) fresh root
2. *Ma prao* (มะพร้าว) (*Cocos nucifera* L. var. *nucifera*) or coconut juice
3. *Mak* (หมาก) (*Areca catechu* L.) fresh endosperm
4. Sugar

Preparation and administration: Ground a handful of No.1 with No.3, soaked in coconut juice for 5-10 minutes, filtered, added the small amount of sugar and taken the filtrate in the morning

Formula 39 (F39)

Mor Phayak Thongpha's

Intestinal worms

1. *Khrop chakkawan* (ครอบจักรวาล) (*Xanthea parvifolia* (Kuntze) Craib) fresh leaf or root
2. **Sang kiat* (สังเคียด) fresh root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 40 (F40)

Mor Liad Saosila's

Joint pain

1. *Khrop chakkawan* (ครอบจักรวาล) (*Xantonnea parvifolia* (Kuntze) Craib) fresh leaf or root
2. *Tan* (ตาล) (*Borassus flabellifer* L.) fresh young leaf and root

Preparation and administration: Chopped a handful of all ingredients into pieces, wrapped in a sheet of muslin, steamed and applied externally to the affected area.

Formula 41 (F41)

Mor Liad Saosila's

Kho sabun: abdominal bloating and constipation; loss of appetite after delivery

1. *Ya haeo mu* (หญ้าเหวหมู) (*Cyperus rotundus* L.) fresh or dried corm
2. *Ya khat* (หญ้าขี้ฉี้) (*Sida rhombifolia* L.) fresh or dried root
3. *Ya khat bai yao* (หญ้าขี้ฉี้ใบยาว) (*Sida acuta* Burm.f.) fresh or dried root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 42 (F42)

Mor Liad Saosila's

Kho sabun: abdominal pain and bloating

1. *Ma kong khao* (มะก่องข้าว) (*Abutilon indicum* (L.) Sweet var. *indicum*) fresh or dried root
2. *Ya khat* (หญ้าขี้ฉี้) (*Sida rhombifolia* L.) fresh or dried root
3. *Ya khat bai yao* (หญ้าขี้ฉี้ใบยาว) (*Sida acuta* Burm.f.) fresh or dried root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 43 (F43)

Mor Liad Saosila's

Kho sabun: abdominal pain, back pain and waist pain

1. *Iniao* (อีเหินขาว) (*Desmodium gangeticum* (L.) DC.) fresh or dried root
2. *Ya khat* (หญ้าขี้ฉี้) (*Sida rhombifolia* L.) fresh or dried root
3. *Ya khat bai yao* (หญ้าขี้ฉี้ใบยาว) (*Sida acuta* Burm.f.) fresh or dried root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 44 (F44)

Mor Liad Saosila's

Kho sabun: chest pain and fainting

1. *Khem farang* (เข็มฝรั่ง) (*Ixora coccinea* L.) dried root
2. *Khem phuang khao* (เข็มพวงขาว) (*Ixora finlaysoniana* Wall. & G.Don) dried root
3. *Phan ngu* (พันงู) (*Achyranthes aspera* L.) dried root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 45 (F45)

Mor Liad Saosila's

Kho sabun: constipation and waist pain

1. *Khrop chakkawan* (ครอบจักรวาล) (*Xantonnea parvifolia* (Kuntze) Craib) fresh or dried root
2. **Kra nab chang en* (กระหนับจิ้งเอร์) fresh or dried root

Preparation and administration: A handful of each ingredient, decoction, on the first day, taken the supernatant 3 times. Next days, taken the supernatant 2 times a day till recovered.

Formula 46 (F46)

Mor Liad Saosila's

Kho sabun: lower abdominal pain

1. *En a khon* (เอ็นอ้าขน) (*Osbeckia stellata* var. *crinita* (Benth. ex Naudin) C. Hansen) fresh root
2. **Kra chin doem* (กระจี้เรียม) or kitchen mint fresh leaf
3. **Kra chin woen* (กระจี้เวียร) fresh or dried stem
4. **Kra tim* (กระเทียม) or garlic bulb
5. **Ma rit* (มะริต) or pepper dried fruit
6. **Phak chi* (ผักชี) or coriander whole plant

Preparation and administration: Three pieces of No.1, 3 and 6, 3 cloves of No.4, 3 dried fruits of No.5 with small amount of No.2, ground, soaked in water for 5 minutes, filtered and take the filtrate

Formula 47 (F47)

Mor Liad Saosila's

Kho sabun: muscular pain, chilled and fever

1. *Krot nam* (กรตน้ำ) (*Scoparia dulcis* L) fresh or dried root
2. **Kra tim* (กระเทียม) or garlic bulb
3. **Ma rit* (มะริต) or pepper dried fruit

Preparation and administration: A handful of No.1, two cloves of No.2, ten dried fruits of No.3, decoction, taken the supernatant

Formula 48 (F48)

Mor Liad Saosila's

Kho sabun: muscular pain, headache, numbness, fainting and blur vision

1. *Ma prao* (มะพร้าว) (*Cocos nucifera* L. var. *nucifera*) or coconut stem bark
2. *En a khon* (เอ็นอ้าขน) (*Osbeckia stellata* var. *crinita* (Benth. ex Naudin) C. Hansen) fresh root
3. **Bai baek so* (บายแบกซอ) fresh root

Preparation and administration: Three pieces of each ingredient, decoction, taken the supernatant

Formula 49 (F49)

Mor Liad Saosila's

Kho sabun: vertigo and abdominal bloating

1. *Ya khat* (หญ้างัด) (*Sida rhombifolia* L.) fresh or dried root
2. *Ya khat bai yao* (หญ้างัดใบยาว) (*Sida acuta* Burm.f.) fresh or dried root
3. **Ai cha ruk kraham* (ไ้อะจะรุกกระซอม) fresh or dried root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 50 (F50)

Mor Liad Saosila's

Kho sabun: vertigo and abdominal bloating; vertigo

1. *I niao* (อีเหินขาว) (*Desmodium gangeticum* (L.) DC.) fresh or dried root
2. *Ma kong khao* (มะก่องข้าว) (*Abutilon indicum* (L.) Sweet var. *indicum*) fresh or dried root
3. *Phak khom nam* (ผักขมหนาม) (*Amaranthus spinosus* L.) fresh or dried root
4. *Ya haeo mu* (หญ้าเหี่ยวหมู) (*Cyperus rotundus* L.) fresh or dried corm
5. *Ya kha* (หญ้างัด) (*Imperata cylindrica* (L.) Raeusch.) fresh or dried root
6. *Ya khat* (หญ้างัด) (*Sida rhombifolia* L.) fresh or dried root
7. *Ya khat bai yao* (หญ้างัดใบยาว) (*Sida acuta* Burm.f.) fresh or dried root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 51 (F51)

Mor Liad Saosila's

Kho sabun: weakness and muscular pain

1. *Som poi* (ส้มป่อย) fresh or dried root (*Acacia concinna* (Willd.) DC.)
2. *Khoi* (ข่อย) fresh or dried root (*Streblus asper* Lour.)

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 52 (F52)

Mor Liad Saosila's

Kho sabun: weakness and weight loss

1. *Khi non pa* (ขี้หนอนป่า) (*Dunbaria punctata* (Wight & Arn.) Benth.) fresh or dried stem or root
2. *Khrop chakkawan* (ครอบจักรวาล) (*Xantonnea parvifolia* (Kuntze) Craib) fresh or dried stem or root
3. *Op choei* (อบเชย) (*Cinnamomum bejolghota* (Buch.-Ham.) Sweet) fresh or dried stem or root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 53 (F53)

Mor Liad Saosila's

Kho sabun: weakness, back pain and waist pain

1. *Oi* (อ้อย) (*Saccharum officinarum* L.) fresh stem
2. *Rak dam* (รักดำ) (*Diospyros curranii* Merr.) fresh or dried stem
3. **Ma rit* (มะริต) or pepper dried fruit

Preparation and administration: Three pieces of ingredients No.1-2, ten fruits of No.3, decoction, taken the supernatant

Formula 54 (F54)

Mor Liad Saosila's

Kho sabun: weakness, back pain and waist pain

1. *Kra dang nga daeng* (กระดังงาแดง) (*Leea guineensis* G.Don) fresh or dried root
2. *Nom noi* (นมน้อย) (*Polyalthia evecta* (Pierre) Finet & Gagnep.) fresh or dried root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 55 (F55)

Mor Liad Saosila's

Kho sabun: weakness, constipation and yellow eyes

1. *Kam phaeng chet chan* (กำแพงเจ็ดชั้น) (*Salacia chinensis* L.) dried stem
2. *Lan thom* (ลั่นทม) (*Plumeria rubra* L.) dried wood
3. *Phe ka* (เพกา) (*Oroxylum indicum* (L.) Kurz) dried stem
4. *Sap suea* (สาบเสือ) (*Chromolaena odoratum* (L.) R.M.King & H.Rob.) dried root
5. *Song fa dong* (สองฟ้าดง) (*Clausena harmandiana* (Pierre) Guillaumin) dried root
6. *Ya kha* (หญ้าคา) (*Imperata cylindrica* (L.) Raeusch.) dried root
7. *Ya pan yot* (หญ้าปันยอด) (*Mimosa pudica* L.) dried root
8. **Chuea ploeng* (เชื้อเพลิง) dried stem
9. **Kra nab chang en* (กระหนับจิงเอร์) dried stem
10. **Nom saw* (นมสาว) dried stem
11. **Yu* (ยู) dried stem

Preparation and administration: Three or five roots of No.1-4 and three pieces of No.5-11, decoction, taken the supernatant

Formula 56 (F56)

Mor Liad Saosila's

Kho sabun: weakness, weight loss and abdominal bloating

1. *Khem fa rang* (เข็มฝรั่ง) (*Ixora coccinea* L.) fresh or dried root
2. *Khem phuang khao* (เข็มพวงขาว) (*Ixora finlaysonian* Wall. & G.Don) fresh or dried root
3. *Proem* (เปริม) (*Psychotria* sp.) fresh or dried root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 57 (F57)

Mor Liad Saosila's

Kho sabun: weakness, weight loss and abdominal bloating

1. *Iniao* (อีเหินยาว) (*Desmodium gangeticum* (L.) DC.) fresh or dried root
2. *Khrop chakkawan* (ครอบจักรวาล) (*Xantonnea parvifolia* (Kuntze) Craib) fresh or dried root
3. *Phak khom nam* (ผักขมหนาม) (*Amaranthus spinosus* L.) fresh or dried root
4. *Ya kha* (หญ้าคา) (*Imperata cylindrica* (L.) Raeusch.) fresh or dried root
5. *Ya khat* (หญ้าขัด) (*Sida rhombifolia* L.) fresh or dried root
6. *Ya khat bai yao* (หญ้าขัดใบยาว) (*Sida acuta* Burm.f.) fresh or dried root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 58 (F58)

Mor Liad Saosila's

Kho sabun: weakness, weight loss, loss of appetite, tendon pain and abdominal bloating, supposed to be due to food abuse especially meat

1. *Khan thong pha ya bat* (ชันทองพญาบาท) (*Suregada multiflora* (A.Juss.) Baill.) dried root
2. *Lan thom* (ลั่นทม) (*Plumeria rubra* L.) dried stem
3. **Cha krae ploeng* (จะแกรเพลิง) dried stem
4. **Chuea ploeng* (เชื้อเพลิง) dried stem
5. **Cha mok* (จะม็อก) dried wood
6. **Kra nab chang en* (กระหนับจั้งเอร์) dried stem

Preparation and administration: Three roots of No.1, three pieces of No.2-6, decoction, taken the supernatant.

Formula 59 (F59)

Mor Phayak Thongpha's

Kho sabun: fever, chilled and anxiety caused by early intercourse after child birth.

1. *Thao wan priang* (เถาวัลย์เปรียง) (*Derris scandens* (Roxb.) Benth) fresh stem
2. *Ueang mai na* (เอื้องหมายนา) (*Costus speciosus* (J. König) Sm.) fresh rhizome
3. **Run* (รุน) fresh rhizome

Preparation and administration: A piece of each ingredient, decoction, taken the supernatant

Formula 60 (F60)

Mor Phayak Thongpha's

Kho sabun: loss of appetite, increased extracellular fluid (caused by no chance to attend *Yu fai* (อยู่ไฟ) therapy after delivery)

1. *Chai hin* (ไฉหิน) (*Droogmansia godefroyana* Schindl.) fresh root
2. *Khem fa rang* (เข็มฝรั่ง) (*Ixora coccinea* L.) fresh root
3. *Khem phuang khao* (เข็มพวงขาว) (*Ixora finlaysoniana* Wall. & G.Don) fresh root
4. *Kra dang nga daeng* (กระดังงาแดง) (*Leea guineensis* G.Don) fresh root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 61 (F61)

Mor Sawoei Sukchaloem's

Kho sabun: headache, excessive internal heat, abdominal bloating supported to be due to food abuse from meat

1. *Ya khat* (หญ้าขี้ฉี้) (*Sida rhombifolia* L.) fresh or dried root
2. *Ya khat bai yao* (หญ้าขี้ฉี้ใบยาว) (*Sida acuta* Burm.f.) fresh or dried root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 62 (F62)

Mor Sawoei Sukchaloem's

Kho sabun: weakness, loss of appetite and vertigo

1. *Sabu dam* (สบู่ดำ) (*Jatropha curcas* L.) fresh or dried root
2. *Kra thin thet* (กระถินเทศ) (*Acacia farnesiana* (L.) Willd.) fresh or dried root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 63 (F63)

Mor Kid Sukchaloem's

Kho sabun: weakness, loss of appetite, vomit and vertigo

1. *Sabu dam* (สบู่ดำ) fresh or dried stem (*Jatropha curcas* L.)
2. *Ya haeo mu* (หญ้าเหี่ยวหมู) fresh or dried corm (*Cyperus rotundus* L.)

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 64 (F64)

Mor Liad Saosila's

Kom ka nong: chest pain and bleeding per anus

1. *Khoi* (ข่อย) (*Streblus asper* Lour.) fresh root
2. *Som lom* (ส้มลม) (*Aganonerion polymorphum* Pierre ex Spire) fresh whole plant
3. *Som poi* (ส้มป่อย) (*Acacia concinna* (Willd.) DC.) fresh root
4. **Tra sai* (ตระไช้) or bamboo fresh bud
5. Weaver ant

Preparation and administration: A handful of No.1-3, eight fresh bud of No.4, decoction, taken the supernatant, after recover, boiled the weaver ant, taken the supernatant

Formula 65 (F65)

Mor Kid Sukchaloem's

Kra dao kra nong: suffer from excessive internal heat due to body toxic

1. *Chang krong sa wa* or *Hing hai* (จักรกรองชะวาหรือหิ้งไห) (*Crotalaria spectabilis* Roth subsp. *spectabilis*) fresh root
2. *Lep khрут* (เลียบครุฑ) (*Polyscias fruticosa* (L.) Harms) fresh root
3. *Thap thim* (ทับทิม) (*Punica granatum* L.) fresh root
4. **Mali* (มะลิ) or jasmine fresh root

Preparation and administration: A root of each ingredient, ground with small amount of water in clay lid or on grinding stone and taken the suspension

Formula 66 (F66)

Mor Liad Saosila's

Kra dao kra nong: suffer from excessive internal heat due to body toxic

1. *Mao khai pla* (เมาไขปลา) (*Antidesma ghaesembilla* Gaertn.) fresh root
2. **Tra mui* (ตระมู๋ย) fresh root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 67 (F67)

Mor Liad Saosila's

Kra-sai: muscular pain, tendon pain in severe cases progressing to loss of the ability to move

1. *Chingchi* (ชิงชี) (*Capparis micracantha* DC.) fresh or dried root
2. *Hatsa khun* (หัตถ์ขุน) (*Micromelum minutum* Wight & Arn.) fresh or dried root
3. *Khi non pa* (ขี้หนอนป่า) (*Dunbaria punctata* (Wight & Arn.) Benth.) fresh or dried stem
4. *Song fa dong* (สองฟ้าดง) (*Clausena harmandiana* (Pierre) Guillaumin) fresh or dried stem
5. **Ai ka no* (ไอกะนอ) fresh or dried stem
6. **Ong kot kha mao* (องกตชะเมา) fresh or dried stem

Preparation and administration: Three roots of No.1-2, three stems of No.3-6, decoction, taken the supernatant

Formula 68 (F68)

Mor Phayak Thongpha's

Kra-sai: muscular pain, tendon pain in severe cases progressing to loss of the ability to move

1. *Pradong lueat* (ประดงเลือด) (*Spatholobus harmandii* Gagnep.) fresh or dried stem
2. *Tam ling khao* (ตำลิงขาว) (*Ventilago* sp.) fresh or dried stem
3. **Tam ling dang* (ตำลิงแดง) fresh or dried stem

Preparation and administration: A handful of No.1-2 and two handful of No.3, decoction, taken the supernatant

Formula 69 (F69)

Mor Phayak Thongpha's

Kra-sai: muscular pain, tendon pain in severe cases progressing to loss of the ability to move

1. *Karawek* (การเวก) (*Artabotrys siamensis* Miq.) dried root
2. **Kra nab chang en* (กระหนับจั่งเอร์) dried stem
3. **Ong kot kha mao* (องกตชะเมา) dried stem

Preparation and administration: A root of No.1, a stem of No.2-3, decoction, taken the supernatant

Formula 70 (F70)

Mor Phayak Thongpha's

Leukorrhea

1. *Nom wua* (นมวัว) (*Anomianthus dulcis* (Dunn) J. Sinclair) dried stem
2. *Phlap phla* (พลับพล) (*Microcos tomentosa* Sm.) dried stem
3. **Chu em* (จูเอม) stem bark

Preparation and administration: Three stem of No.1-2 with a stem bark of No. 3, decoction, taken the supernatant

Formula 71 (F71)

Mor Phayak Thongpha's

Loss of appetite

1. *Chiang phra nang ae* (เถียงพรา nang ae) (*Carallia brachiata* (Lour.) Merr.) fresh or dried wood
2. *To sai* (ต๋อไส) (*Allophylus cobbe* (L.) Raeusch.) fresh or dried root

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 72 (F72)

Mor Phayak Thongpha's

Muscular pain

1. *Karawek* (การเวก) (*Artabotrys siamensis* Miq.) root
2. *Mueai* (เมื่อย) (*Gnetum montanum* Markgr.) stem
3. *Tam ling khao* (ตำลิงขาว) (*Ventilago* sp.) stem
4. **Tam ling dang* (ตำลิงแดง) stem

Preparation and administration: Three roots of No.1, three stems of No.2-4 decoction, taken the supernatant

Formula 73 (F73)

Mor Liad Saosila's

Pradong: pain in bone, joint swelling

1. *Chai hin* (ไฉหิน) (*Droogmansia godefroyana* Schindl.) dried root
2. *Lan thom* (ลั่นทม) (*Plumeria rubra* L.) dried root
3. *Op choei* (อบเชย) (*Cinnamomum bejolghota* (Buch.-Ham.) Sweet) dried root
4. *Pradong lueat* (ประดงเลื้อย) (*Spatholobus harmandii* Gagnep.) dried stem
5. *Song fa dong* (สองฟ้าแดง) (*Clausena harmandiana* (Pierre) Guillaumin) dried root
6. **Ai cha ruk kraham* (ไอจะรูกกระซอม) dried root
7. **Chuea ploeng* (เชื้อเพลิง) dried stem
8. **Kra nab chang en* (กระหนับจั่งเอร์) dried stem
9. **Nom saw* (นมสาว) dried stem
10. **Yu* (ยู) dried stem

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 74 (F74)

Mor Liad Saosila's

Pue: fever, excessive internal heat, aphthous ulcer, vertigo and vomit

1. *Dan mi* (ดันหมี่) (*Gonocaryum lobbianum* Kurz) dried root
2. *Ta kai bai kwang* (ตาไกไบกว้าง) (*Ardisia crenata* Sims var. *crenata*) dried root

Preparation and administration: Ground a root of each crude drug with small amount of water in stone grinder or clay lid and taken the suspension

Formula 75 (F75)

Mor Liad Saosila's

Pue: fever, excessive internal heat, aphthous ulcer, vertigo and vomit

1. *Khem phuang khao* (เข็มพวงขาว) fresh or dried root
(*Ixora finlaysoniana* Wall. & G.Don)
2. *Phut pa* (พุทป่า) dried or fresh root (*Kailarsenia hygrophila* (Kurz) Tirveng.)

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 76 (F76)

Mor Liad Saosila's

Pue: fever, excessive internal heat, aphthous ulcer, vertigo and vomit

1. *Ma kong khao* (มะก่องข้าว) fresh root (*Abutilon indicum* (L.) Sweet var. *indicum*)
2. *Ya kha* (หญ้าคา) fresh root (*Imperata cylindrica* (L.) Raeusch.)

Preparation and administration: A handful of each ingredient, decoction, taken the supernatant

Formula 77 (F77)

Mor Liad Saosila's

Saang: fever with wound in the mouth, loss of appetite, weight loss and furred tongue in both children and adult

1. *Karawek* (การเวก) (*Artabotrys siamensis* Miq.) fresh root
2. *Nom noi* (นมน้อย) (*Polyalthia evecta* (Pierre) Finet & Gagnep.) fresh root

Preparation and administration: Ground a root of each ingredient with small amount of water in stone grinder or clay lid and taken the suspension

Formula 78 (F78)

Mor Liad Saosila's

Saang: fever with wound in the mouth, loss of appetite, weight loss and furred tongue in both children and adult

1. *Kham saet* (คำแสน) (*Bixa orellana* L.) fresh or dried root
2. **Mali* (มะลิ) or jasmine fresh or dried root

Preparation and administration: Ground a root of each ingredient, applied to the oral surface and the tongue

Formula 79 (F79)

Mor Phayak Thongpha's

Saang: fever with wound in the mouth, loss of appetite, weight loss and furred tongue in children

1. *Ya kha* (หญ้าคา) (*Imperata cylindrica* (L.) Raeusch.) dried root
2. *Ma sang* (มะสัง) (*Feroniella lucida* Swingle) dried stem bark
3. **Pan nao* (ปันเนา) or beal fruit tree dried stem bark
4. **Tha ngan* (ทงัน) dried stem bark

Preparation and administration: A root of No.1, a stem bark of No.2-3, soaked in water, waited for 30 minutes, soaked cloth and wiped the patient's body or used to take a bath

Formula 80 (F80)

Mor Liad Saosila's

Tonic after delivery

1. *Sabu dam* (สบุดำ) (*Jatropha curcas* L.) fresh or dried branch and stem
2. **Kra tim* (กระเทียม) or garlic bulb
3. **Ma rit* (มะริด) or pepper dried fruit
4. Salt

Preparation and administration: Three pieces of No.1, two or three cloves of No.2, five to ten fruits of No.3, decoction with small amount of salt, taken the supernatant

Formula 81 (F81)

Mor Liad Saosila's

Tonic

1. *Bo ra phet* (บอระเพ็ด) (*Tinospora crispa* (L.) Hook.f. & Thomson) fresh stem
2. *Fa tha lai chon* (ฟ้าทะลายโจร) (*Andrographis paniculata* (Burm.f.) Nees) fresh leaf
3. **Wan hua phi* (ว่านหัวผี) fresh tuber
4. **Yu* (ยู) fresh stem
5. Honey

Preparation and administration: Ground a handful of all crude drugs into powder, mixed with honey, making into pills and taken orally

Formula 82 (F82)

Mor Phayak Thongpha's

Vertigo

1. *Khi khrok* (ขี้ครอก) (*Urena lobata* L.) root
2. *Ya khat bai yao* (หญ้าขัดใบยาว) (*Sida acuta* Burm.f.) root

Preparation and administration: Two roots of each ingredient, decoction, taken the supernatant

Formula 83 (F83)

Mor Phayak Thongpha's

Vertigo

1. *Khrop chakkawan* (ครอบจักรวาล) (*Xanthea parvifolia* (Kuntze) Craib) fresh or dried root
2. *Phak khom nam* (ผักขมหนาม) (*Amaranthus spinosus* L.) fresh or dried root
3. *Ya kha* (หญ้าคา) (*Imperata cylindrica* (L.) Raeusch.) fresh or dried root
4. *Ya khat* (หญ้าขัด) (*Sida rhombifolia* L.) fresh or dried root
5. *Ya khat bai yao* (หญ้าขัดใบยาว) (*Sida acuta* Burm.f.) fresh or dried root

Preparation and administration: Two roots of each ingredient, decoction, taken the supernatant

The names of plants including medicinal plants in Thailand were varied largely because of the presence of various tribes and ethnic groups. In this work, two plants were collected but could not identify to species due to lacking of reproductive parts, *Proem* (*Psychotria* sp., Rubiaceae) and *Tam ling khao* (*Ventilago* sp., Lemnaceae). The medicinal plants that could not found in the study site were *Ai cha ruk kraham* (ไ้อะรุกระซอม), *Ong kot kha mao* (องกตชะเมา) and *Yu* (ยู) etc. The examples of the rare species were *Cha krae ploeng* (จะแกรเพลิง) in *Kho sabun* formulation, *Chuea ploeng* (เชื้อเพลิง) to stimulate lactation and *Khamin hua sung* (ขมิ้นหัวสูง) for haemorrhoids.

Table 4.2 Frequency of ingredients in Thai-Khmer formulations

Number of ingredients in one formulation	Number of formulations	% total
2	29	34.93
3	31	37.34
4	8	9.63
5	5	6.02
6	6	7.22
7	1	1.20
8	1	1.20
10	1	1.20
11	1	1.20

Table 4.2 showed that 95% of the herbal formulations were composed of 2-6 crude drugs and the most predominant formulations composed of 3 and 2 ingredients (37.34 and 34.93%). The application processes were mentioned, 88.71% for oral administration and 14.29% for external use.

Table 4.3 List of the formulations with their medicinal uses, routes and methods of administration

Formulation	Indication	Route of administration	Method of administration
F1	Abdominal bloating	Orally taken	Decoction
F2	Abscesses	Externally applied	Grinding
F3	Blur vision	Orally taken	Decoction
F4	Bruise and sprains	Externally applied	Grinding
F5	Burns	Externally applied	Mixing
F6	Chest pain and uncomfortable breathing	Orally taken	Decoction
F7, F8	Congest lochia after delivery	Orally taken	Decoction
F9	Constipation with indigestion	Orally taken	Grinding
F10	Constipation	Orally taken	Decoction
F11	Dandruff	Externally, washed hair	Fermentation
F12	Mushroom poisoning	Orally taken	Grinding
F13	Difficult urination	Orally taken	Decoction
F14	Dysenteric	Orally taken	Soaked in water
F15	Dysmenorrhea; Irregular menstruation Leukorrhea	Orally taken	Decoction
F16	Fever	Externally , wiped body	Crushed then soaked in water
F17	Fever	Externally herbal bath	Decoction
F18	Fever	Orally taken	Soaked in water
F19	Fever in children	Orally taken	Soaked in water
F20, F21	Gall stone	Orally taken	Decoction
F22	Head-lice	Externally applied	Grinding
F23	Hemorrhoids	Externally applied	Decoction
F24, F25	Hemorrhoids	Orally taken	Decoction
F26	<i>Ho pua sa-ok sakuam</i>	Orally taken	Decoction
F27- F32	Increase milk secretion	Orally taken	Decoction
F33	Increase milk secretion	Orally taken	Soaked in water
F34	Increase milk secretion	Orally taken	Decoction
F35	Insomnia or sleeplessness	Externally, take a bath	Soaked in water
F36	Insomnia or sleeplessness	Orally taken	Decoction
F37	Intestinal worms	Orally taken	Decoction

Table 4.3 List of the formulations with their medicinal uses, routes and methods of administration (cont.)

Formulation	Indication	Route of administration	Method of administration
F38	Intestinal worms	Orally taken	Grinding
F39	Intestinal worms	Orally taken	Decoction
F40	Joint pain	Externally applied	Steamed
F41- F45	<i>Kho sabun</i>	Orally taken	Decoction
F46	<i>Kho sabun</i>	Orally taken	Soaked in water
F47- F63	<i>Kho sabun</i>	Orally taken	Decoction
F64	<i>Kom ka nong</i>	Orally taken	Decoction
F65- F66	<i>Kra dao kra nong</i>	Orally taken	Grinding
F67-F69	<i>Kra-sai</i>	Orally taken	Decoction
F70	Leukorrhea	Orally taken	Decoction
F71	Loss of appetite	Orally taken	Decoction
F72	Muscular pain	Orally taken	Decoction
F73	<i>Pradong</i>	Orally taken	Grinding
F74	<i>Pue</i>	Orally taken	Grinding
F75- F76	<i>Pue</i>	Orally taken	Decoction
F77	<i>Saang</i>	Orally taken	Grinding
F78	<i>Saang</i>	Applied in the mouth	Grinding
F79	<i>Saang</i>	Externally, wiped or take a bath	Soaked in water
F80	Tonic after delivery	Orally taken	Decoction
F81	Tonic	Orally taken	Powdered, mixed with honey, made into pills
F82-F83	Vertigo	Orally taken	Decoction

In other countries, the medicinal plants were used and prepared in different forms: juice of plants, paste, powder and other modes like smoking, baths and toothbrush. The common administrations of traditional medicines are in the form of oral or through nasal intake, gargling, topical usage, inhalation, washing and smoking (116). In this study, various methods of preparation were also recorded. For orally taken, decoction was the most preferable method. The routes of administration of 83 recorded formulations were both orally taken (71 formulations) and externally applied to the affected area or taken a bath (12 formulations). The most common methods of preparation were decoction (72.29%), grinding (13.25%), soaking in water (9.64%)

and the rest were powdered (1.2%), fermentation (1.2%), herbal compress (1.2%), and mixing (1.2%).

The diseases, symptoms and activities mentioned by the key informants were analyzed and grouped according to the classification of modern diseases into 6 systems included gynecological or women diseases, gastro-intestinal diseases, neurological diseases, respiratory diseases, urinary diseases, skin diseases and miscellaneous symptoms (Table 4.4).

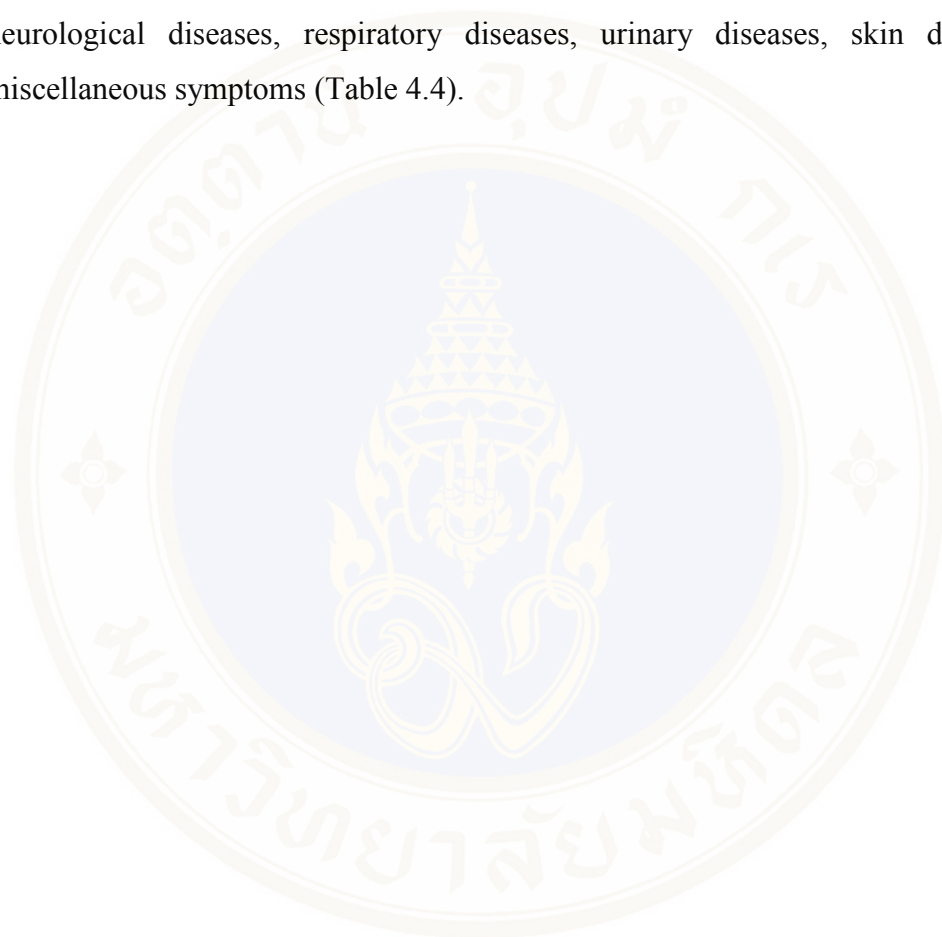


Table 4.4 Groups of diseases and symptoms according to the classification of modern diseases and numbers of medicinal plants and formulations used.

System	Diseases or symptoms or activity	No. of single medicinal plants used	No. of formulation
1. Gynecological diseases (Women diseases)			
1.1 Normal complications	Dysmenorrhea	-	1
	Irregular menstruation	-	1
	Leukorrhea	-	2
1.2 Postpartum complications	<i>Kho sabun</i>	2	23
	Increase milk secretion	-	8
	Congest lochia after delivery	-	3
	Loss of appetite	-	1
	Tonic	-	1
Subtotal		2	40
2. Gastro-intestinal diseases			
	<i>Kra dao kra nong</i>	-	2
	Bleeding gum	2	-
	Abdominal bloating	-	1
	Dysenteric(diarrhea with watery stool)	-	1
	Diarrhea	2	-
	<i>Ho pua so-ak</i>	-	1
	Constipation	-	2
	Hemorrhoids	-	3
	Intestinal worm	-	3
	<i>Chue pua tom</i>	1	-
Subtotal		5	13
3. Neurological diseases			
3.1 Inflammation	Muscular pain	1	1
	Joint pain	-	1
	<i>Pradong</i>	-	1
	<i>Kra-sai</i>	-	3
	Bruise and sprains	1	1
3.2 Fever	Fever	4	4
	<i>Pue</i>	5	3
	<i>Saang</i>	6	3
	Prevent fever in children	1	-
3.3 others	Vertigo	-	3
	Blur vision	-	1
Subtotal		18	21

Table 4.4 Groups of diseases and symptoms according to the classification of modern diseases and numbers of medicinal plants and formulations used (cont.)

System	Diseases or symptoms or activity	No. of single medicinal plants used	No. of formulation
4. Respiratory diseases			
	<i>Sa dong cha mo</i>	2	-
	<i>Kan sa lak</i>	1	-
	Chest pain and difficult or uncomfortable breathing	-	1
	Subtotal	3	1
5. Urinary diseases			
	Gall stone: difficult urination with abdominal pain and cloudy urine	-	2
	Difficult urination	-	1
	Subtotal	-	3
6. Skin diseases			
	Head-lice	1	1
	Dandruff	1	1
	Abscesses	2	1
	Burns	-	1
	Infected wound	1	-
	Stop bleeding	2	-
	Subtotal	7	4
7. Miscellaneous			
	Insomnia or sleeplessness	-	2
	Tonic	2	1
	Loss of appetite	-	2
	Infection in the eyes	1	-
	<i>Kom ka nong</i>	-	1
	Reduce body fat	1	-
	Mushroom poisoning	-	1
	Clean the teeth	1	-
	Subtotal	5	7
Total		40	89

Table 4.5 List of frequency of diseases or symptoms or activity treated with medicinal plants

System	Single plant remedy	% of total	Formulation	% of total
Gynecological diseases	2	5	40	44.94
Gastro-intestinal diseases	5	15	13	14.61
Neurological diseases	18	45	21	23.6
Respiratory diseases	3	7.5	1	1.12
Urinary diseases	0	0	3	3.37
Skin diseases	7	17.5	4	4.49
Miscellaneous	5	12.5	7	7.87

Three from five healers were well known herbalists in gynecological diseases, so 45% of the reported formulations were used for both women after delivery and complication in menstruation. Eventhough they went to hospital or community health center for labor, they normally used the herbal medicine during took care of the new born and themself at home. The villagers still believed in herbal medicine for women. For their concepts, the women after childbirth needed specially treatments to restore their health and to prevent serious symptom or even death. *Yu fai* (อยู่ไฟ) or healing therapy with heat, would reduced excessive lochia, back and muscular pain and help to restore the health condition. Another important reason was that orally taken *Kho sabun* (F 41-F 63) would lead to beauty, good health and resistance to climate change.

Twenty three formulations and 2 plants were use for *Kho sabun* which was a broad symptoms occurring in woman after delivery. The conditions varied from one woman to another and composed of simple to complex symptoms. The symptoms of this disease were caused by many factors such as individual, basically health condition together with hygiene, behavior and environment. The herbalists would select the appropriated formulation for each case.

Kra-sai, *Saang* and *Pradong* were pronounced the same in Thai-Khmer medicine and Traditional Thai medicine (TTM) but different in details. The symptoms of *Kra-sai* in study site defined as muscular and tendon pain and in severe cases might loss of the ability to move but in TTM meant physical wasting with loss of weight and muscular mass (117). About *Saang*, the symptoms were similar but TTM concluded that it was caused by intestinal worms and was found in only children (117). *Pradong*

composed of pain in bone, joint swelling but in TTM composed of exanthematous fevers, headache, pain in bone and aphthous ulcer (117).

Comparison on utilization of Thai-Khmer folkloric, Thai traditional medicine and other traditional medicine in Thailand

In this study, 116 species were documented. They were taxonomic identified and grouped according to their families and alphabetically listed. The information obtained include botanical name, local Khmer name and Thai vernacular names, parts of the plant used, folkloric uses. Some plants have also been found out in other location and used in the same or different indications. Comparison of the medicinal uses with Thai traditional medicine, Thai-Khmer group in Khok Phayuung village, Surin (13, 14) and other ethnic groups in Thailand were done to disseminate the herbal knowledge. *Po Khluean Bunkhruea* (พ่อเคลื่อน บุญเครือ), local teacher in Khmer language kindly and willingly written Khmer alphabet names which made this paper more valuable. *Pramuan sapphakhun ya thai wa duai phrueksachat watthuthat le satwatthu nanachanit* (ประมวลสรรพคุณยาไทย ว่าด้วย พฤษภชาติ วัตถุธาตุ และสัตว์วัตถุนานาชาติ) (volume 1-3)(118-120) and other studied in Thailand were helps in justifying the need for continued study of scientific support.

Acanthaceae

1. *Andrographis paniculata* (Burm.f.) Nees (96, 121)

Thai name: Fa thalai chon (ฟ้าทะลายโจร) (113)

Other name: King of betters

Plant description: Herb, simple leaf, inflorescence, capsule

Authentic specimen: PBM05055

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Leaf in F 81: tonic (M. Liad)

Folk medicine in other parts of Thailand:

Leaf: tonic, antipyretic (122, 123), antidysenteric, antidiarrheal (124), treatment of hypertension (59), sore throat (122-124), urinary stone, *Kra-sai* (กระษัย) (125) and pains (59), detoxification of snake poison (125).

Leaf in formula: antidiabetic (59, 126, 127), treatment of jaundice (128)

Whole plant: tonic (125), antidiabetic (39, 59), stimulant of appetite (125), treatment of insomnia (125), muscular cramps (129) and gall stone (58).

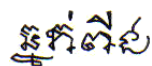
Whole plant in formula: antidiabetic (41, 129), treatment of muscular cramps (129) and uterus hernia (41)

Stem: tonic (130), for longevity (63), antipyretic, antidysenteric, antidiarrheal (124), treatment of sore throat (124), detoxification of snake poison (125)

Root: treatment of gonorrhea (57)

2. *Barleria strigosa* Willd. (96)

Thai-Khmer name: Cha knob ping (ชะนีออกปิ้ง)



Thai name: Sang korani (สังกรณี) (113)

Other name: Barleria

Plant description: Undershrub, simple leaf, inflorescence, capsule

Authentic specimen: PBM05049

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Whole plant: treatment of fever in children (M. Phayak); soaked in water, wait for 15 minutes, take the supernatant.

Thai-Khmer folk medicine in Khok Phayuung village:

Root: for oxytocic (13)

Folk medicine in other parts of Thailand:

Root: blood tonic (131), diuretic (132), treatment of abdominal pain (130), and aphthous ulcer (50)

Stem: appetizer (47), treatment of abdominal pain (130)

Leaf: treatment of abdominal pain (130), muscular pain (133)

Leaf in formula: antidiabetic, treatment of *Pradong* (ประดง), liver disease (41)

3. *Thunbergia laurifolia* Lindl. (96, 121)

Thai-Khmer name: Yiao sap (เหี่ยวสาบ)

ຍາວສາບ

Thai name: Rang chuet (รางจืด) (113)

Other names: Laurel clockvine, Blue trumpet vine

Plant description: Climber, simple leaf, inflorescence, capsule

Authentic specimen: PBM04906

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root: treatment of *Pue* (M. Liad); soaked a root in water for 5 minutes and take the supernatant.

Folk medicine in other parts of Thailand:

Root: antidiabetic (126, 127), antipyretic (59, 130), treatment of bronchial asthma (34), oozing eczema due to lymphatic disorders (127, 134), detoxification (45, 59, 125), detoxification of snake poison (125)

Leaf: antipyretic (49, 59, 130, 135, 136), antipyretic in children (124, 137), treatment of contusion (125), detoxification (59, 122, 130, 135, 136), detoxification of snake poison (122), detoxification of alcohol (63)

Leaf in formula: treatment of paralysis (138)

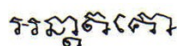
Stem: antipyretic (49, 59, 130), antipyretic in children (58, 124), treatment of red eyes (58), tinnitus (32) and muscular pain (33), detoxification (59, 130)

Whole plant: treatment of chronic alcoholism (139), dysuria (135), detoxification (139), detoxification of alcohol (125)

Amaranthaceae

4. *Achyranthes aspera* L. (140)

Thai-Khmer name: An nat ko (อ้นนาจโก)



Thai name: Phan ngu (พญางู) (113)

Other name: Prickly chaff-flower (113)

Plant description: Herb, simple leaf, inflorescence, urticulate glabrous with truncate apex

Authentic specimen: PBM04901

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 44: treatment of *Kho sabun* (M. Liad)

Folk medicine in other parts of Thailand:

Root in formula: antimalarial (59), treatment of osteoporosis (59) and gall stone (45)

Root: antitussive, treatment of scabies (39)

Stem: treatment of menstrual disorders (47) and hemorrhoids (124)

Leaf: antipyretic, treatment of wounds, muscular pain, urethral stones (122) and bone fracture (141)

Flower: anti-inflammatory for poisonous insect bite (124)

Whole plant: antipruritic (59), treatment of muscular pain (130), bone fracture, irregular menstruation (29) and chicken pox (34)

5. *Amaranthus spinosus* L. (79, 140)

Thai-Khmer name: Pati pun la (ปตฺยพินลา)



Thai name: Phak khom nam (ผักขมหนาม) (113)

Other names: Spiny amaranth, Spiny pigweed (113)

Plant description: Herb, simple leaf, inflorescence, circumscissile or indehiscent fruit

Authentic specimens: PBM04902, PBM04903

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 21: treatment of gall stone (M. Liad)

Root in F 50, 57: treatment of *Kho sabun* (M. Liad)

Root in F 83: treatment of vertigo (M. Phayak)

Thai-Khmer folk medicine in Khok Phayuung village:

Whole plant: treatment of oedema (13)

Folk medicine in other parts of Thailand:

Root: appetizer (32), treatment of leukorrhea (57) and dysuria (31)

Root in formula: antidiabetic (34, 41)

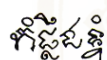
Whole plant: treatment of leukorrhea (124)

Whole plant in formula: antimalarial (59), hematinic (142), treatment of gall stone (33)

Leaf: treatment of bleeding per gum and leukorrhea (124)

Amaryllidaceae**6. *Crinum asiaticum* L. (97)**

Thai-Khmer name: Kam phlueng (กำพลึง)



Thai name: Phlap phlueng (พลับพลึง) (113)

Other names: Cape lily, Crinum lily (113)

Plant description: Herb, simple leaf, inflorescence, freshly fruit, irregular dehiscent

Authentic specimens: PBM05071, PBM05072

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Leaf: treatment of bruise and sprains (M. Liad, M.Kid); heated a leaf over embers and tied the heated leaf to the affected area.

Thai traditional medicine:

Leaf: as expectorant, treatment of bruise and sprains, detoxification (119)

Folk medicine in other parts of Thailand:

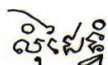
Leaf: treatment of sore throat (46), bruise and sprains (34, 63), corns (125), pains (39, 47, 55), stomachache (57) and bone fracture (29)

Leaf in formula: antipyretic (138), treatment of bone fracture (141)

Anacardiaceae

7. *Buchanania siamensis* Miq. (143)

Thai-Khmer name: Ram choei (รำจอย)



Thai name: Thanon chai (ธนนไชย) (113)

Plant description: Tree, simple leaf, inflorescence, drupaceous, indehiscent fruit

Authentic specimen: PBM04904

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem and root: treatment of fever in children (M. Liad); soaked a handful of stems and roots in water for a moment then soaked cloth and applied to the forehead in children.

Thai-Khmer folk medicine in Khok Phayuung village:

Stem and root: for against drug poisoning (13)

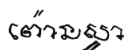
Folk medicine in other parts of Thailand:

Wood, stem bark, root: antipyretic (51)

Wood in formula: treatment of leukorrhea (138)

8. *Spondias pinnata* (L.f.) Kurz (143, 144)

Thai-Khmer name: Pun sa wa (ปุนชะวา)



Thai name: Makok (มะกอก) (113)

Other name: Hog plum (113)

Plant description: Tree, compound leaf, inflorescence, drupaceous, indehiscent fruit

Authentic specimen: PBM04905

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem: treatment of *Saang* (M. Phayak); soaked a handful of stems in water for 5 minutes and take the supernatant.

Stem in F 33: increase milk secretion with excessive internal heat and thirsty (M. Liad)

Thai traditional medicine:

Stem bark, leaf: antidysenteric, element tonic for irregular bile (120)

Leaf: treatment of earache (120)

Fruit: element tonic, treatment of bleeding gum and indigestion (120)

Seed: treatment of aphthous ulcer and hiccup (120)

Folk medicine in other parts of Thailand:

Stem bark: appetizer (32, 38), antidysenteric (50, 136), antidiarrheal (123, 131), treatment of earache (123) and aphthous ulcer (131, 136)

Stem bark in formula: antipyretic (34), treatment of aphthous ulcer (139) and paralysis (132)

Leaf: antidiarrheal (123, 131), treatment of earache (123) and aphthous ulcer (131)

Fruit: antidiarrheal, treatment of earache (123) and bodily discomfort (129)

Fruit in formula: treatment of thirst (139)

Root: antidiarrheal, treatment of earache (123)

Root in formula: antipyretic (138)

Ancistrocladaceae

9. *Ancistrocladus tectorius* (Lour.) Merr. (145)

Thai-Khmer name: Yul (ยูล)



Thai name: Lin kwang (ลั่นทม) (113)

Plant description: Climber, simple leaf, inflorescence, nut

Authentic specimen: PBM04907

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 13: treatment of difficult urination (M. Phayak)

Folk medicine in other parts of Thailand:

Root: antipyretic (129), treatment bodily discomfort (138)

Stem: for laxative (130)

Stem in formula: laxative (50)

Leaf: antipyretic (129), antipruritic (137)

Annonaceae

10. *Annona squamosa* L. (95)

Thai-Khmer name: Tip (ตีบ)

ទឹក

Thai name: Noina (น้อยหน่า) (113)

Other names: Custard apple, Sugar apple (113)

Plant description: Shrubby tree, simple leaf, solitary flower, aggregate fruit

Authentic specimen: PBM05056

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Leaf: killing head-lice (M. Phayak, M. Kid); ground a handful of leaves with small amount of water, applied on the hair thoroughly and washed hair carefully.

Leaf in F 22: killing head-lice (M. Phayak)

Root in F 2: relieve abscesses (M. Liad)

Thai traditional medicine:

Leaf: killing head-lice, anthelmintic, treatment of bruise and swelling, skin diseases and tinea versicolor (119)

Root: laxative (119)

Stem bark: treatment of wounds, detoxification of snake poison (119)

Folk medicine in other parts of Thailand:

Leaf: killing head-lice (58, 59, 63, 124), treatment of skin disease (59)

Leaf in formula: antipyretic (138)

Root: antipyretic (59)

Seed: killing head-lice (63)

11. *Anomianthus dulcis* (Dunn) J. Sinclair (95)

Thai-Khmer name: Krian sa wa (เกรียลชะวา)

ក្រិលសាវា

Thai name: Nom wua (นมวัว) (113)

Plant description: Climber, simple leaf, solitary flower, aggregate fruit

Authentic specimen: PBM04891

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 27: increase milk secretion (M. Phayak)

Stem in F 28: increase milk secretion and appetizer (M. Phayak)

Stem in F 70: treatment of leukorrhea (M. Phayak)

Thai-Khmer folk medicine in Khok Phayuung village:

Stem in formula: increase milk secretion (14)

Thai traditional medicine:

Root: increase milk secretion, prevent recurrent fever (119)

Stem: prevent recurrent fever (119)

Fruit: antipruritic, detoxification (119)

Folk medicine in other parts of Thailand:

Root: carminative (50), hematinic after delivery (132)

Root in formula: cardi tonic (50)

Stem: tonic (46), treatment of dizziness (63)

Stem in formula: antipyretic (52), treatment of jaundice (138)

Whole plant: treatment of muscular cramps (129)

12. *Artabotrys siamensis* Miq. (146)

Thai-Khmer name: Truek dok kra bai (ตริักดอกกระไบ)

ชื่อไทย: ฝรั่ง

Thai name: Karawek (การเวก) (113)

Other name: Climbing Ilang-Ilang

Plant description: Climber, simple leaf, no sample, aggregate fruit

Authentic specimen: PBM05079

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root: treatment of *Saang* (M. Liad); ground a root with small amount of water in clay lid or on grinding stone and take the suspension.

Root in F 27: increase milk secretion (M. Phayak)

Root in F 72: treatment of muscular pain (M. Phayak)

Root in F 69: treatment of *Kra-sai* (M. Phayak)

Root in F 77: treatment of *Saang* (M. Liad)

Folk medicine in other parts of Thailand:

Flower: cardiotonic (147)

Stem, fruit: laxative (131)

Stem bark in formula: cardiotonic (50)

13. *Melodorum fruticosum* Lour. (144)

Thai-Khmer name: Ram nol (รำโนล)

រំណុល

Thai name: Lamduan (ลำดูวน) (113)

Other name: White Cheesewood

Plant description: Shrub, simple leaf, solitary flower, aggregate fruit

Authentic specimen: PBM04894

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 37: treatment of intestinal worms (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Root: laxative (13)

Root in formula: treatment of food poisoning (13), nasal polyposis (14)

Wood: laxative (13)

Thai traditional medicine:

Flower: ingredient in *Ya-Hom* (ยาหอม), antitussive, cardiotonic (120)

Folk medicine in other parts of Thailand:

Root in formula: treatment of stomachache (132), detoxification of snake poison (41)

14. *Polyalthia evecta* (Pierre) Finet & Gagnep. (144)

Thai-Khmer name: Bai mum (บายมุ่ม)

បាយមុម

Thai name: Nom noi (นมน้อย) (113)

Plant description: Tree, simple leaf, solitary flower, aggregate fruit

Authentic specimens: PBM04892, PBM04893

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 54: treatment of *Kho sabun* (M. Liad)

Root in F 77: treatment of *Saang* (M. Liad)

Folk medicine in other parts of Thailand:

Root: for woman after delivery (148), increase milk secretion (128, 138), stimulant of appetite (39), intestinal antibacterial (131), treatment of abdominal cramps (128), stomachache (138), for bodily discomfort, torpid, weakness (39) and pains (131), detoxification of snake poison (129)

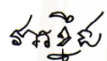
Root in formula: increase milk secretion (50)

Stem, flower: treatment of pains and as intestinal antibacterial (131)

Wood: increase milk secretion (63)

Apocynaceae**15. *Aganonerion polymorphum* Pierre ex Spire (149)**

Thai-Khmer name: Kha nueng (คะนึ่ง)



Thai name: Som lom (ส้มหลม) (113)

Other names: Sour-soup creeper, River-leaf creeper

Plant description: Climber, simple leaf, inflorescence, follicle

Authentic specimens: PBM04898, PBM04899

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Whole plant in F 64: treatment of *Kom ka nong* (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Stem: treatment of body pain (13)

Folk medicine in other parts of Thailand:

Root: anti-flatulent (39), carminative (50), treatment of abdominal cramps (128)

Root in formula: blood tonic, increase milk secretion (41), treatment of pains (128, 150), bodily discomfort (138), *Pradong* (ประดง) (151), hemorrhoids (41) and leukorrhea (51)

Leaf: antitussive (50), treatment of fainting (63)

Twig: treatment of fainting (63)

Wood in formula, stem bark in formula: blood tonic, increase milk secretion (41)

16. *Plumeria rubra* L. (149)

Thai-Khmer name: Cham pa (จำปา)



Thai name: Lan thom (ลั่นทม) (113)

Other name: Frangipani (113)

Plant description: Shrubby tree, simple leaf, inflorescence, follicle oblong

Authentic specimen: PBM05073

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem in F 10: treatment of constipation with lower abdominal and waist pain (M. Liad)

Stem in F 29: increase milk secretion with back and waist pain (M. Liad)

Stem in F 58: treatment of *Kho sabun* (M. Liad)

Wood in F 23: treatment of hemorrhoids with abdominal and muscular pain and bloody stool (M. Liad)

Wood in F 55: treatment of *Kho sabun* (M. Liad)

Root in F 73: relieve *Pradong* (M. Liad)

Folk medicine in other parts of Thailand:

Root: treatment of bronchial asthma (41)

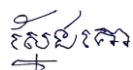
Root in formula: detoxification of alcohol (41)

Stem in formula: treatment of aphthous ulcer (53)

Wood in formula: treatment of paralysis and pruritus (138)

17. *Tabernaemontana bufalina* Lour. (149)

Thai-Khmer name: Sa nang ko (แสนงโก)



Thai name: Phrik nai phran (พริกนายพราน) (113)

Plant description: Shrubby tree, simple leaf, inflorescence, paired follicle

Authentic specimens: PBM04895, PBM04896, PBM04897

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 36: for insomnia or sleeplessness (M. Liad)

Thai traditional medicine:

N/A: antipyretic, treatment of aphthous ulcer (119)

Folk medicine in other parts of Thailand:

Root: antitussive, treatment of sore throat (138) and leukorrhea (152)

18. *Willughbeia edulis* Roxb. (149)

Thai-Khmer name: Kui (ꨀꨣ)

ꨀꨣ

Thai name: Khui (ꨀꨣ) (113)

Other names: Edible willugbeia, Willughbeia

Plant description: Climber, simple leaf, inflorescence, berry

Authentic specimen: PBM04900

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Latex: treatment of infected wounds (M. Sawoei); applied the latex on the wound.

Thai-Khmer folk medicine in Khok Phayuung village:

Stem: tonic (14)

Thai traditional medicine:

Stem: treatment of complications caused by abnormal menstruation and postpartum toxemia, oozing eczema due to lymphatic disorders and muscular pain (118)

Folk medicine in other parts of Thailand:

Latex: treatment of aphthous ulcer (125)

Stem bark: treatment of wounds, herpes infection (125)

Stem: anti-inflammatory (129), treatment of yaws and oozing eczema due to lymphatic disorders (142)

Stem in formula: laxative (151)

Apocynaceae-Asclepiadoideae

19. *Hoya kerrii* Craib (100)

Thai-Khmer name: Sa ka mang kon (สะกามังกร)

សកាមងក្រ

Thai name: Dang (ดัง) (113)

Other names: Sweetheart Hoya, Valentine Hoya, Wax Hearts, Porcelain Flower

Plant description: Climber, simple leaf, inflorescence, no sample

Authentic specimen: HWR00004

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Latex: treatment of bleeding gum (M. Liad); applied the latex on the effected gum.

Thai-Khmer folk medicine in Khok Phayuung village:

Latex: hemostatic (13)

Folk medicine in other parts of Thailand:

Leaf: treatment of liver disease (50, 52, 152)

Apocynaceae-Periplocoideae

20. *Streptocaulon juvenas* (Lour.) Merr.

Thai-Khmer name: Kra hom (กระฮอม)

ไคร้ฮ่อม

Thai name: Thao prasong (เถาประสงค์) (113)

Plant description: Climber, simple leaf, inflorescence, follicle

Authentic specimen: HWR00005

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 20: treatment of gall stone (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Root: anti-flatulent (13)

Whole plant: treatment of aphthous ulcer, detoxification of poisonous insect bite (13)

Root, stem in formula: antiasthmatic (13)

Folk medicine in other parts of Thailand:

Root: tonic (127), improving of cardiovascular function (129), detoxification of snake bite (138)

Stem: treatment of angular stomatitis (63)

Latex: treatment of angular stomatitis (138, 154)

Araliaceae**21. *Polyscias fruticosa* (L.) Harms (96)**

Thai-Khmer name: Prue yom (เปรี้ยว)

ស្រូវ

Thai name: Lep khрут (เล็บครุท) (113)

Other names: Black aralia, Ming aralia

Plant description: Shrub, compound leaf, inflorescence, drupaceous fruit

Authentic specimen: HWR00002

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root: treatment of *Pue* (M. Kid); ground a root, soaked in water for a moment and take the suspension.

Root in F 16: treatment of fever (M. Liad)

Root in F 65: relieve *Kra dao kra nong* (M. Kid)

Folk medicine in other parts of Thailand:

Root: relief of eczema (129)

Leaf: aphrodisiac (125)

Asphodelaceae

22. *Aloe vera* (L.) Burm.f. (97)

ໂພດສາວຈຳນວນໄຫຼ່

Thai name: Wan hang chora khe (ว่านหางจระเข้) (113)

Other names: Star cactus, Aloe, Aloin, Jafferabad, Barbados (113)

Plant description: Herb, simple leaf, inflorescence, capsule

Authentic specimen: PBM05050

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Mucilage from leaf in F 5: treatment of burns (M. Liad)

Thai traditional medicine:

Mucilage from leaf: treatment of headache (120)

Yellow-sap from leaf skin: purgative (120)

Root: treatment of gonorrhea (120)

Folk medicine in other parts of Thailand:

Mucilage from leaf: anti-flatulent (39), treatment of burns (29, 45, 47, 55, 57-59, 63, 122, 124), headache (124), acne (59), flatulence, heartburn and sensation of warmth in the abdomen (39)

Bignoniaceae

23. *Markhamia pierrei* Dop (157)

Thai-Khmer name: Dog pua (ด็อกปัว)

ໂພດສາວຈຳນວນໄຫຼ່

Thai name: Khae pa (แคป้า) (113)

Plant description: Deciduous tree, compound leaf, inflorescence, capsule floccose

Authentic specimens: PBM04915, PBM05077

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 12: detoxification for mushroom poisoning (M. Phayak)

Folk medicine in other parts of Thailand:

Stem: treatment of stomachache (63)

24. *Millingtonia hortensis* L.f. (157)**Thai-Khmer name:** Ang kria ri bo (อังกเรียริบือ)

အနွယ်ပု:

Thai name: Pip (ปีป) (113)**Other name:** Cork tree (113)**Plant description:** Deciduous tree, compound leaf, inflorescence, capsule linear**Authentic specimen:** PBM05053**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Stem in F 6: treatment of chest pain and uncomfortable breathing (M. Phayak)

Thai traditional medicine:

Root: lung tonic, treatment of tuberculosis and dyspnea (119)

Folk medicine in other parts of Thailand:

Flower: tonic, antitussive (123), treatment of bronchial asthma (47), hemorrhoids (136) and contraction (122), detoxification (122)

Flower in formula: ingredient in *Ya-Hom* (ยาหอม), cardi tonic, treatment of vertigo (124)**25. *Oroxylum indicum* (L.) Kurz (96, 157, 158)****Thai-Khmer name:** Pika (ปีกา)

ပိနီ

Thai name: Phe ka (เฟกา) (113)**Other name:** Indian trumpet tree**Plant description:** Deciduous tree, compound leaf, inflorescence, linear capsule**Authentic specimen:** PBM04916**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**Stem bark: treatment of *Saang* (M. Liad); Ground a stem bark and applied to the oral surface and the tongue.

Stem in F 6: treatment of chest pain and uncomfortable breathing (M. Phayak)

Stem in F 24: treatment of hemorrhoids (M. Liad)

Stem in F 55: treatment of *Kho sabun* (M. Liad)

Folk medicine in other parts of Thailand:

Stem bark: carminative (122), anti-flatulent (31, 46), for woman after delivery (125), treatment of pulmonary diseases, pneumonia (34), abscesses (129), wounds (59, 148), burns (125), stomachache (47, 129), ascites (45) and *Pang buam* (ป่างบวม) (31)

Stem bark in formula: *Ya hom* (ยาหอม), *Ya hom lang klot* (ยาหอมหลังคลอด) (33), treatment of wounds (58)

Stem: treatment of peptic ulcer (59)

Root: antidiarrheal (124), antidiabetic (125), anti-inflammatory (129), treatment of ascites (45), white spot on the skin, blisters with clear water appear and ache around the area of the infection (41)

Root in formula: antimalarial (138)

Leaf: anti-flatulent (31, 46), antidiarrheal (124), for woman after delivery (131, 136)

Pedicel: appetizer (32)

Fruit: treatment of ascites (45), peptic ulcer (59), *Pang buam* (ป่างบวม) (31)

Seed: treatment of tuberculosis (32)

Bixaceae

26. *Bixa orellana* L. (95, 108, 159)

Thai-Khmer name: Cham pu (จำปู)

จำปูละ

Thai name: Kham saet (คำแซด) (113)

Other name: Anatto tree (113)

Plant description: Shrubby tree, simple leaf, inflorescence, capsule

Authentic specimens: PBM04917, PBM04918

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 78: treatment of *Saang* (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Root: antipyretic (13)

Thai traditional medicine:

Flower: blood tonic, antidysenteric, treatment of wounds, anemia and kidney disorder (118)

Seed: treatment of wounds, antipyretic (118)

Mesocarp: laxative (118)

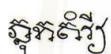
Folk medicine in other parts of Thailand:

Root: treatment of heat rash in children (125)

Wood: hematinic (127), treatment of vaginal bleeding (126)

Boraginaceae**27. *Heliotropium indicum* L. (96)**

Thai-Khmer name: Plu tam rai (พลูดำไร)



Thai name: Ya nguang chang (หญ้าวงช้าง) (113)

Other names: Heliotrope, Indian heliotrope

Plant description: Herb, simple leaf, inflorescence, drupaceous fruit

Authentic specimens: PBM04919, PBM04920

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem in F 3: treatment of blur vision (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Whole plant: treatment of joint pain, oedema and abscesses (13, 14)

Thai traditional medicine:

Stem: diuretic, antipyretic (119)

Root: treatment of eye disease, dimness of vision and blur vision (119)

Folk medicine in other parts of Thailand:

Stem: stimulate milk secretion (130), treatment of cancer (59)

Root: treatment of typhoid fever, chronic pyrexia (34) and cancer (59)

Leaf: expectorant (125), stimulate milk secretion (130), treatment of blur vision, blepharitis, ophthalmitis (124), acne (47), stomachache, wounds, burns and cancer (59)

Flower and fruit: treatment of cancer (59)

Whole plant in formula: antimalarial, antidiabetic, treatment of chronic pyrexia, sprain and back pain (59)

Bromeliaceae

28. *Ananas comosus* (L.) Merr. (97)

Thai-Khmer name: Ma nuea (มะเนื่อ)

မနွေ

Thai name: Sapparot (สับปะรด) (113)

Other name: Pineapple (113)

Plant description: Herb, simple leaf, inflorescence, multiple fruit

Authentic specimen: PBM05057

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Young leaf: relieve abscesses (M. Liad, M. Kid); ground a young leaf and put on the abscess.

Thai-Khmer folk medicine in Khok Phayuung village:

Rhizome in formula: treatment of abscesses, oedema and leukorrhea (14)

Thai traditional medicine:

Leafy parts on the top of fruit: diuretic, treatment of nephropathy, gall stone, *Kra-sai* (กระชาย), gonorrhea, leukorrhea and menstrual disorders (120)

Fruit: used as antitussive, expectorant (120)

Folk medicine in other parts of Thailand:

Rhizome: treatment of venereal disease (63)

Rhizome in formula: hematinic after delivery, treatment of gonorrhea, (142) and syphilis (127, 134)

Leaf: tonic (47), diuretic (125), treatment of opium addiction (47)

Fruit: antitussive, expectorant, to promote digestion, anti-inflammatory (124)

Root: diuretic, treatment of gall stone, gonorrhea (124) and dysuria (29)

Stem: treatment of venereal disease (63)

Capparaceae

29. *Capparis micracantha* DC. (95, 160, 161)

Thai-Khmer name: Kan chue bai dai (กันจือใบด้าย)

កង្កែបដំបូង

Thai name: Chingchi (ชิงชี) (113)

Other name: Caper thorn

Plant description: Shrub, simple leaf, solitary flower, berry

Authentic specimen: PBM04928

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 67: treatment of *Kra-sai* (M. Liad)

Thai traditional medicine:

Root: antipyretic, anti-flatulent, treatment of cancer, bronchial asthma, bruises and sprain (119)

Stem: treatment of bronchitis, bruise and sprain, skin disease, *Pradong* (ประดง), cramp, exanthematous fever, moribund stage (119)

Leaf: antipyretic, treatment of bronchial asthma, bruise and sprain (119)

Folk medicine in other parts of Thailand:

Root: antipyretic (151), blood tonic (47), anthelmintic (63), treatment of hemorrhoid (50)

Root in formula: antipyretic (138), treatment of nasal polyposis (13), tuberculosis (132)

Stem: stimulate milk secretion (130)

Stem in formula: antimalarial (162), treatment of nasal polyposis (13), breast cancer (163)

Wood: antipyretic (151), anthelmintic (63)

Wood in formula: treatment of *Pradong* (ประดง), paralysis (41)

Branch: stimulate milk secretion (130)

Seed: antitussive (47)

Whole plant in formula: antipyretic (164)

Celastraceae

30. *Salacia chinensis* L. (165)

Thai-Khmer name: Woei (เวื้อย)



Thai name: Kam phaeng chet chan (กำแพงเจ็ดชั้น) (113)

Other name: Chinese salacia

Plant description: Scandent shrub, simple leaf, inflorescence, drupaceous fruit

Authentic specimen: PBM04927

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem in F 1: treatment of abdominal bloating (M. Phayak)

Stem in F 55: treatment of *Kho sabun* (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Stem in formula: tonic, laxative, treatment of urinary stone (13, 14)

Folk medicine in other parts of Thailand:

Stem: blood tonic (130), antipyretic (131), carminative (39), laxative (127, 134), treatment of abnormal menstruation, skin problems, body pain (142), *Phit samdang* (ผิตสำแดง) (136) and hepatomegaly (163)

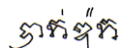
Stem in formula: antidiabetic (126, 127, 162), antipruritic (162), laxative (132), treatment of bronchial asthma, hepatitis (128), cancer, hematinic (162) and muscular pain (52, 128)

Root: antipyretic (131), laxative (63), treatment of *Phit samdang* (ผิตสำแดง) (136), *Kra-sai* (กระษัย) and nephropathy (151)

Root in formula: treatment of *Phit kabun* (ผิตกะบูน) (41)

Wood: laxative (41, 63), treatment of *Kra-sai* (กระษัย) and nephropathy (151)

Wood in formula: treatment of convulsion, *Pradong* (ประดง) (41)

31. *Siphonodon celastrineus* Griff. (96)**Thai-Khmer name:** Buk dok (บัคดอก)**Thai name:** Ma duk (มะดุก) (113)**Other name:** Ivru wood**Plant description:** Tree, simple leaf, inflorescence, drupaceous fruit**Authentic specimen:** PBM05078**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Stem bark in F 1: treatment of abdominal bloating (M. Phayak)

Stem in F 24: treatment of hemorrhoids with abdominal and muscular pain and bloody stool (M. Liad)

Thai traditional medicine:Root: bone tonic, antipruritic, treatment of skin disease, *Pradong* (ประดง), internal abscesses, diseases of bones, oozing eczema due to lymphatic disorders, disorders of tendomyopathy and syphilis (120)**Folk medicine in other parts of Thailand:**

Whole plant: treatment of muscular pain (52)

Root: antipruritic, treatment of hepatomegaly (163)

Stem bark: antipruritic, treatment of hepatomegaly (163)

Wood in formula: treatment of bodily discomfort (132)

Chrysobalanaceae**32. *Parinari anamensis* Hance (166)****Thai-Khmer name:** Ta lok (ทะลอก)**Thai name:** Ma phok (มะพอก) (113)**Plant description:** Tree, simple leaf, inflorescence, drupaceous fruit**Authentic specimens:** PBM04925, PBM04926**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Fruit in F 18: treatment of fever (M. Yian)

Wood in F 32: increase milk secretion (M. Liad)

Wood in F 31: increase milk secretion with chest and waist pain and congest lochial after deliver (M. Liad)

Folk medicine in other parts of Thailand:

Wood: Use blood tonic (52), treatment of bronchial asthma (128) and *Pradong* (ประดง) (151)

Leaf: treatment of peptic ulcer (130)

Fruit: treatment of abscesses (129)

Compositae (Asteraceae)

33. *Blumea balsamifera* (L.) DC. (96, 155)

Thai-Khmer name: Mat (มาต)

ไม้

Thai name: Nat yai (หนาดใหญ่) (113)

Other name: Camphor tree (113)

Plant description: Shrub, simple leaf, inflorescence, achene

Authentic specimens: PBM04909, PBM04910

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Leaf in F 35: relief of insomnia or sleeplessness (M. Liad)

Folk medicine in other parts of Thailand:

Leaf: antipyretic (122), antidandruff (63), antiasthmatic (127), antipruritic (131, 136), antidiarrheal, anthelmintic (125), contraceptive (47), temperature regulation (122), improve the quality of blood for woman after delivery (31, 32, 46, 135) bath the baby to protect from evil spirit (32), protect evil spirit (129), treatment of ophthalmia (122), headache (29, 47, 57), polyposis (polyps in the nose) or wounds lesion in nasal cavity (122, 135), epistaxis (32, 38), fainting (58), dizziness (55), red itchy hives with white skin that peels off (41), prickly heat (131, 136), swelling (125), bruise and sprains (29, 39, 47), internal injury (47), leg pain, back pain, bodily discomfort (39), urinary tract infection (122), hemorrhoids (31) and venereal diseases (46)

Leaf in formula: antipyretic (138), treatment of bronchial asthma (126)

Twig: antipyretic (29, 31), treatment of respiratory distress (31), detoxification (31)

Whole plant: antimalarial (141)

Stem: for woman after delivery (63)

Root: contraceptive (29)

34. *Chromolaena odoratum* (L.) R.M.King & H.Rob. (96)

Thai-Khmer name: Kong kang (โกงกาง)

កងកង

Thai name: Sap suea (สาบเสือ) (113)

Other names: Bitter bush, Christmasbush, Chromolaena, Devilweed, Hagonoy, Jack in the bush, Siam weed, Triffid weed

Plant description: Herb, simple leaf, inflorescence, achene

Authentic specimens: PBM04911, PBM04912

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Leaf: stop bleeding (M. Liad, M. Phayak, M. Kid); crushed 1-3 leaves and applied the paste over the wound.

Leaf: stop bleeding (M. Liad); crushed 1-3 leaves, mixed with white slaked lime and applied externally to the wound.

Root in F 55: treatment of *Kho sabun* (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Leaf: hemostatic (14)

Folk medicine in other parts of Thailand:

Leaf: hemostatic (29, 31-35, 38, 39, 45, 47, 49, 50, 55, 58, 59, 61, 63, 122-124, 126-128, 130, 135, 136, 154, 156), antimalarial (141), antitussive (49), treatment of bronchial asthma (58), pneumonosis (125), pains (55), wounds (60, 125) and hemorrhoids (131, 136)

Leaf in formula: antimalarial, for protection from poisonous insect bite and stings, treatment of wounds, cancer (41), *Lom phit duean* (ลมพิษเดือน) (34) and gall stone (45)

Root: diuretic (127), treatment of bronchial asthma (135), peptic ulcer (34, 45), hematuria, biliuria, nephropathy (126), vaginal bleeding (128) and hemorrhoids (131)

Flower: hemostatic (126)

Whole plant: treatment of hemorrhoids (129)

Whole plant: treatment of toothache and *Phit kabun* (พิษกะบูน) (41)

Connaraceae

35. *Ellipanthus tomentosus* Kurz var *tomentosus* (167)

Thai-Khmer name: Kra pok ling (กระโปกลิง)



Thai name: Kham rok (คำรอก) (113)

Other name: Ellipanthus

Plant description: Tree, simple leaf, inflorescence, follicle

Authentic specimen: PBM04936

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Leaf in F 11: antidandruff (M. Phayak)

Folk medicine in other parts of Thailand:

Stem: Use as appetizer (127, 134), anti-flatulent, treatment of bronchial asthma and abdominal cramps (128)

Stem in formula: antipyretic (36), laxative (152), treatment of joint pain (36, 152) and paresis (132)

Stem bark, wood: treatment of hematuria, biliuria and nephropathy (126)

Stem bark in formula: treatment of *Tan*, *Saang* (ตาน, ซาง) (41)

Root, stem: tonic, drugs for uterotonic after delivery (148), lactagogue (63), antipyretic (132), laxative (52), treatment of bodily discomfort, torpid, loss of appetite, adynamia (39) and muscular pain (52)

Root in formula: treatment of bodily discomfort (138)

Wood: diuretic (127)

Wood in formula: treatment of liver disease (50)

Costaceae**36. *Costus speciosus* (J. König) Sm. (97)****Thai-Khmer name:** Tra thok (ตระพอก)**Thai name:** Ueang mai na (เอื้องหมายนา) (113)**Other names:** Crape ginger, Malay ginger, Spiral flag (113)**Plant description:** Herb, simple leaf, inflorescence, capsule**Authentic specimens:** PBM04929, PBM04930, PBM04931**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Rhizome in F 15: treatment of dysmenorrhea or irregular menstruation and leukorrhea (M. Liad)

Rhizome in F 33: increase milk secretion with excessive internal heat and thirsty (M. Liad)

Rhizome in F 59: treatment of *Kho sabun* (M. Phayak)

Folk medicine in other parts of Thailand:

Rhizome: aphrodisiac (125), treatment of aphthous ulcer (137), otitis media (139), abscesses (41), rash (125), urticaria (34), enlarged abdomen (50), *Tan, Saang* (ตาน, ซาง) (36, 152), muscular pain (32) and dysuria (29)

Rhizome in formula: antiAIDS (50), treatment of epistaxis (32), toothache (41) and *Tan, Saang* (ตาน, ซาง) (51)

Whole plant: treatment of otitis media (49)

Whole plant in formula: treatment of abscesses and bleeding per vagina (41)

Root: tonic, tendon tonic in children (56), diuretic (57), treatment of bodily discomfort, torpid, loss of appetite and adynamia (39)

Stem: diuretic (57), treatment of otitis media (31, 138, 139), red eyes (61), abscesses (29), gall stone (61) and dysuria (47), detoxification of snake poison (33)

Flower: treatment of otitis media (139)

Leaf: treatment of otitis media (33, 50)

Cucurbitaceae

37. *Cucurbita moschata* Duchesne (95, 168)

Thai-Khmer name: Ra poeng (ระเปี๊ยะ)

រ៉ាប៉េង

Thai name: Fak thong (ฟักทอง) (113)

Other names: Cushaw, Pumpkin, Winter squash (113)

Plant description: Herbaceous climber, simple leaf, solitary flower, pepo

Authentic specimen: PBM04932

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Receptacle in F 18: treatment of fever (M. Yian)

Thai traditional medicine:

Seed: anthelmintic for roundworm (119)

Root: sexual stimulant, tonic (119)

Folk medicine in other parts of Thailand:

Seed: anthelmintic for roundworm (124)

Mesocarp: eyes tonic, hepatotonic, kidney tonic, antidiabetic, to protect renal stones, treatment of hypertension (124)

Cyperaceae

38. *Cyperus rotundus* L. (169)

Thai-Khmer name: Sa mao ai sae (สะมาไอแซะ)

សាម៉ាអាយសៃ

Thai name: Ya hao mu (หญ้าเห่าหมู) (113)

Other name: Nut grass (113)

Plant description: Perennial herb, simple leaf, inflorescence, achene

Authentic specimen: PBM05059

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Corm in F 4: relieve bruises and sprains (M. Liad)

Corm in F 41: treatment of *Kho sabun* (M. Liad)

Corm in F 50: treatment of *Kho sabun* and vertigo (M. Liad)

Corm in F 63: treatment of *Kho sabun* (M. Kid)

Thai-Khmer folk medicine in Khok Phayuung village:

Corm: treatment of wounds (13)

Thai traditional medicine:

Corm: cardi tonic, carminative, stimulate milk secretion, diaphoresis, diuretic, antidy senteric, anthelmintic for roundworm, treatment of stomachache, detoxification (119)

Folk medicine in other parts of Thailand:

Corm: for longevity (127), tonic (39), cardi tonic (139), health promoting, hepatotonic (163), carminative (59), treatment of gall stone (47)

Corm in formula: for longevity (126), blood tonic, anti-flatulent, antipyretic, hypertension, (59), hepatotonic (128), treatment of peptic ulcer, back and waist pain (41)

Whole plant: strengthen knee in children (29), treatment of waist pain (125)

Stem: bone tonic, knees tonic in children (47)

Stem, leaf in formula: treatment of *Kra-sai* (กระษัย) (41)

Root: treatment of epilepsy, *Kra-sai* (กระษัย) and gall stone (41)

Dilleniaceae

39. *Tetracera loureiri* (Finet & Gagnep.) Pierre ex Craib (170)

Thai-Khmer name: Do ra kuan (ดอระกวน)

ดอระกวน

Thai name: Rot su khon (รสสุคนธ์) (113)

Other name: Fragrant tetracera

Plant description: Climber, simple leaf, inflorescence, capsules

Authentic specimens: PBM04934, PBM04935

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Latex: treatment of infection in the eyes (M. Liad); dropped the latex into the eyes.

Thai-Khmer folk medicine in Khok Phayuung village:

Root, stem in formula: treatment of abscesses and oedema (14)

Thai traditional medicine:

Flower: ingredient in *Ya-Hom* (ยาหอม), cardi tonic (120)

Folk medicine in other parts of Thailand:

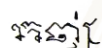
Whole plant: treatment of gall stone (137)

Stem in formula: treatment of stomachache (129)

Ebenaceae

40. *Diospyros curranii* Merr. (171)

Thai-Khmer name: Kra cha (กระเจี๊ยะ)



Thai name: Rak dam (รักดำ) (113)

Plant description: Tree, simple leaf, inflorescence, berry

Authentic specimen: PBM05044

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem in F 7: treatment of congest lochial after delivery (M. Phayak)

Stem in F 20: treatment of gall stone (M. Liad)

Stem in F 29, 30: increase milk secretion with back pain and waist pain
(M. Liad)

Stem in F 34: increase milk secretion with tendon pain (M. Liad)

Stem in F 53: treatment of *Kho sabun* (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Stem: treatment of abscesses and oedema (14)

Euphorbiaceae

41. *Antidesma ghaesembilla* Gaertn. (95, 172)

Thai-Khmer name: Tang kip ka dam (ตังกีบกะดาม)

តង់ក៏បកាដាម

Thai name: Mao khai pla (เมาไขปลา) (113)

Other name: Black currant-tree

Plant description: Shrubby tree, simple leaf, inflorescence, drupaceous fruit

Authentic specimen: PBM00134

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 66: relief of *Kra dao kra nong* (M. Liad)

Folk medicine in other parts of Thailand:

Stem bark: treatment of sprain, leg ache, backache and bodily discomfort (39)

Stem bark in formula: treatment of *Lom phit duean* (ลมพิษเดือน), headache and dizziness (34)

Twig: blood tonic (130)

Leaf: treatment of abscesses (125), sprain, leg ache, backache and bodily discomfort (39)

42. *Baliospermum solanifolium* (Geiseler) Suresh (172)

Thai-Khmer name: Salak dai (สลักไถ่)

សាក់តៃ

Thai name: Tong taek (ตองแตก) (113)

Other names: Red physic nut, Wild castor, Wild croton, Wild sultan seed

Plant description: Shrub, simple leaf, inflorescence, 3-valved capsule

Authentic specimen: PBM05080

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem and leaf in F 9: treatment of constipation with indigestion (M. Liad)

Thai traditional medicine:

Leaf: laxative, treatment of bronchial asthma (119)

Root: laxative for jaundice (119)

Seed: laxative (119)

Folk medicine in other parts of Thailand:

Leaf: treatment of polyposis (polyps in the nose) or wounds lesion in nasal cavity (41)

Root: laxative (134)

Whole plant: laxative (129)

43. *Hymenocardia punctata* Wall. ex Lindl. (173)

Thai-Khmer name: Pa niang (ປະເນີຍັງ)



Thai name: Faep nam (แฟปนํ้า) (113)

Plant description: Shrubby tree, simple leaf, inflorescence, 2-lobed, usually heart-shaped samaras

Authentic specimen: PBM04947

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem in F 28: increase milk secretion and appetizer (M. Phayak)

Thai-Khmer folk medicine in Khok Phayuung village:

Root in formula: for accelerating lochial discharge (14)

Thai traditional medicine:

N/A: antipyretic, diuretic, pains, *Kra-sai* (กระซัย), detoxification (119)

Folk medicine in other parts of Thailand:

Stem: diuretic (142), treatment of chicken pox (50)

Stem in formula: treatment of *Phit kabun* (ฟิดกะบูน) (50) and paresis (132)

Root: treatment of gynecological disease (164)

Wood in formula: treatment of *Tan, Saang* (ตาน, ซาง) (51)

44. *Jatropha curcas* L. (95, 173)**Thai-Khmer name:** Ka yae ka wong (กะแยกวาง)

ក្បាលដំបូង

Thai name: Sabu dam (สบู่ดำ) (113)**Other name:** Physic nut (113)**Plant description:** Shrubby tree, simple leaf, inflorescence, 3-lobed capsule**Authentic specimen:** PBM04948**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Latex: treatment of *Saang* (M. Yian); applied the latex on oral surface and the tongue.

Stem in F 63: treatment of *Kho sabun* (M. Kid)

Root in F 62: treatment of *Kho sabun* (M. Sawoei)

Branch and stem in F 80: tonic after delivery (M. Liad)

Thai traditional medicine:

Seed: laxative (120)

Folk medicine in other parts of Thailand:

Latex: treatment of aphthous ulcer (56), burns (29, 45, 47) and stomachache (142)

Stem: treatment of pneumonia (123)

Whole plant: treatment of bronchial asthma (128)

Stem bark: treatment of pneumonia (123)

Twig: antipyretic, treatment of *Tan, Saang* (ตาน, ซาง) (123)

Leaf: antipyretic, treatment of *Tan, Saang* (ตาน, ซาง) (123) and bone fracture (122)

45. *Jatropha multifida* L. (95, 173)**Thai-Khmer name:** Sam rong chot (สำโรงจอก)

សំរោងចក់

Thai name: Malako farang (มะละกอฝรั่ง) (113)**Other names:** Adenoropium multifidum, Coral plant, Physic nut**Plant description:** Shrubby tree, simple leaf, inflorescence, 3-lobed capsule**Authentic specimens:** PBM04949, PBM04950

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Latex: stop bleeding (M. Phayak, M. Sawoei, M. Kid); applied the latex to the wound.

Latex in F 5: treatment of burns (M. Liad)

Folk medicine in other parts of Thailand:

Latex: treatment of wounds (122)

Leaf: laxative (129)

Stem: antimalarial (36)

46. *Suregada multiflorum* (A.Juss.) Baill. (173)

Thai-Khmer name: Kan choeng (กันเจียง)



Thai name: Khan thong phayabat (ขันทองพายบาท) (113)

Plant description: Tree, simple leaf, inflorescence, loculicidal capsule

Authentic specimen: PBM04943

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem in F 1: treatment of abdominal bloating (M. Phayak)

Stem in F 29: increase milk secretion with back pain and waist pain (M. Liad)

Root in F 58: treatment of *Kho sabun* (M. Liad)

Thai traditional medicine:

Stem: antipyretic, treatment of urticaria, venereal diseases (118)

Stem bark: treatment of *Pradong* (ประดง), skin disease, diseases of bones, leprosy, cancer, yaws, for healthy teeth, used as laxative for liver diseases, anthelmintic, antifungal for ring worm and tinea versicolor (118)

Folk medicine in other parts of Thailand:

Stem: antipruritic, treatment of skin disease, (124), muscular pain (63), cancer (129, 163) and *Pradong* (ประดง) (151)

Stem in formula: antipruritic (162), antidysenteric (128), treatment of muscular pain (128), beriberi (51), cancer (129, 162) and liver cancer (162)

Root: treatment of cancer (129)

Root in formula: treatment of paralysis (138) and cancer (129)

Wood: treatment of jaundice (63) and *Pradong* (ประดง) (151)

Wood: treatment of urinary stone and venereal disease (128)

Gramineae (Poaceae)

47. *Chrysopogon aciculatus* (Retz.) Trin. (97)

Thai-Khmer name: Kan troei (กันเตรย)

កង្កែបក្រវិញ

Thai name: Ya chao chu (หญ้าเจ้าชู้) (113)

Other names: Golden beardgrass (113)

Plant description: Grass, simple leaf, inflorescence, caryopsis

Authentic specimen: PBM05005

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 4: treatment of bruise and sprains (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Whole plant in formula: antipyretic (14)

Folk medicine in other parts of Thailand:

Flower: treatment of urinary stones (125)

48. *Imperata cylindrica* (L.) Raeusch. (97, 189)

Thai-Khmer name: Sa bao (สะเบา)

ស្លឹកដំបូល

Thai name: Ya kha (หญ้าคา) (113)

Other name: Alang-alang, Lalang (113)

Plant description: Perennial grass, simple leaf, inflorescence, caryopsis

Authentic specimen: HWR0009

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root: treatment of food poisoning (M. Liad)

Root in F 76: treatment of *Pue* (M. Liad)

Root in F 33: increase milk secretion (M. Liad)

Root in F 50, 55, 57: treatment of *Kho sabun* (M. Liad)

Root in F 79: treatment of *Saang* (M. Phayak)

Root in F 50: treatment of vertigo (M. Liad)

Root in F 83: treatment of vertigo (M. Phayak)

Thai traditional medicine:

Root: antipyretic, diuretic, treatment of aphthous ulcer, gall stone, dysuria, nephropathy and leukorrhea (119)

Folk medicine in other parts of Thailand:

Root: antipyretic (125), hemostatic (31, 122), diuretic (131, 136), treatment of colic (122), *Lom phit duean* (ลมพิษเดือน) (34), stomachache (29), jaundice (51), venereal diseases (141) and urethral stones (122), detoxification (129)

Root in formula: antipyretic (32, 41, 59), diuretic (162), treatment of typhoid fever, cancer, kidney diseases and *Kra-sai* (กระษัย) (41) and gall stone (45)

Leaf: Use as hemostatic (122), treatment of *Lom phit duean* (ลมพิษเดือน) (31), colic and urethral stones (122)

Whole plant in formula: treatment of gall stone (45)

49. *Saccharum officinarum* L. (109)

Thai-Khmer name: Am po (อัมโป)

อัมโป

Thai name: Oi (อ้อย) (113)

Other name: Sugar cane (113)

Plant description: Perennial grass, simple leaf, inflorescence, caryopsis

Authentic specimen: HWR0010

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem in F 1: treatment of abdominal bloating (M. Phayak)

Stem in F 26: treatment of *Ho pua sa-ok sakuam* (M. Phayak)

Stem in F 53: treatment of *Kho sabun* (M. Liad)

Thai traditional medicine:

Stem: diuretic, treatment of nephropathy, gonorrhea and gall stone (120)

Folk medicine in other parts of Thailand:

Stem: antidiabetic (125), expectorant (45), tonic (122), stimulant of appetite (39), treatment of sore throat (45), bodily discomfort, torpid (39), *Phit samdang* (พืชสามแดง) (63), beriberi (34) and stroke (122)

Stem in formula: appetizer (33), antipyretic (52, 53), antidiabetic (41), diuretic (138), treatment of jaundice (52, 53) and pains (33)

Leaf: tonic, treatment of stroke (122)

Leaf in formula: treatment of pains (33)

Root: carminative (122), treatment of urinary stones (125)

Root in formula: treatment of paralysis (51)

Bagasse in formula: treatment of abscesses, chronic ulcers (124)

Leguminosae (Fabaceae)-Caesalpinioideae

50. *Bauhinia pulla* Craib (174)

Thai-Khmer name: Phae tria (แพตริย)

ផ្កាត្រី

Thai name: Salaeng phan thao (แสงพันเถา) (113)

Other name: Hopseed bush

Plant description: Climber, simple leaf, inflorescence, pod, dehiscent fruit

Authentic specimen: PBM04957

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Leaf: reduce body fat (M. Liad); used a handful of leaves as ingredient in Thai style sauna.

Folk medicine in other parts of Thailand:

Stem bark: treatment of *Phit kabun* (ฟิดกะบูน) (51) and stomachache (131)

Stem: diuretic, diaphoretic (162), treatment of leukorrhea (51)

Root in formula: relieve toothache (49)

51. *Tamarindus indica* L. (95, 174)

Thai-Khmer name: Ma puel (มะปืล)

អ្នកប្រើ

Thai name: Ma kham (มะขาม) (113)

Other name: Tamarind

Plant description: Tree, compound leaf, inflorescence, indehiscent pod

Authentic specimen: PBM05065

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem: treatment of *Kho sabun* (M. Sawoei); decoction a handful of stems, take the supernatant.

Stem in F 10: treatment of constipation (M. Liad)

Stem in F 34: increase milk secretion, tonic after delivery with tendon pain (M. Liad)

Wood in F 8: treatment of congest lochia after delivery (M. Phayak)

Thai-Khmer folk medicine in Khok Phayuung village:

Stem bark: treatment of wounds in woman after delivery (14)

Thai traditional medicine:

Young leaf: treatment of common cold (120)

Kernel of seed: anthelmintic (for roundworms) (120)

Seed coat: treatment of wounds (120)

Pulp: laxative, treatment of constipation (120)

Pulp fiber: treatment of menstrual disorders (120)

Folk medicine in other parts of Thailand:

Wood: for woman after delivery (63), detoxified against mushroom poisoning (36)

Wood in formula: antimalarial (36), antipyretic, antidiabetic, treatment of headache, red itchy hives with white skin that peels off, *Phit kabun* (ฟิดกะบูน), *Pradong* (ประดง) and peptic ulcer (41)

Kernel of seed: anthelmintic for roundworm, antidiarrheal (124)

Seed: treatment of lock jaw (39)

Stem bark: protection from freckle (49)

Stem bark in formula: anti-flatulent (31), treatment of typhoid fever (33)

Pulp: laxative (58, 59, 61, 124)

Leaf: antimalarial, antidiabetic (125)

Fruit: treatment of abscesses (57)

Root bark: antipyretic (59)

Root in formula: treatment of red itchy hives with white skin that peels off (41), *Lom phit duean* (ลมฟิดเดือน) and gall stone (34)

Twig in formula: antipyretic (33), anti-flatulent (31)

Leguminosae (Fabaceae)-Mimosoideae**52. *Acacia concinna* (Willd.) DC. (175)****Thai-Khmer name:** Sa mun proei សំពៅជ្រៃ**Thai name:** Som poi (ส้มป่อย) (113)**Other name:** Shikakai pods**Plant description:** Woody climber, compound leaf, inflorescence, pod oblongs**Authentic specimen:** PBM05063**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Fruit: antidandruff (M. Liad); ground a handful of fruits with water to induce foam and used as hair shampoo.

Root in F 51: treatment of *Kho sabun* (M. Liad)

Root in F 64: treatment of *Kom ka nong* (M. Liad)

Thai traditional medicine:

Stem: hair tonic, antidandruff, emetic, laxative, expectorant, antimalarial, treatment of wounds (120)

Leaf: to improve the quality of blood (120)

Folk medicine in other parts of Thailand:

Root: for woman after delivery (125), treatment of cough from tuberculosis (41), detoxification (131, 136)

Leaf: antipyretic (33), for woman after delivery (125), treatment of blepharitis (47) and hemorrhoids (122)

Leaf in formula: to improve the quality of blood (58), anti-inflammatory (142), treatment of typhoid fever (33) and gall stone (41)

Stem: expectorant, blood tonic (50)

Fruit in formula: hair tonic (44), treatment of cancer (41) and peptic ulcer (41)

Twig in formula: antipyretic (33)

Branch in formula: for woman after delivery (33)

Whole plant: blood tonic (129), antidiabetic (125), antipruritic (59)

Whole plant in formula: antipyretic (59)

53. *Acacia farnesiana* (L.) Willd. (175)

Thai-Khmer name: Sa mun miak (สมูรเมียก)

សម្បជ្រូក

Thai name: Kra thin thet (กระถิ่นเทศ) (113)

Other names: Sponge tree, Cassie flower (113)

Plant description: Shrub, compound leaf, inflorescence, pod

Authentic specimens: PBM04961, PBM04962

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Branch: treatment of fever in children (M. Sawoei); soaked in water, wait for 10-15 minutes, soaked cloth and applied to the forehead in children.

Root in F 36: relieve insomnia or sleeplessness (M. Liad)

Root in F 62: treatment of *Kho sabun* (M. Sawoei)

Thai traditional medicine:

Root: for longevity, detoxification of poisonous insect bite (118)

Folk medicine in other parts of Thailand:

Root: expectorant, antidiarrhetic, laxative, skin tonic (123), detoxification of snake poison (127)

Leaf, flower, fruit: expectorant, antidiarrhetic, laxative, skin tonic (123)

54. *Mimosa pudica* L. (175)

Thai-Khmer name: Pria krap (เปรี้ยกราบ)

ໄຂ່: ໄຂ່

Thai name: Ya pan yot (หญ้าปันยอด) (113)

Other names: Sensitive plant, Sleeping grass

Plant description: Annual or perennial herb, compound leaf, inflorescence, pod

Authentic specimen: PBM04963

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Leaf in F 2: relief of abscesses (M. Liad)

Root in F 55: treatment of *Kho sabun* (M. Liad)

Thai traditional medicine:

Whole plant: diuretic, treatment of nephropathy and *Kra-sai* (กระษัย) (120)

Folk medicine in other parts of Thailand:

Leaf: used to protect evil spirit (29), treatment of edema (33)

Leaf in formula: diuretic (127), treatment of edema (33)

Root: tonic (31), anti-inflammatory (34), diuretic (51, 57), to protect evil spirit (29), treatment of vomit (29), herpes infection (125), blisters, bump and itchy hives on the skin (41), edema (54), venereal diseases (51) and dysmenorrhoea (47, 57)

Root in formula: stimulate milk secretion, treatment of burns, abscesses, peptic ulcer, painful bumps, blisters, sore on tongue and inside mouth and saliva run and *Phit kabun* (ฝัดกะบูน) (41)

Whole plant: tonic (125), diuretic (58), treatment of pains (129), stomachache (135), leukorrhoea and urticaria fever (125)

Whole plant in formula: to improve the quality of blood (58), antipyretic (59), diuretic (126), treatment of typhoid fever (33), eruptive, leukorrhea (59) and hemorrhoid (45)

Branch: treatment of edema (33)

Stem in formula: diuretic (127), treatment of edema (33)

Leguminosae (Fabaceae)-Papilionoideae**55. *Abrus precatorius* L. (95)**

Thai-Khmer name: Krim krom (กริมกรอม)

ไคร้ไคร้

Thai name: Ma klam ta nu (มะกล่ำตาหนู) (113)

Other names: Crab's eye vine, American pea (113)

Plant description: Climber, compound leaf, inflorescence, pod

Authentic specimens: PBM04965, PBM04966, PBM04967

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 38: treatment of intestinal worms (M. Liad)

Thai traditional medicine:

Root: anti-flatulent, expectorant, treatment of hiccup and hoarseness (120)

Seed: treatment of eye diseases, red eyes (120)

Folk medicine in other parts of Thailand:

Root: treatment of red eyes, whooping cough (122) and abscesses (129)

Stem: expectorant, to improve the quality of blood (50), treatment of wounds (138)

Whole plant in formula: antipyretic, tonic (59)

56. *Crotalaria spectabilis* Roth subsp. *spectabilis* (99)

Thai-Khmer name: Chang krong saw a, Hing hai (จังกรวงชะวาหรือหิ้งหาย)

ខ្ញុំក្រវ៉ា

Other names: Showy rattlebox, Rattlepod

Plant description: Undershrub, simple leaf, inflorescence, pod turgid

Authentic specimen: PBM05066

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 65: relief of *Kra dao kra nong* (M. Kid)

Folk medicine in other parts of Thailand:

Stem and root: detoxification (51)

57. *Derris scandens* (Roxb.) Benth. (95)

Thai-Khmer name: Preng (เปรียง)

ឈើដើម

Thai name: Thao wan priang (เถาวัลย์เปรียง) (113)

Other names: Hog creeper, Malay jewelvine

Plant description: Climber, compound leaf, inflorescence, pod

Authentic specimen: PBM05064

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem and root: relief of muscular pain (M. Phayak); decoction a handful of stems and roots until 1/3 of the origin volume, take the supernatant.

Stem in F 59: treatment of *Kho sabun* (M. Phayak)

Thai traditional medicine:

Stem and root: treatment of *Kra-sai* (กระษัย) (119)

Stem: laxative, diuretic, antidysenteric (119)

Folk medicine in other parts of Thailand:

Stem: laxative (59), expectorant (131), to increase women's breast size (63), hematinic (142), treatment of muscular cramps (129) and skin diseases (63)

Stem in formula: treatment of paralysis (50, 51), stomachache (129), bodily discomfort and hemorrhoid (162)

Root: treatment of *Kra-sai* (กระษัย) (59)

Whole plant: treatment of bruise and sprain (59)

58. *Desmodium gangeticum* (L.) DC. (102)

Thai-Khmer name: Kan prum prae kloi (ก้นปทุมเประกรอ)

ក្បាលប្រាម

Thai name: I niao (อีเหนียว) (113)

Other name: Ticktree

Plant description: Undershrub, compound leaf, inflorescence, pod

Authentic specimen: PBM04964

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 43, 50, 57: treatment of *Kho sabun* (M. Liad)

Thai traditional medicine:

Root: laxative, antipyretic, anthelmintic (roundworms) for children (120)

Leaf: anti-inflammation from dog bite, detoxification (120)

Folk medicine in other parts of Thailand:

Whole plant: tonic (135)

59. *Droogmansia godefroyana* Schindl. (176)

Thai-Khmer name: Dai tuan (ไตตวน)

តៃតួន

Thai name: Chai hin (ไชหิน) (113)

Plant description: Shrub, simple leaf, inflorescence, pod

Authentic specimens: PBM04968, PBM04969, PBM04970

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 26: treatment of *Ho pua sa-ok sakuam* (M. Phayak)

Root in F 60: treatment of *Kho sabun* (M. Phayak)

Root in F 73: relief of *Pradong* (M. Liad)

60. *Dunbaria punctata* (Wight & Arn.) Benth. (103)

Thai-Khmer name: Ra mit (ระมิต)

ระมิต

Plant description: Climber, compound leaf, inflorescence, pod

Authentic specimens: PBM04971, PBM04972

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem or root in F 52: treatment of *Kho sabun* (M. Liad)

Stem in F 67: treatment of *Kra-sai* (M. Liad)

61. *Phyllodium pulchellum* (L.) Desv. (101)

Thai-Khmer name: Kon kha mum (โกนขาม)

โกนขาม

Thai ame: Klet pla chon (เกล็ดปลาช่อน) (113)

Other name: Showy desmodium

Plant description: Shrub, compound leaf, inflorescence, pod

Authentic specimen: PBM05095

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Leaf: treatment of polyposis or wounds lesion in nasal cavity (M. Phayak); rolled 5-7 leaves, wrapped with dried banana leaf like a cigarette, then smoked.

Thai-Khmer folk medicine in Khok Phayuung village:

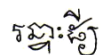
Root in formula: treatment of hemorrhoid (14)

Folk medicine in other parts of Thailand:

Root: treatment of liver disease (50, 127), *Lom phit duean* (ลมพิษเดือน) and stomachache (34)

Root in formula: stimulate milk secretion (41), treatment of cancer (138)

Stem bark or wood in formula: stimulate milk secretion (41)

62. *Sesbania grandiflora* (L.) Pers. (95)**Thai-Khmer name:** Pan tia dai (ปันเตียไต่)**Thai name:** Khae ban (แคบ้าน) (113)**Other names:** Agasta, Sesban, Vegetable humming bird (113)**Plant description:** Tree, compound leaf, inflorescence, pod**Authentic specimen:** PBM04973**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Stem bark: antidiarrheal (M. Liad); chopped 2-3 stem barks into pieces, ground with weaver ant and take orally

Stem bark or root in F 14: treatment of dysenteric (M. Phayak)

Thai traditional medicine:

Stem bark: antidiarrheal, antidysenteric, treatment of griping, seasonal fever and wounds (118)

Folk medicine in other parts of Thailand:

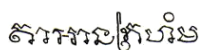
Stem bark: antidiarrheal (59), antipyretic in children (59), treatment of aphthous ulcer (53), pain, blisters and sores on and under the tongue and inside the mouth and the saliva runs (41) and *Tan, Saang* (ตาน, ซาง) (59)

Stem bark in formula: antidiarrheal (124)

Root: treatment of toothache (122)

Root in formula: treatment of *Kra-sai* (กระษัย), (59)

Leaf: treatment of fever at the beginning of winter season (124)

63. *Spatholobus harmandii* Gagnep. (98)**Thai-Khmer name:** Ta an kra hom (ตะอั้นกระซอม)**Thai name:** Pradong lueat (ประดงเลือด) (113)**Plant description:** Woody climber, compound leaf, inflorescence, pods**Authentic specimen:** HWR00006**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

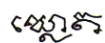
Stem in F 68: treatment of *Kra-sai* (M. Phayak)

Stem in F 73: relief of pain in the bone, joint swelling (M. Liad)

Gnetaceae

64 *Gnetum montanum* Markgr. (177)

Thai-Khmer name: Khlot (โกลด)



Thai name: Mueai (เมื่อย) (113)

Other name: Common jointfir

Plant description: Woody climber, simple leaf, inflorescence, spurious, drupe-like fruit

Authentic specimen: PBM04951

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem: treatment of *Kho sabun* (M. Liad); soaked a handful of stems, added more water, used to take a bath.

Stem in F 72: treatment of muscular pain (M. Phayak)

Folk medicine in other parts of Thailand:

Stem: hematinic (127), treatment of liver disease (50), muscular pain (52) and bodily discomfort (127)

Stem in formula: treatment of *Pradong* (ประดง) (50)

Root: antipyretic, anti-inflammatory (163), improve the quality of blood, treatment of bruise and sprains (46)

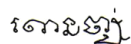
Root in formula: antipyretic (132)

Whole plant: treatment of joint pain (129)

Icacinaceae

65. *Gonocaryum lobbianum* Kurz (178)

Thai-Khmer name: Don cha (โดนจ๊ะ)



Thai name: Dan mi (ดันหมี่) (113)

Plant description: Tree, simple leaf, inflorescence, drupaceous fruit

Authentic specimen: PBM05062

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 74: treatment of *Pue* (M. Liad)

Folk medicine in other parts of Thailand:

Root in formula: treatment of jaundice (50)

Whole plant: antipyretic (137)

Stem in formula: treatment of jaundice (50)

Wood in formula: treatment of jaundice (52)

Labiatae (Lamiaceae)**66. *Clerodendrum paniculatum* L. var. *paniculatum* (96)**

Thai-Khmer name: Nom sa wan (นมสวรรค์)

นมสวรรค์

Thai name: Nom sawan (นมสวรรค์) (113)

Other name: Pagoda flower (113)

Plant description: Shrub, simple leaf, inflorescence, drupaceous fruit

Authentic specimens: PBM04981, PBM04982

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 15: treatment of dysmenorrhea or irregular menstruation and treatment of leukorrhea (M. Liad)

Folk medicine in other parts of Thailand:

Root: treatment of dizziness (63)

Root in formula: stimulate milk secretion (162), treatment of renal stones (50) and leukorrhea (138)

Leaf: treatment of wound (49)

Whole plant in formula: treatment of tinea versicolor (49)

67. *Leonotis nepetifolia* (L.) R.Br. (96)

Thai-Khmer name: Chat rut (ฉัตรรูต)

ฉัตรรูต

Thai name: Chat phra in (ฉัตรพระอินทร์) (113)

Other names: Annual lion's ear, Lion's ear, Christmas candlestick

Plant description: Herb, simple leaf, inflorescence, nutlets

Authentic specimen: PBM04986

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root: treatment of *Pue* (M. Liad); soaked a root in water for 5 minutes and take the supernatant.

Folk medicine in other parts of Thailand:

Root: treatment of engorged breast in lactating women (58)

Whole plant: treatment of cancer (129)

68. *Ocimum tenuiflorum* L. (96, 107)

Thai-Khmer name: Pria prao (เปรี้ยวเปรี้ยว)

မြားမြား

Thai name: Ka phrao (กะเพรา) (113)

Other names: Holy basil, Thai basil (113)

Plant description: Undershrub, simple leaf, inflorescence, nutlet

Authentic specimen: PBM04985

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 8: treatment of congest lochial after delivery (M. Phayak)

Thai-Khmer folk medicine in Khok Phayuung village:

Root in formula: antitussive (14)

Thai traditional medicine:

Leaf: anti-flatulent, carminative, antidiarrheal, treatment of tympany and disorders of four elements (118)

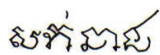
Folk medicine in other parts of Thailand:

Whole plant: anti-flatulent in children (129)

Whole plant in formula: antimalarial (59)

Leaf: element tonic, stimulate milk secretion, diaphoresis (124), carminative, anti-flatulent (59, 124), treatment of nasal congestion, toothache (49) and *Tan, Saang* (ตาน, ซาง)(59)

Root in formula: treatment of toothache (49)

Lauraceae**69. *Cassytha filiformis* L. (95)****Thai-Khmer name:** So nian tom (เซาะเนียบทม)**Thai name:** Sangwan phra in (สังวาลพระอินทร์) (113)**Other name:** Love vine (113)**Plant description:** Parasitic herbaceous climber, minute scales, inflorescence, fleshy fruit**Authentic specimens:** PBM04990, PBM04991**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Stem in F 16: treatment of fever (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

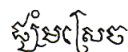
Whole plant: antipyretic, anticonvulsant (13)

Whole plant in formula: treatment of oozind eczema due to lymphatic disorders (14)

Folk medicine in other parts of Thailand:

Stem: treatment of weakness (45) and leukorrhea (129)

Whole plant: anti-inflammatory, anthelmintic (45), treatment of aphthous ulcer (51), arthritis (141) and gall stone (34)

Whole plant in formula: antipyretic (34), diuretic (52), treatment of palpitation (34), chicken pox, jaundice, hemorrhoid (45), paralysis (50, 138), *Lom phit duean* (ลมพิษเดือน) (34) and kidney disorder (45)**70. *Cinnamomum bejolghota* (Buch.-Ham.) Sweet (104)****Thai-Khmer name:** Pasom salat (ปสมสลัด)**Thai name:** Op choei (อบเชย) (113)**Other names:** Annam cinnamon, China cinnamon, God's cinnamon, Saigon cinnamon, Wild cassia**Plant description:** Tree, simple leaf, inflorescence, drupaceous fruit**Authentic specimens:** PBM04988, PBM04989

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root: tonic after delivery (M. Liad)

Root in F 73: relief of *Pradong*: pain in bone, joint swelling (M. Liad)

Stem in F 34: increase milk secretion with tendon pain (M. Liad)

Stem or root in F 52: treatment of *Kho sabun* (M. Liad)

Folk medicine in other parts of Thailand:

Stem bark: antipyretic, treatment of measles (127) and venereal diseases (136)

Wood: antipyretic, treatment of measles (127)

Leaf: tonic, for accelerating lochial discharge, treatment of venereal diseases (136)

Root in formula: antipyretic, antitussive, treatment of stomachache (156), peptic ulcer and cancer (41)

Stem in formula: antipyretic, antitussive, treatment of stomachache (156)

Lygodiaceae

71. *Lygodium flexuosum* (L.) Sw. (180)

Thai-Khmer name: Trom (ตรม)



Thai name: Ya yai phao (หญ้ายายเถา) (113)

Other name: Climbing fern

Plant description: Climbing fern, frond pinnately compound, sporangia indusium

Authentic specimen: PBM05028

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root: treatment of *Pue* (M. Liad); soaked a handful of roots in water for 5 minutes and take the supernatant.

Thai traditional medicine:

Stem: treatment of bruise; detoxification, especially for poisonous insect bite (120)

Folk medicine in other parts of Thailand:

Root: tonic (154), treatment of muscular pain, waist pain (46) and vaginal bleeding (51)

Root in formula: treatment of internal injury, burns (41) and venereal diseases (51)

Whole plant: anti-inflammatory for poisonous insect bite (156)

Whole plant in formula: treatment of muscular pain (51)

Stem: treatment of pain after delivery (46), muscular pain and waist pain (46)

Leaf: anti-inflammatory for poisonous insect bite (58), treatment of pains after delivery (46) and pains (46)

Lythraceae (Punicaceae)

72. *Punica granatum* L. (95)

Thai-Khmer name: Tap tim (ต๋ับติม)



Thai name: Thap thim (ทับทิม) (113)

Other name: Pomegranate

Plant description: Shrub, simple leaf, solitary flower, berry

Authentic specimen: PBM05004

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 65: relief of *Kra dao kra nong* (M. Kid)

Folk medicine in other parts of Thailand:

Root: treatment of *Tan, Saang* (ตาน, ซาง) (59)

Root in formula: treatment of toxic fever (127), specific type of fever (ແຕ້ໄຟ ທຳມະລາ) (134) and hemorrhoids (41)

Stem bark: relief mouth pain (129)

Stem bark in formula: treatment of hemorrhoids (41)

Twig: antidiarrheal (31, 45), treatment of stomachache (45)

Twig in formula: treatment of toothache and *Tan, Saang* (ตาน, ซาง) (41)

Mesocarp: antipyretic (124)

Leaf: antidiarrheal, antipyretic, anti-flatulent, treatment of *Kra-sai* (กระษัย), *Tan, Saang* (ตาน, ซาง) and vomit (59)

Stem: antidiarrheal, tonic after delivery (59)

Whole plant: antipyretic (129), treatment of hypertension (129)

Fruit: antidiabetic, treatment of vomit (59)

Juice: treatment of painful eyes (59)

Wood in formula: treatment of hemorrhoids (41)

Leaf in formula: antimalarial (141)

Malvaceae

73. *Abutilon indicum* (L.) Sweet var. *indicum* (95, 97)

Thai-Khmer name: Kan trum (กันตรึม)



Thai name: Ma kong khao (มะก่องข้าว) (113)

Other names: Chinese bell flower, Country mallow (113)

Plant description: Undershrub, simple leaf, solitary flower, capsule

Authentic specimen: PBM04994

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 4: relief of bruises and sprains (M. Liad)

Root in F 76: treatment of *Pue* (M. Liad)

Root in F 42, 50: treatment of *Kho sabun* (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Whole plant: treatment of cramps (13)

Folk medicine in other parts of Thailand:

Whole plant: treatment of hemorrhoid (125)

74. *Sida acuta* Burm.f. (95)**Thai-Khmer name:** Kan trong bai so cha mon (กันตรองใบชอชะโมล)

Thai name: Ya khat bai yao (หญ้าขัดใบยาว) (113)**Other name:** Broom weed (113)**Plant description:** Undershrub, simple leaf, solitary flower or densely crowded on short side shoots, mericarp**Authentic specimen:** PBM04993**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**Root in F 41-57: treatment of *Kho sabun* (M. Liad)Root in F 61: treatment of *Kho sabun* (M. Sawoei)

Root in F 82-83: treatment of vertigo (M. Phayak)

Thai-Khmer folk medicine in Khok Phayuung village:

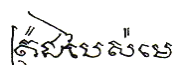
Root in formula: to treat food poisoning (13)

Folk medicine in other parts of Thailand:

Leaf: treatment of rashes (122), abscesses (45)

Root in formula: antipyretic (59), appetizer (29), treatment of shock following opium smoking overdose (34)

Whole plant in formula: antipyretic (59)

75. *Sida rhombifolia* L. (95)**Thai-Khmer name:** Kan trong bai so (กันตรองใบชอ)

Thai name: Ya khat (หญ้าขัด)**Other names:** Paddy's Lucerne, Queensland hemp (113)**Plant description:** Undershrub, simple leaf, solitary flower, mericarp**Authentic specimen:** PBM05094**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**Root in F 41-43, 49-50, 57: treatment of *Kho sabun* (M. Liad)Root in F 61: treatment of *Kho sabun* (M. Sawoei)

Root in F 83: treatment of vertigo (M. Phayak)

Thai-Khmer folk medicine in Khok Phayuung village:

Root in formula: to treat food poisoning (13)

Folk medicine in other parts of Thailand:

Root: antipyretic after delivery (46), antidysenteric (162), treatment of hiccup (63) and venereal diseases (141)

Root in formula: antipyretic (32), treatment of peptic ulcer (41), shock from overdose of opium smoking (34)

Whole plant: antipyretic in children (33)

Whole plant in formula: antimalarial (59)

76. *Urena lobata* L. (181)

Thai-Khmer name: Ai cha ruk (ไอชะรูก)

ไอลชะรูก

Thai name: Khi khrok (ขี้กรอก) (113)

Other name: Caesarweed

Plant description: Undershrub, simple leaf, solitary flower, mericarp

Authentic specimen: PBM05048

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 82: treatment of vertigo (M. Phayak)

Thai-Khmer folk medicine in Khok Phayuung village:

Root: treatment of urinary stone (13)

Thai traditional medicine:

Root: antipyretic, treatment of nephropathy, oozing eczema due to lymphatic disorders, detoxification (118)

Whole plant: diuretic (118)

Leaf: antitussive, treatment of toxic sputum (118)

Folk medicine in other parts of Thailand:

Root: use to prevent abortion (46, 141), drug for antenatal care (46), to against food poisoning (122), antipyretic (57), antitussive (52), anti-flatulent (38), antidiarrheal (122), antidysenteric (127, 134), treatment of abscesses (125), stomachache during pregnant (29), urethral stones (122) and venereal diseases (125, 141)

Root in formula: antipyretic, treatment of red or painful eyes, leukorrhea, menstrual cramps and stomachache during menstruation, *Phit kabun* (ผิดกะบูน), tendon pain (41) and gonorrhea (37)

Whole plant: treatment of blur vision, blepharitis (59) and cancer (129)

Leaf: hemostatic (46), antitussive, expectorant (124), treatment of rashes, wounds (122) and menstrual disorders (29, 47)

Flower: to prevent cracked lip (49), treatment of rashes and wounds (122)

Stem: to treat food poisoning, antidiarrheal (122), antidysenteric (127, 134), treatment of urethral stones (122)

Malvaceae-Grewioideae (Tiliaceae)

77. *Microcos tomentosa* Sm. (95, 199)

Thai-Khmer name: Pli plia (ปลีเปลี้ย)



Thai name: Phlapphla (พลับพล่า) (113)

Plant description: Tree, simple leaf, inflorescence, drupaceous fruit

Authentic specimens: PBM05037, PBM05038

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem in F 3: treatment of blur vision (M. Liad)

Stem in F 70: treatment of leukorrhea (M. Phayak)

Folk medicine in other parts of Thailand:

Whole plant: detoxification (129)

Wood: use as diuretic, treatment of nephropathy (127)

Wood in formula: treatment of bronchial asthma (128) and bodily discomfort (132)

Fruit: antidote for *Kloi* (กลอย) (*Dioscorea hispida* var. *hispida*) toxic (185)

Stem in formula: stimulate milk secretion, treatment of jaundice (138)

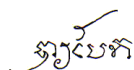
Flower in formula: treatment of herpes simplex and herpes zoster (142)

Root in formula: stimulate milk secretion, treatment of jaundice (138)

Melastomaceae

78. *Osbeckia stellata* var. *crinita* (Benth. ex Naudin) C. Hansen (182)

Thai-Khmer name: Bai baek (บายแบก)



Thai name: En a khon (เอ็นอ้าขน) (113)

Other name: Starry osbeckia

Plant description: Shrub, simple leaf, inflorescence, capsule

Authentic specimen: PBM05000

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root: treatment of *Saang* (M. Liad)

Root in F 46, 48: treatment of *Kho sabun* (M. Liad)

Folk medicine in other parts of Thailand:

Root: element tonic, tonic (127), treatment of *Phit kabun* (ผิดกะบูน) (51)

Root in formula: promote involution of uterus after childbirth (51)

Leaf: element tonic, tonic (127)

79. *Memecylon edule* Roxb. (183)

Thai-Khmer name: Phlong (พลอง)



Thai name: Phlong mueat (พลองเหมือด) (113)

Other name: Delek air

Plant description: Shrubby tree, simple leaf, inflorescence, berry

Authentic specimens: PBM04995, PBM04996

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem bark: tonic (M. Phayak); chewed 2-3 stem barks, sipped the juice and spited the residue out.

Thai-Khmer folk medicine in Khok Phayuung village:

Leaf: antipruritic (13)

Folk medicine in other parts of Thailand:

Stem: treatment of toxic fever (148)

Stem in formula: antitussive (151), antipyretic (132), treatment of bronchial asthma (128)

Root: treatment of stomachache (50)

Root in formula: antipyretic (132), treatment of tuberculosis (132) and *Pradong* (ประดง) (128)

Stem bark and Twig: treatment of mouth pain (148)

Leaf: antipyretic (63)

Wood in formula: treatment of *Phit samdang bab krabun kao muek* (ผิดสำแดงแบบกระบุงเข้าหมึก) (150)

Meliaceae

80. *Azadirachta indica* A.Juss. var. *siamensis* Valetton (144)



Thai name: Sadao (สะเดา) (113)

Other name: Siamese neem tree (113)

Plant description: Tree, compound leaf, inflorescence, drupaceous fruit

Authentic specimen: PBM04999

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Fruit in F 22: killing head-lice (M. Phayak)

Thai-Khmer folk medicine in Khok Phayuung village:

Stem bark: antiAIDS (13)

Stem bark: for headache, antipyretic (14)

Thai traditional medicine:

Young fruit: anthelmintic, treatment of hemorrhoid and disorders of urination (120)

Stem bark: antidiarrheal, antidyenteric (120)

Root: emetic, antipyretic, treatment of skin disease (120)

Flower: element tonic (120)

Petiole: antipyretic (120)

Folk medicine in other parts of Thailand:

Stem bark: antidiarrheal (124, 125), antidysenteric, antipyretic (124), treatment of wounds (63)

Stem bark in formula: anti-flatulent (63)

Flower, twig: appetizer (124)

Leaf: element tonic, use to promote digestion (124), treatment of peptic ulcer (122), blisters, bump and itchy hives on the skin (41)

Leaf in formula: treatment of fever during first few weeks after the delivery (34)

Stem in formula: expectorant, treatment of pulmonary diseases, (151)

Root in formula: treatment of liver disease (41)

Petiole in formula: antimalarial (52), antiAIDS (59), treatment of cancer and constipation (59)

Wood in formula: expectorant, treatment of pulmonary diseases (151)

Menispermaceae

81. *Tiliacora triandra* (Colebr.) Diels (184)

Thai-Khmer name: Ra yia tom (ระยือทม)

အာရီယာတမ်

Thai name: Thao yanang (เถาย่านาง) (113)

Plant description: Climber, simple leaf, inflorescence, aggregate fruit (113)

Authentic specimen: PBM04997

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Leaf: treatment of gall stone (M. Liad)

Stem in F 20: treatment of gall stone (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Root: antipyretic (13)

Root in formula: expectorant (13)

Thai traditional medicine:

Root: ingredient in *Ya ha rak* (ยาห้าราก), antipyretic, detoxification (119)

Folk medicine in other parts of Thailand:

Root: antipyretic (50, 59, 123, 129), for accelerating lochial discharge (59), detoxification of alcohol, treatment of smallpox (123)

Root in formula: antipyretic (41, 129), antimalarial (59, 162), for woman after delivery, treatment of headache, aphthous ulcer, typhoid fever, abscesses, paralysis and *Phit kabun* (ผิดกะบูน) (41)

Stem: hemostatic (136), detoxification (63)

Leaf: hair tonic (63), antipyretic (123, 124), hemostatic (136), detoxification of alcohol, treatment of smallpox (123), impetigo and dyspeptic discomfort (39)

Whole plant: treatment of *Bat tayak na fai* (บาดทะยักหน้าไฟ) after delivery, (59)

Fruit in formula: Use as antipruritic (185)

82. *Tinospora crispa* (L.) Hook.f. & Thomson (95, 184)

Thai-Khmer name: Ra wing (ระเวียง)

ระเวียง

Thai name: Bora phet (บอระเพ็ด) (113)

Other name: *Tinospora* stem

Plant description: Woody climber, simple leaf, no sample, no sample

Authentic specimen: HWR00007

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem in F 81: tonic (M. Liad)

Thai traditional medicine:

Stem: diaphoresis, antipyretic, treatment of aphthous ulcer, thirst (119)

Leaf: treatment of sprains and abscesses (119)

Folk medicine in other parts of Thailand:

Stem: antitussive, expectorant (130), appetizer (45, 63, 124), relieve inflammation from mite and tick bites (45), antipyretic (59, 123, 124), anti-aging (163), for longevity (45, 124, 164), anti-flatulent (33), carminative (122), antidiabetic (39, 59), antipruritic (45), for malarial prevention, as blood tonic (135), tonic (29, 39, 122, 154), blood tonic (45), skin tonic (29), diaphoresis (124), treatment of disorders

of elements (123), aphthous ulcer (124), insomnia (127), weakness (34), pains (59), hypertension (59, 125), stomachache (45, 154), jaundice (163) and hemorrhoid (125)

Stem in formula: antimalarial (49), antidiabetic (34, 41), for longevity (127), treatment of toothache, *Tan, Saang* (ตาน, ซาง) (41), typhoid fever (33, 45) and hemorrhoid (138)

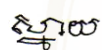
Leaf: treatment of peptic ulcer, wounds (45)

Fruit: antipyretic, disorders of elements (123)

Moraceae

83. *Streblus asper* Lour. (96, 144)

Thai-Khmer name: Sa nai (สะนาย)



Thai name: Khoi (ข่อย) (113)

Other names: Siamese rough bush, Tooth brush tree (113)

Plant description: Tree, simple leaf, inflorescence, fleshy fruit

Authentic specimen: PBM05002

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 51: treatment of *Kho sabun* (M. Liad)

Root in F 64: treatment of *Kom ka nong* (M. Liad)

Thai traditional medicine:

Leaf: laxative (118)

Stem bark: antidiarrheal, treatment of bleeding gum, skin disease, wounds, disease of bones and surrounding tissues and hemorrhoid (118)

Seed: for longevity, element tonic, appetizer, treatment of normal *Wata* found in external and internal gastrointestinal tract (118)

Folk medicine in other parts of Thailand:

Leaf: anti-flatulent (128), treatment of red or painful eyes (41), bleeding gum (164) dysmenorrheal (124) and *Phit samdang* (พิดตำแดง) (59)

Leaf in formula: treatment of gall stone (139)

Stem bark: to promote healthy teeth (124), as element tonic (131), oral antiseptic, antipyretic, antidiarrheal, for longevity (123), treatment of dental caries (51, 124, 130), bleeding gum (131, 136) and swollen gum (131)

Stem bark in formula: treatment of bruise and sprains, hemorrhoids (41)

Seed: element tonic (131), oral antiseptic, for longevity, antipyretic, antidiarrheal (123), treatment of bleeding gum and swollen gum (131)

Wood: oral antiseptic, antipyretic, for longevity, antidiarrheal (123)

Wood in formula: antipyretic (41), for longevity (164), treatment of chicken pox, bruise and sprains and hemorrhoids (41)

Whole plant: antipyretic, antimalarial (59), treatment of halitosis (41), *Phit samdang* (ผิตสำแดง) and torpid, (59)

Whole plant in formula: treatment of bronchial asthma (126) and leukorrhea (41)

Stem: treatment of *Phit samdang* (ผิตสำแดง) (59)

Stem in formula: treatment of bronchial asthma (127)

Root in formula: cardiogenic, stimulate milk secretion, treatment of tuberculosis, *Phit kabun* (ผิตกะบูน) (41), specific type of fever (ไข้ท่ามะลาถักถัก) (52), abscesses and hemorrhoids (41)

Myrsinaceae

84. *Ardisia crenata* Sims var. *crenata* (186)

Thai-Khmer name: Bat pra toen (บาตรประตือน)



Thai name: Ta kai bai kwang (ตาไก่ใบกว้าง) (113)

Other names: Coralberry, Spiceberry, Hen's eyes

Plant description: Shrub, simple leaf, inflorescence, drupaceous fruit

Authentic specimen: PBM04992

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 74: treatment of *Pue* (M. Liad)

Folk medicine in other parts of Thailand:

Root: antipyretic (36, 50, 152), appetizer (127), to treat a disease of fingernails (125)

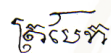
Root in formula: tonic (132), diuretic (52), treatment of jaundice (138)

Stem: treatment of jaundice (138)

Myrtaceae

85. *Psidium guajava* L. (95, 187)

Thai-Khmer name: Phae ka baek (แพะกะแบก)



Thai name: Farang (ฝรั่ง) (113)

Other name: Guava (113)

Plant description: Tree, simple leaf, solitary flower, berry

Authentic specimen: PBM05001

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Twig: antidiarrheal (M. Sawoei); decoction 7 twigs with small amount of salt, take the supernatant.

Thai-Khmer folk medicine in Khok Phayuung village:

Leaf: treatment of wounds after delivery (14)

Thai traditional medicine:

Leaf: antidiarrheal, antidysenteric, contraceptive (119)

Root: diuretic, treatment of disorders of urination (119)

Folk medicine in other parts of Thailand:

Twig: antidiarrheal (31, 46), treatment of stomachache in children (34) and peptic ulcer (47)

Twig in formula: antipyretic (45)

Stem bark: treatment of wounds (138)

Stem bark in formula: antidiarrheal (53)

Fruit: antidiarrheal (58), antidysenteric (124), laxative (58), treatment of bleeding per gum (124)

Fruit in formula: treatment of stomachache (34)

Root: anti-inflammatory for poisonous insect bite (125), treatment of *Phit kabun* (ผิดกะบูน) (46) and menstrual disorders (47)

Stem: tonic, appetizer (126), antidiarrheal (63)

Branch: antidiarrheal (32)

Nyctaginaceae

86. *Boerhavia diffusa* L. (95, 188)

Thai-Khmer name: Pa tit ha mo (ปะติหะมอ)



Thai name: Phak khom hin (ผักขมหิน) (113)

Other name: Spreading hog-weed (113)

Plant description: Herb, simple leaf, inflorescence, anthocarp clavate

Authentic specimen: PBM5003

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Whole plant: treatment of fever in children (Mor Liad); crushed a whole plant, added more water, used to take a bath.

Palmae (Arecaceae)

87. *Areca catechu* L. (97, 153)

Thai-Khmer name: Sa la (สลา)



Thai name: Mak (หมาก) (113)

Other names: Areca palm, Betelnut palm (113)

Plant description: Palm, compound leaf, inflorescence, drupaceous fruit

Authentic specimen: PBM05054

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 25: treatment of hemorrhoids with bloating, stomach pain and bloody stool (M. Liad)

Endosperm in F 38: treatment of intestinal worms (M. Liad)

Thai traditional medicine:

Fruit: antidiarrheal, antipyretic, diaphoresis, treatment of vomit, aphthous ulcer (120)

Leaf: antipyretic, treatment of itching (120)

Folk medicine in other parts of Thailand:

Endosperm: use to heal umbilicus wound of the new born baby (34), skin disease (41)

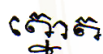
Endosperm in formula: anti-inflammatory for oedema (142), treatment of hepatomegaly (127), cancer (41), herpes zoster (142), hepatomegaly (134), blisters, bump and itchy hives on the skin (41)

Root: promote healthy teeth and gum (124), antidiabetic (63)

Root in formula: treatment of hemorrhoids (41)

88. *Borassus flabellifer* L. (97)

Thai-Khmer name: Tanot (ตะโหนด)



Thai name: Tan (ตาล) (113)

Other names: Palmyra palm, Lontar palm, Fan palm, Brab palm (113)

Plant description: Palm, compound leaf, inflorescence, drupaceous fruit

Authentic specimen: PBM05051

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root: treatment of bleeding gum (M. Phayak); wormed 2-3 leaves over embers, ground, squeezed for the juice and applied to the gum.

Root in F 25: treatment of hemorrhoids with bloating, stomach pain and bloody stool (M. Liad)

Male inflorescences in F 21: treatment of gall stone (M. Liad)

Young leaf, root in F 40: relief of joint pain (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Male inflorescences in formula: treatment of oedema and abscesses (14)

Thai traditional medicine:

Male inflorescences: treatment of *Saang*, *Tan* (119)

Folk medicine in other parts of Thailand:

Root: antipyretic, antidiabetic (122), treatment of internal injury (63)

Root in formula: antipyretic (142), treatment of difficulty walking and standing and lack of appetite in elderly (41)

Male inflorescences: antipruritic (39)

Male inflorescences in formula: antidiabetic, treatment of blisters, bump and itchy hives on the skin (41)

Petiole: treatment of aphthous ulcer (124)

Petiole in formula: treatment of paralysis (41)

Flower: antipyretic, antidiabetic (122), treatment of internal injury (63)

Fruit in formula: antidiabetic (41)

89. *Cocos nucifera* L. var. *nucifera* (97)

Thai-Khmer name: Dong (โดง)



Thai name: Ma prao (มะพร้าว) (113)

Other name: Coconut (113)

Plant description: Palm, compound leaf, inflorescence, drupaceous fruit

Authentic specimen: HWR00003

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Fruit in F 36: treatment of intestinal worms (M. Liad)

Coconut juice in F 19: treatment of fever in children (M. Phayak)

Coconut juice in F 37, 38: treatment of intestinal worms (M. Liad)

Receptacle in F 21: treatment of gall stone (M. Liad)

Root in F 25: treatment of hemorrhoids with bloating, stomach pain and bloody stool (M. Liad)

Stem bark in F 48: treatment of *Kho sabun* (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Fruit: treatment of chronic ulcer (14)

Folk medicine in other parts of Thailand:

Fruit: antidiarrheal, antipyretic, hemostyptic (125)

Coconut juice: tonic, diuretic, treatment of weakness (124)

Coconut juice in formula: treatment of blisters, bump and itchy hives on the skin and hemorrhoid (41)

Inflorescences: treatment of impotency (125)

Root: treatment of erysipelas (39)

Fixed oil in formula: treatment of ringworm and tinea versicolor (142)

Root in formula: antidiabetic (41), antipyretic (142)

Kernel in formula: treatment of varicose vein (142)

Phyllanthaceae (Euphorbiaceae)

90. *Breynia vitis-idaea* (Burm.f.) C.E.C.Fisch. (172)

Thai-Khmer name: Ta min tri tom (ตะมิลไตรทอม)



Thai name: Phak wan tua phu (ผักหวานตัวผู้) (113)

Other name: Mountain coffee bush

Plant description: Shrubby tree, simple leaf, solitary or several in axillary racemes, capsule

Authentic specimens: PBM04940, PBM04941

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem: treatment of *Kan sa lak* (M. Phayak); decoction a handful of stems, take the supernatant.

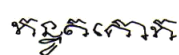
Folk medicine in other parts of Thailand:

Leaf: for woman after delivery (125)

Root: for woman after delivery (125), treatment of *Lom phit duean* (ลมพิษเดือน) (34)

91. *Phyllanthus amarus* Schumach. & Thonn. (173)

Thai-Khmer name: Kan tut kok (กันตุ๊ดโก๊ก)



Thai name: Luk tai bai (ลูกใต้ใบ) (113)

Other names: Black catnip, Carry me seed, Child pick-a-back, Gale of wind, Gulf leaf flower, Hurricane weed, Shatterstone, Stone breaker

Plant description: Herb, simple leaf, solitary flower, solitary in female flower and fascicle in male flower, loculicidal capsule

Authentic specimen: PBM05007

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root: treatment of *Saang* (M. Yian); ground a root and applied to the oral surface and the tongue.

Whole plant in F 21: treatment of dysenteric (M. Phayak)

Folk medicine in other parts of Thailand:

Whole plant: antidiabetic (34, 125), antimalarial, chronic pyrexia (125), antipyretic (58)

Whole plant in formula: antidiabetic (41, 51, 127), antipyretic (142), antidiarrheal, anti-inflammatory for poisonous insect bite, treatment of dizziness and vomit (128)

Root: treatment of pains (139)

Root in formula: treatment of uterus hernia (41)

Stem: treatment of pains (139)

N/A: treatment of urethral stones (122)

Leaf in formula: treatment of uterus hernia (41)

Fruit in formula: treatment of nephropathy (41)

Polygalaceae

92. *Xanthophyllum lanceatum* J.J.Sm. (190)

Thai-Khmer name: Kan sang (กันแสง)



Thai name: Chum saeng (ชุมแสง) (113)

Plant description: Tree, simple leaf, inflorescence, indehiscent fruit

Authentic specimen: PBM05042

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem in F 20: treatment of gall stone (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Stem bark: treatment of oozing eczema due to lymphatic disorders (14)

Thai traditional medicine:

Stem: treatment of skin disease, and hemorrhoid, detoxification (119)

Folk medicine in other parts of Thailand:

Root: antipyretic (130)

Stem in formula: antipruritic (50)

Rhamnaceae

93. *Ventilago* sp. (96)

Thai-Khmer name: Tam ling khao (ตำลิงขาว)



Plant description: Climber, simple leaf, inflorescence, nut with apical wing

Authentic specimen: PBM05047

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem in F 68: treatment of *Kra-sai* (M. Phayak)

Stem in F 72: treatment of muscular pain (M. Phayak)

Rhizophoraceae

94. *Carallia brachiata* (Lour.) Merr. (191)

Thai-Khmer name: Tra mang (ตระเมง)

ไทรช้าง

Thai name: Chiang phra nang ae (ช้างพรานางแอ) (113)

Plant description: Tree, simple leaf, inflorescence, pulpy

Authentic specimen: PBM05012

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Wood in F 31: increase milk secretion to post-labor with chest and waist pain and congest lochial after deliver (M. Liad)

Wood in F 32: increase milk secretion to post-labor with chest pain and dry cough (M. Liad)

Wood in F 71: appetizer (M. Phayak)

Thai-Khmer folk medicine in Khok Phayuung village:

Stem: tonic, appetizer (13)

Stem in formula: against food poisoning (13), appetizer after delivery (14)

Thai traditional medicine:

Stem bark: antipyretic treatment of aphthous ulcer, thirst (118)

Folk medicine in other parts of Thailand:

Wood: anaesthesia in hands and feet (39), treatment of jaundice (130)

Stem: antipyretic (127)

Stem bark: anaesthesia in hands and feet (39), treatment of jaundice (130)

Root: antipyretic, treatment of paralysis (142)

Rubiaceae

95. *Ixora coccinea* L. (96, 192)

Thai-Khmer name: Kan chul kra hom (กันจูลกระชอม)

កង្កែបក្រហម

Thai name: Khem farang (เข็มฝรั่ง) (113)

Other name: Flame flower (113)

Plant description: Shrub, simple leaf, inflorescence, drupaceous fruit

Authentic specimen: PBM05013

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 26: treatment of diarrhea, weight loss, abdominal bloating and enlargement (M. Phayak)

Root in F 44, 56: treatment of *Kho sabun* (M. Liad)

Root in F 60: treatment of *Kho sabun* (M. Phayak)

96. *Ixora finlaysoniana* Wall. & G. Don (96, 192)

Thai-Khmer name: Chun so (จูลซอ)

កង្កែបស្វាយ

Thai name: Khem phuang khao (เข็มพวงขาว)

Other name: Siamese white ixora (113)

Plant description: Shrubby tree, simple leaf, inflorescence, drupaceous fruit

Authentic specimen: PBM 05011

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 44, 56: treatment of *Kho sabun* (M. Liad)

Root in F 60: treatment of *Kho sabun* (M. Phayak)

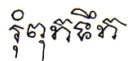
Root in F 75: treatment of *Pue* (M. Liad)

Thai traditional medicine:

Root appetizer, treatment of eye diseases (118)

Folk medicine in other parts of Thailand:

Root: treatment of tuberculosis (132)

97. *Kailarsenia hygrophila* (Kurz) Tirveng. (192)**Thai-Khmer name:** Lum puk tuek (ลุมพุกตึก)**Thai name:** Phut pa (พุดป่า) (113)**Plant description:** Shrubby tree, simple leaf, inflorescence, berry**Authentic specimen:** PBM 05010**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**Root in F 75: treatment of *Pue* (M. Liad)**98. *Nauclea orientalis* (L.) L. (96, 144)****Thai-Khmer name:** Ta kao (ตะเคา)**Thai name:** Kan lueang (ก้านเหลียง) (113)**Other names:** Leichhardt tree, Cheesewood, Yellow cheesewood, Canary cheesewood**Plant description:** Tree, simple leaf, inflorescence, berry**Authentic specimen:** PBM05014**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Leaf: treatment of polyposis or wounds lesion in nasal cavity (M. Phayak); rolled 3-5 leaves, wrapped with dried banana leaf like a cigarette then smoked.

Thai-Khmer folk medicine in Khok Phayuung village:

Root: hematinic (14)

Folk medicine in other parts of Thailand:

Leaf: anti-flatulent (63)

Leaf in formula: treatment of *Phit kabun* (ผิตกะบูน) (41)

Twig: anti-flatulent (63)

Branch or wood: treatment of jaundice (130)

Wood in formula: tonic, blood tonic, appetizer, antimalarial, treatment of typhoid fever, internal injury, tendon pain, *Phit kabun* (ผิตกะบูน), relieve alcoholism symptoms (41)Stem bark in formula: treatment of *Phit kabun* (ผิตกะบูน) (41)

Root in formula: treatment of liver disease and liver fluke (41)

99. *Psychotria* sp. (193)

Thai-Khmer name: Proem (เปริม)



Plant description: Tree, simple leaf, inflorescence, syncarp globose

Authentic specimen: PBM05009

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 56: treatment of *Kho sabun* (M. Liad)

100. *Xantonnea parvifolia* (Kuntze) Craib (194)

Thai-Khmer name: Kan tri bak dai (กระไตรбакได)



Thai name: Khrop chakkawan (ครอบจักรวาล), Chiang muen (เจียงมูน) (113)

Plant description: Shrub, simple leaf, inflorescence, fleshy fruit

Authentic specimen: PBM05008

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 25: treatment of hemorrhoids (M. Liad)

Stem or root in F 52: treatment of *Kho sabun* (M. Liad)

Root in F 45, 57: treatment of *Kho sabun* (M. Liad)

Root in F 83: treatment of vertigo (M. Phayak)

Leaf or root in F 39: treatment of intestinal worms (M. Liad)

Leaf or root in F 40: relief of joint pain (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Root, stem bark: prevent dental caries (13)

Folk medicine in other parts of Thailand:

Stem bark: treatment of fever associated with menstruation (131)

Stem bark in formula: treatment of jaundice (50)

Root in formula: treatment of bodily discomfort (132), paralysis (50) and kidney stone (138)

Stem in formula: antiAIDS, treatment of *Pradong* (ประดง) (50)

Rutaceae

101. *Atalantia monophylla* DC. (181)

Thai-Khmer name: Krot proei (ไกรจเปรย)

ក្រូចប្រើ

Thai name: Manao phi (มะนาวผี) (113)

Other names: Indian atalantia, Wild lime

Plant description: Tree, simple leaf, inflorescence, berry

Authentic specimen: PBM05019

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem bark in F 17: treatment of fever (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Root: for dog bite (14)

102. *Clausena harmandiana* (Pierre) Guillaumin (96)

Thai-Khmer name: Pan ro mak (ปันไร่เมฆ)

ស្រូវមេ

Thai name: Song fa dong (สองฟ้าดง) (113)

Plant description: Shrub, compound leaf, inflorescence, berry

Authentic specimen: PBM05022

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 25: treatment of hemorrhoids (M. Liad)

Root in F 29: increase milk secretion for post-labor with back pain and waist pain (M. Liad)

Root in F 36: relief of insomnia or sleeplessness (M. Liad)

Root in F 55: treatment of *Kho sabun* (M. Liad)

Root in F 73: relief of *Pradong* (M. Liad)

Stem in F 67: treatment of *Kra-sai* (M. Liad)

Folk medicine in other parts of Thailand:

Root: antipyretic (128, 151), anti-flatulent (51), anti-inflammatory for poisonous insect bite (41, 151), to against food poisoning (138), treatment of headache (128), *Phit samdang* (ผิดสำแดง) (126, 128), hypermenorrhoea (39), muscular pain (51) and *Phit sam dang* (พิษสำแดง) (151), detoxification of snake poison (41)

Root in formula: anti-flatulent (128), antipyretic (41), antidiabetic (138), lactagogue (162), to against food poisoning (127), treatment of headache (41), bronchitis (127), treatment of blood flow from the nose constantly in man, menstruates continuously in woman (41), toxic fever (127), specific type of fever (ไข้ทำมะลา) (126), abscesses (41), *Pradong tao nom* (ประดงเต้านม) (128), blisters, bump and itchy hives on the skin, burns, *Phit kabun* (ผิดกะบูน) (41) and peptic ulcer (132), detoxification of snake poison (138)

Stem: anti-flatulent (63)

Leaf: anti-flatulent (148)

103. *Feroniella lucida* Swingle (96)

Thai-Khmer name: Kra sang (กระสัง)

ไครสัง

Thai name: Ma sang (มะสัง) (113)

Other name: Java feroniella

Plant description: Tree, compound leaf, inflorescence, berry

Authentic specimen: PBM05023

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Stem in F 17: treatment of fever (M. Liad)

Stem bark in F 19: treatment of fever in children (M. Phayak)

Stem bark in F 79: treatment of *Saang* (M. Phayak)

Folk medicine in other parts of Thailand:

Root: antipyretic (53)

104. *Glycosmis pentaphylla* (Retz.) DC. (111)**Thai-Khmer name:** Pliang (พลีแยง)**Thai name:** Khoei tai (เขยต่าย) (113)**Other name:** *Atista indica***Plant description:** Shrub, compound leaf, inflorescence, berry**Authentic specimens:** PBM05020, PBM05021**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Leaf in F 35: relief of insomnia or sleeplessness (M. Liad)

Folk medicine in other parts of Thailand:

Leaf: contraceptive (125)

Root: antipyretic (129), lactagogue (123), hematinic after delivery (142), treatment of abscesses, weeping scabiasis (123), herpes simplex (185), herpes zoster (125) and gonorrhea (142), detoxification of snake poison (127, 131, 134, 136, 185)

Flower, fruit: stimulate milk secretion, treatment of abscesses and weeping scabiasis (123)

105. *Micromelum minutum* Wight & Arn. (96, 111)**Thai-Khmer name:** Kan truk, Kan throk (กันตู้กหรือกันโทรัก)**Thai name:** Hatsa khun (หัตถ์คูน) (113)**Other name:** Lime berry**Plant description:** Shrubby tree, compound leaf, inflorescence, berry**Authentic specimens:** PBM05016, PBM05017, PBM05018**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Root in F 25: treatment of hemorrhoids (M. Liad)

Root in F 29: increase milk secretion for post-labor with back pain and waist pain (M. Liad)

Root in F 36: relief of insomnia or sleeplessness (M. Liad)

Root in F 67: treatment of *Kra-sai* (M. Liad)

Folk medicine in other parts of Thailand:

Root: treatment of gall stone (131)

Root in formula: antipyretic (37, 61), increase milk secretion (162), antidiarrheal (41), treatment of stomachache (61) and peptic ulcer (132)

Wood: treatment of abdominal discomfort (195)

Wood in formula: antipyretic (138), treatment of cancer and peptic ulcer (41)

Stem: treatment of muscular pain (130) and gall stone (131)

Stem bark: treatment of abdominal discomfort (195)

Whole plant: anti-flatulent (49), choleric (52)

106. *Naringi crenulata* Nicolson (111)

Thai-Khmer name: Pha ya ya (พญาชา)

ផ្កាយាយ

Thai name: Kra chae (กระเจาะ) (113)

Other name: Hesperethusa

Plant description: Shrubby tree, compound leaf, inflorescence, berry

Authentic specimen: HWR0011

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root or stem in F 36: relief of insomnia or sleeplessness (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Root: antidiarrheal (13)

Root: treatment of hysteropathy (13)

Thai traditional medicine:

Root: purgative (119)

Stem: antipyretic, treatment of any disorders or disease causing *Kra-sai* (กระษัย) and severe disorder of blood (119)

Leaf: treatment of epilepsy (119)

Folk medicine in other parts of Thailand:

Root: treatment of beriberi (138)

Root in formula: antipyretic (41, 50), tonic, treatment of headache, peptic ulcer (41), chicken pox (41, 50), *Phit kabun* (พืชกะบูน) (41) and cancer (138)

Stem: antipyretic (151), treatment of joint pain, aphthous ulcer and *Pradong* (ประดง) (128)

Stem in formula: antipyretic (41), antimalarial (52), treatment of peptic ulcer and *Phit kabun* (พิศกะบูน) (41)

Whole plant: treatment of sore throat and pain in bones and knees, gall stone and paralysis (41)

Whole plant in formula: treatment of patient with alcoholism symptoms (41)

Stem bark: relief of freckle (139)

Stem bark in formula: tonic (41), antipyretic (138)

Wood: antidiabetic (132), antipyretic (151), relief of freckle (139)

Wood in formula: blood tonic, lactagogue (41)

Leaf: antipyretic (138)

Sapindaceae

107. *Allophylus cobbe* (L.) Raeusch. (96, 196)

Thai-Khmer name: (ฮ้างจระม้อส)

អ្នកជ្រាប

Thai name: To sai (ต่อไส้) (113)

Other name: Tit berry

Plant description: Shrub, compound leaf, inflorescence, drupaceous fruit

Authentic specimen: BM05027

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root in F 13: treatment of difficult urination (M. Phayak)

Root in F 27: increase milk secretion after delivery (M. Phayak)

Root in F 71: to promote appetite (M. Phayak)

Thai-Khmer folk medicine in Khok Phayuung village:

Root, stem: to promote lochial discharge (14)

Root: for bodily discomfort, hematinic (14)

Thai traditional medicine:

Root: diuretic, treatment of tendon dysfunction (119)

Folk medicine in other parts of Thailand:

Root: diuretic (38), treatment of *Phit kabun* (ผิดกะบูน) (50), for patient with alcoholism symptoms (41)

Root in formula: treatment of stomachache (129)

Stem: treatment of morning sickness (38) and *Tan, Saang* (ตาน, ซาง) (52, 152)

Stem in formula: antipruritic (50)

Leaf: treatment of *Tan, Saang* (ตาน, ซาง) (52)

Wood: treatment of morning sickness (32)

108. *Lepisanthes rubiginosa* (Roxb.) Leenh. (196)

Thai-Khmer name: Chan lu (จันทน์)



Thai name: Ma huat (มะหวด) (113)

Plant description: Tree, compound leaf, inflorescence, drupaceous, indehiscent fruit

Authentic specimen: PBM05026

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root: treatment *Chue pua tom* (M. Liad); decoction a handful of roots, take the supernatant.

Stem bark in F 19: treatment of fever in children (M. Phayak)

Thai-Khmer folk medicine in Khok Phayuung village:

Root: antipyretic (13), to against food poisoning (14)

Stem bark: hematinic (13)

Thai traditional medicine:

Root: antipyretic, treatment of skin disease, internal inflammation (120)

Seed: treatment of *Tan, Saang* (ตาน, ซาง) and whooping cough (120)

Folk medicine in other parts of Thailand:

Root: antidiarrheal (55), antipyretic (125), treatment of hemorrhage, dysmenorrheal, nausea (125) and *Phit samdang* (ผิดสำแดง) (63)

Root in formula: antipyretic (138, 185), treatment of *Tan, Saang* (ตาน, ซาง) (128)

Stem: treatment of wounds (50)

Leaf: antipyretic in children (142)

Wood in formula: tonic (151)

Scrophulariaceae

109. *Scoparia dulcis* L. (96, 197)

Thai-Khmer name: Kan tae tue (กัญแดตุ้)



Thai name: Krot nam (กระตัญน้ำ) (113)

Other name: Macao tree (113)

Plant description: Herb, simple leaf, solitary flower, capsule

Authentic specimen: PBM05029

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Leaf and stem: tonic (M. Liad); decoction a handful of leaves and stems with a little amount of sugar, take the supernatant.

Root in F 47: treatment of *Kho sabun* (M. Liad)

Thai-Khmer folk medicine in Khok Phayuung village:

Whole plant: antipyretic (13)

Folk medicine in other parts of Thailand:

Stem: treatment of abscesses (63) and allergy (135)

Root: treatment of gall stone (31)

Root in formula: antipyretic (33)

Whole plant: hemostatic, antipyretic (34), treatment of muscular pain (34), *Tan, Saang* (ตาน, ซาง) (137, 142), peptic ulcer (29), skin disease (45), wounds (45), urticaria (29) and gall stone (45)

Whole plant in formula: treatment of muscular cramps (129) and bleeding per vagina (41)

Twig: treatment of blur vision (58)

Twig: treatment of wounds (58)

Leaf in formula: treatment of wounds (45)

Simaroubaceae

110. *Brucea javanica* (L.) Merr. (96, 198)

Thai-Khmer name: Samong (ส้มออง)

សមង

Thai name: Ratchadat (ราชดัด) (113)

Other name: Macassar kernels

Plant description: Shrub, compound leaf, inflorescence, drupaceous fruit

Authentic specimen: PBM05030

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Root: treatment of *Pue* (M. Liad); decoction a handful of roots, take the supernatant.

Thai traditional medicine:

Root: antidiarrheal, antitussive, antipyretic, anti-flatulent, treatment of muscular pain (120)

Fruit: to improve lymph quality, antipyretic, treatment of tympany, vertigo, bloody vomit, chest pain (120)

Leaf: anti-inflammatory for centipede and scorpion bite, treatment of abscesses, antifungal for ring worm, tinea versicolor and splenomegaly (120)

Folk medicine in other parts of Thailand:

Root: antimalarial (49), antidiarrheal, antitussive (123), antidiarrheal, antipyretic, detoxification of alcohol (132)

Root in formula: anti-flatulent (50), antidiabetic (138), antimalarial (49, 52), treatment of stomachache (50), gall stone (128) and hemorrhoid (138)

Fruit: antidiarrheal, antitussive, treatment of abscesses, tympanites (123) sore and scabies (125)

Leaf: antidiarrheal, antitussive, treatment of abscesses, tympany (123)

Wood in formula: antipyretic, antimalarial (41), treatment of headache, *Phit kabun* (พืชกะบูน) and liver fluke (41)

Stem in formula: antidiabetic, treatment of hemorrhoid (138)

111. *Harrisonia perforata* (Blanco) Merr. (96, 198)**Thai-Khmer name:** Kroen tria (เกรินเตี๋ย)**Thai name:** Khon tha (คนทา) (113)**Plant description:** Scandent shrub, compound leaf, inflorescence, drupaceous fruit**Authentic specimen:** PBM05031**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Fruit: use to clean the teeth (M. Phayak); chewed 3 fruits, sipped the juice and spit the residue out.

Thai-Khmer folk medicine in Khok Phayuung village:

Stem bark in formula: emetic (13)

Thai traditional medicine:

Stem and root: antidysenteric, antidiarrheal, antipyretic, treatment of aphthous ulcer and thirst (118)

Folk medicine in other parts of Thailand:

Fruit: antipruritic (34), treatment of toothache (34) and athlete's foot (49)

Stem bark: treatment of toothache (34)

Whole plant in formula: antipyretic (164)

Root in formula: antimalarial (138, 162), antidiabetic (138)

Solanaceae**112. *Datura metel* L. var. *fastuosa* (Bernh.) Danert (106)****Thai-Khmer name:** Phae khliak (แพเคลียก)**Thai name:** Lam phong ka salak (ลำโพงกาสลัก) (113)**Other name:** Thorn apple (113)**Plant description:** Undershrub, simple leaf, solitary flower, spiny capsule**Authentic specimen:** PBM05032**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**

Root in F 2: treatment of abscesses (M. Liad)

Root in F 23: treatment of hemorrhoids with abdominal and muscular pain and bloody stool (M. Liad)

Thai traditional medicine:

Seed: treatment of muscular pain and spasm, stomach pain, whooping cough and bronchial asthma (120)

Folk medicine in other parts of Thailand:

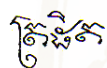
Fruit: treatment of muscular pain (122)

Leaf in formula: treatment of abscesses (41)

Vitaceae

113. *Cayratia trifolia* (L.) Domin (96)

Thai-Khmer name: Tra det (ตระเด็จ)



Thai name: Khruea phat sam (เครือพัดสาม) (113)

Plant description: Climber, compound leaf, inflorescence, berry

Authentic specimens: PBM05040, PBM05041

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Twig: treatment of abscesses (M. Phayak, M. Sawoei); ground a twig and applied externally to the abscess.

Thai-Khmer folk medicine in Khok Phayuung village:

Root in formula: treatment of abscesses and oedema (14)

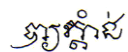
Stem in formula: treatment of abscesses, oedema and leukorrhea (14)

Folk medicine in other parts of Thailand:

Stem: treatment of swelling (59)

Latex: treatment of burns (59)

Root in formula: antipyretic (59)

Vitaceae (Leeaceae)**114. *Leea guineensis* G.Don (105)****Thai-Khmer name:** Bai ka dang (บายกะดั่ง)**Thai name:** Kradang nga daeng (กระดังงาแดง) (113)**Other name:** West indian holly**Plant description:** Shrub, compound leaf, inflorescence, compressed-globose**Authentic specimens:** PBM04977, PBM04978, PBM04979**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**Root in F 54: treatment of *Kho sabun* (M. Liad)Root in F 60: treatment of *Kho sabun* (M. Phayak)**Folk medicine in other parts of Thailand:**

Root: antidiarrheal (131, 136)

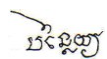
Root in formula: tonic (137)

115. *Leea macrophylla* Roxb. ex Hornem. (179)**Thai-Khmer name:** Klang (คลั่ง)**Thai name:** Phaya rak lo (พญารากหล่อ) (113)**Other name:** Snowflake plant**Plant description:** Shrub, compound leaf, inflorescence, berry**Authentic specimen:** PBM04980**Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:**Root: treatment of *Saang* (M. Yian); ground a root with small amount of water, applied the paste on oral surface and the tongue.

Zingiberaceae

116. *Zingiber montanum* (König) Link ex A. Dietr. (97)

Thai-Khmer name: Pu loei (ផ្កាឈូក)



Thai name: Phlai (พลาย) (113)

Other name: Cassumunar ginger

Plant description: Herb, simple leaf, inflorescence, globose capsule

Authentic specimen: PBM05043

Thai-Khmer folk medicine in Kanthararom and Lumpuk villages:

Rhizome: to prevent fever in children (M. Kid); ground a rhizome and applied the paste to the forehead of children.

Rhizome in F 17: treatment of fever (M. Liad)

Thai traditional medicine:

Rhizome: emmenagogue, antidysenteric, treatment of bruise and sprains, wounds, laxative, beriberi and bodily discomfort (119)

Folk medicine in other parts of Thailand:

Rhizome: for woman after delivery (45), blood tonic (59), antipyretic in children (31), antipyretic, antitussive (122), antipruritic (38, 156), anti-inflammatory for poisonous insect bite (57), anti-flatulent (31, 39, 124), carminative (124), antidysenteric (123), emmenagogue (124), treatment of menstrual disorders (124), red eyes, pain in the eyes (39), acne (59), colic, bone fracture (122), pains (29, 59, 128), bruise and sprains (39, 58, 59, 124), stomachache (32, 33, 123), and urticaria (125)

Rhizome in formula: treatment of skin disease, stomachache in children (32) and bodily discomfort (138)

Leaf: antidysenteric (123), anti-flatulent (39), treatment of red eyes, pain in the eyes (39), stomachache (123) and bruise and sprains (39)

Root: treatment of constipation (55)

Based on a comparison of the ethnobotanical data between Thai-Khmer people (in Kanthararom and Lumpuk villages) and *Pramuan sapphakhun ya thai wa duai phrueksachat watthuthat le satwatthu nana chanit* (ประมวลสรรพคุณยาไทย ว่าด้วย พฤษภชาติ วัตถุธาตุ และสัตตวัตถุณานาชนิด) (volume 1-3), 51 species were found to be used as medicines both at the study sites and in Thai traditional medicine (TTM).

In both studies, only 3 of these species were used for the same symptoms and from the same plant part: the leaves of *Crinum asiaticum* L. were used for the treatment of bruise and sprains, the leaves of *Annona squamosa* L. were used for killing head-lice, and the stem bark of *Sesbania grandiflora* (L.) Pers. was used as an antidiarrheal.

Two plants were reportedly used for the same indications but from different plant parts. At the study sites, the twig of *Polyscias fruticosa* (L.) Harms was used as antidiarrheal, whereas the leaves were reported for the same indication in TTM. Also, villagers used the fruits of *Acacia concinna* (Willd.) DC. as an antidandruff while TTM used the stem as a hair tonic and antidandruff.

At the Thai-Khmer villages, the roots of *Brucea javanica* (L.) Merr. were used for the treatment of *Pue* (which is a disorder manifested by fever, excessive internal heat, aphthous ulcer, vertigo and vomiting). In TTM, the roots of *Brucea javanica* (L.) Merr. have also been reported for fever treatment. These two studies support the role of *Brucea javanica* (L.) Merr. in the treatment of fever.

At the Thai-Khmer villages, *Sesbania grandiflora* (L.) Pers., *Anomianthus dulcis* (Dunn) J. Sinclair, and *Imperata cylindrica* (L.) Raeusch. were reportedly used as medicines in combination with other plants. In TTM, they were used alone. The stem bark or roots of *Sesbania grandiflora* (L.) Pers. was traditionally used in these villages in combination with other plants for the treatment of dysentery, while the TTM reported only the efficacy of the stem bark for the same symptoms. In the study sites, the roots and the stem of *Anomianthus dulcis* (Dunn) J. Sinclair have been combined with other plants to increase milk secretion. In TTM, the roots and the stem of *Anomianthus dulcis* (Dunn) J. Sinclair were also used for the same indications, but not in association with any other plant.

At the Thai-Khmer study sites, the root of *Imperata cylindrica* (L.) Raeusch. was reported in the formulation for the treatment of *Saang* (a disorder

manifested by fever with wounds in the mouth, appetite and weight loss, furred tongue and *Pue*). While in TTM, the root of *Imperata cylindrica* (L.) Raeusch. was used for the treatment of fever and aphthous ulcer. In both studies, these roots seem to be efficacious for at least these two symptoms, thus we can say that the roots of *Imperata cylindrica* (L.) Raeusch. is indicated for the treatment of fever and aphthous ulcer.

Among Thai-Khmer people in Khok Phayuung Village, Kaapchoeng District, Surin province (KKS) and the study sites, 39 species were used as medicinal plants. Only *Chromolaena odoratum* (L.) R.M.King & H.Rob. were used for the same indications and used the same plant parts in both areas. They reported that the leaves were used to stop bleeding. Two plant species were used for the same indications and used the same parts at both sites: the stem of *Anomianthus dulcis* (Dunn) J. Sinclair was used in combination with other plants to increase milk secretion and the roots of *Bixa orellana* L. were used to treat *Saang* at the study sites and fever at KKS. It also observed that the roots of *Bixa orellana* L. were used in combination with other plants for fever treatment by the Thai-Khmer people in both areas.

There were 6 plants that were used for the same indications but differed in the preparation methodology: The stem of *Cassytha filiformis* L. was used in combination with other plants for fever treatment at the study sites. The entire *Cassytha filiformis* L. plant was used for the same indications at KKS. For the treatment of abscesses, the young leaves of *Annona squamosa* L. were used at the study sites while the rhizome of *Annona squamosa* L. was used in combination with other plants at KKS. *Cassytha filiformis* L. was shown to be efficacious for the treatment of abscesses in both areas. The twig of *Cassytha filiformis* L. was used alone at the study sites, while the roots and stem of *Cassytha filiformis* L. were used in combination with other plants at KKS. One of the healers in the study sites claimed that the wood of *Carallia brachiata* (Lour.) Merr. was used in combination with other plants as an appetizer. At KKS, the stem of *Carallia brachiata* (Lour.) Merr. was used alone for the same indication. The stem bark of *Lepisanthes rubiginosa* (Roxb.) Leenh. was used in combination with other plants to treat fever in children from the Thai-Khmer villages in the study sites. But at KKS, only the root of *Lepisanthes rubiginosa* (Roxb.) Leenh. was used to treat fever. *Tamarindus indica* L.

was traditionally used for women as a post-partum treatment. At the study sites, the stem of *Tamarindus indica* L. was used alone to treat *Kho sabun*. At KKS, the stem bark of *Tamarindus indica* L. was used alone to treat post-partum wounds.

The different treatments used by the Thai-Khmer people in the two areas suggested that that botanical medical knowledge was strongly influenced by the environmental surroundings (49, 122, 200, 201). Their specific medicinal knowledge was gained over many centuries of practice.

A comparison between these study sites and folk medicine from other parts of Thailand, showed that the same parts of six plants were used for the same indication. The leaf of *Crinum asiaticum* L. was indicated for the treatment of bruises and sprains. This was confirmed by the studies of Kamwong (34) and Udomsirichakorn (63). Thai-Khmer healers claimed the efficacy of the stem and roots of *Buchanania siamensis* Miq. for the treatment of fever in children. In the study by Chuakul & Saralamp (51), the treatment of fever required the use of the roots, wood and stem bark. This suggests that the roots of *Buchanania siamensis* Miq. were used for the treatment of fever. The use of the leaves of *Annona squamosa* L. for killing head-lice was reported in 4 studies (58, 59, 63, 124), at both the study sites and TTM. The leaves of *Chromolaena odoratum* (L.) R.M.King & H.Rob. were commonly found to stop bleeding in many studies (29, 31-35, 38, 39, 45, 47, 49, 50, 55, 58, 59, 61, 63, 122-124, 126-128, 130, 135, 136, 154, 156). At the study sites, the villagers either crushed the leaves of *Chromolaena odoratum* (L.) R.M.King & H.Rob. or crushed the leaves and mixed them with white slaked lime before applying on the wound. The twig, stem bark, fruit and branch of *Psidium guajava* L. were widely used as an antidiarrheal (31, 32, 46, 53, 58, 63) by the Thai-Khmer people at the study sites. Finally, the roots of *Thunbergia laurifolia* Lindl. have been used for the treatment of *Pue* at the study sites and for the treatment of fever in the studies of Tongdonae (59) and Suksri (130). This suggests that the root of *Thunbergia laurifolia* Lindl. was indicated for the treatment of fever.

Seven plants were used in the formulation among the Thai-Khmer people at the study sites and used as single plants in other areas. At the study sites, the leaves of *Andrographis paniculata* (Burm.f.) Nees were used in combination with other

plants as a tonic. The studies of Inta (122) and Phueaknang (123) used only the leaves for the same purpose.

Aloe vera (L.) Burm.f. was always used as a single plant in the treatment of burns (29, 45, 47, 55, 57-59, 63, 122, 124). Mucilage from the leaves of *Aloe vera* (L.) Burm.f. was used in combination with the latex of *Jatropha multifida* L. to treat burns at the study sites.

The stem of *Gnetum montanum* Markgr. was used in combination with other plants at the study sites to treat muscular pain. It was used as a single plant in the study of Chuakul & Chaikaew (52). The stem of *Tinospora crispa* (L.) Hook.f. & Thomson was used in combination with other plants as a tonic. Four studies (29, 39, 122, 154), also created that tonic from the stem of *Tinospora crispa* (L.) Hook.f. & Thomson. The roots of *Allophylus cobbe* (L.) Raeusch. were used in combination with other plants to treat difficult urination. Chompror (38) reported its use as a single plant for the same indication.

The roots of *Lepisanthes rubiginosa* (Roxb.) Leenh were used in combination with other plants from Thai-Khmer villages for fever. Upho (125) reported that the root of *Lepisanthes rubiginosa* (Roxb.) Leenh. was used as single plant for the same indication. At the study sites, the rhizome of *Zingiber montanum* (König) Link ex A. Dietr. was used as a single plant to prevent fever in children and used in combination with other plants to treat fever in adults. Ponpim (31) and Inta (122) also found that the rhizome of *Zingiber montanum* (König) Link ex A. Dietr. was used to treat fever.

Seven plants were suggested to treat the same kind of symptoms or diseases. *Millingtonia hortensis* L.f. was found to be efficacious in the treatment of respiratory disorders. At the study sites, the stem of *Millingtonia hortensis* L.f. was used in combination with other plants to treat chest pains and uncomfortable breathing. The flowers of *Millingtonia hortensis* L.f. were used as an antitussive (123) and in the treatment of bronchial asthma (47).

Capparis micracantha DC. was often used to treat inflammations. At the study sites, the roots were used for the treatment of *Kra-sai*. In TTM, the roots and leaves were used to treat bruises and sprains and the stem was used for the treatment of 3 symptoms: bruises and sprains, *Pradong*, and cramps. Virapongse (41) reported

that its wood was used in combination with other plants to treat *Pradong* and paralysis.

The stem of *Salacia chinensis* L. was used for GI disorders. Thai-Khmer villagers used the stem in combination with other plants to treat abdominal bloating. The study of Chuakul & Saralamp (127) and Chuakul et al. (134) reported that its stem was used as a laxative.

The latex of *Jatropha multifida* L. was used for skin disorders. At the study sites, it was used as a single plant to stop bleeding and in combination with other plants to treat burns. Inta (122) reported that the latex of *Jatropha multifida* L. could be used to treat wounds.

The stem and roots of *Derris scandens* (Roxb.) Benth. were used to treat inflammation. They were used to relieve muscular pains at the study sites. Chuakul, et al. (129) reported that the stem only was used for the treatment of muscular cramps.

Harrisonia perforata (Blanco) Merr. was used for dental cavities. Its fruit was used to clean the teeth from Thai-Khmer villagers, while the stem bark was used to treat toothaches in the study of Kamwong (34). The healers used the roots of *Polyalthia evecata* (Pierre) Finet & Gagnep. in post-partum woman. It was used in combination with other plants to treat *Kho sbun* at the study sites; while it was used as single plant to increase milk secretion in two studies (128, 138). The stem and leaves of *Baliospermum solanifolium* (Geiseler) Suresh were used in combination with other plants and minerals to treat constipation. This was supported by the study of Chuakul et al. (134), who reported that the roots were used for their laxative effects.

A comparison between Thai-Khmer folk use, Thai traditional medicine and folk use in other parts in Thailand indicated that 9 species were interested: *Annona squamosa* L., *Azadirachta indica* A.Juss. var. *siamensis* Valetton, *Psidium guajava* L., *Crinum asiaticum* L., *Sesbania grandiflora* (L.) Pers., *Chromolaena odoratum* (L.) R.M.King & H.Rob., *Aloe vera* (L.) Burm.f., *Jatropha multifida* L and *Harrisonia perforata* (Blanco) Merr.

The effectiveness of 9 plants was confirmed by scientific research. Further study might be lead to discover of novel drugs.

***Annona squamosa* L. (Annonaceae)**

Killing head-lice is one of the uses for the *Annona squamosa* leaf. It has been confirmed by many studies in Thailand such as Tongdonae (59), Srisopa (124), Udomsirichakorn & Supaprom (63) and Sonsupub (58). In TTM, the young fruit was used as an anthelmintic, a treatment of hemorrhoids, and for urinary tract problems. The root was used as an emetic, antipyretic medicine and for the treatment of skin disease. Puapatanakul (202) studied the head-lice killing activity *in vitro* and *in vivo*. The study showed that the best preparation of the *Annona squamosa* L. was a mixture of the seeds and coconut oil in the ratio of 1:2. From this preparation, 98% of the lice were killed. However, it was noted in tests on rabbit skin, that a seed extract caused more irritation than a leaf extract (202).

Eventhough the leaf extract was not as effective for killing head-lice, it was suggested for the utilization in folk medicine because of the lower toxicity compared to other extracts.

***Azadirachta indica* A.Juss. var. *siamensis* Valeton (Meliaceae)**

From the study of Abdel-Ghaffar & Semmler (203), they found that a shampoo contained the *Azadirachta indica* A.Juss. var. *siamensis* Valeton seed extract as active ingredient could kill head-lice in children (4-17 years) without showing any side effect.

Interestingly, people in the study site used the fresh leaves of *Annona squamosa* with the fruits or roots of *Azadirachta indica* A.Juss. var. *siamensis* Valeton for better results. This combination has not been reported in other areas and has not been studied. Therefore, further study is required in order to confirm its efficacy. Azadirachtins, the compound found in the seeds of *Azadirachta indica* A.Juss. var. *siamensis* Valeton, might be the active compound for killing head-lice because it showed an ability to kill insects (204). Apart from azadirachtins, limonoid derivatives found in *Azadirachta indica* A.Juss. var. *siamensis* Valeton also showed the insecticidal activity (205).

***Psidium guajava* L. (Myrtaceae)**

The twigs of *Psidium guajava* L. is used to treat diarrhea in the study areas, which agrees with the findings of Pannawali (46) and Ponpim (31). In other areas, the twig was used for the treatment of stomachache in children (34) and peptic

ulcer in adults (47). Moreover, the leaves, the stems, the stem bark, the branches and the fruits are used in antidiarrheal remedies (32, 53, 58, 63, 119).

Lutterodt (206) assessed the antidiarrheal activity of aqueous extract of the guava leaves in Sprague-Dawley rats. At a dose of 0.2 mg/100g., the fresh leaf extract showed a 65% inhibition of the propulsive rate (the movement of the small intestine) and was equivalent to the group receiving 0.2 mg/kg of morphine. The antidiarrhoeal action of the extract may be due, in part, to the inhibition of the increased watery secretions that occur commonly in all acute diarrhoeal disease and cholera. In a double-blind, randomized control trial (207) showed the effect of dried guava leaves compared with tetracycline for treatment of acute diarrhea (in 64 men and 58 women), the results showed that the stool output, the fluid intake, and the duration of diarrhea were reduced for the guava leaves. Furthermore, the study of Lozoya, et al. (208) demonstrated the safety and efficacy of the aqueous extract of the guava leaves in 100 patients. The duration of abdominal pain was decreased after taking the aqueous extract of the guava leaves every 8 hour for 3 days. These results could confirm the effect of guava leaves in the treatment of diarrhea.

Flavonoids are significant components in the guava leaf extract. Quercetin, quercetin-3-arabinoside, and asiatic acid were claim as the active compounds for this antidiarrheal activity (209).

***Crinum asiaticum* L. (Amaryllidaceae)**

The leaf of *Crinum asiaticum* L. was reported to be used for the treatment of bruises and sprains at the study site. Its medicinal usage for these injuries is also supported by references in TTM (34, 63). Furthermore, there was a number of reports that the leaf of *Crinum asiaticum* L. was used as an expectorant, for detoxification, treatment of sore throat (46), corns (125), various pains (39, 47, 55), stomachache (57) and bone fractures (29).

Samud, et al. (210) demonstrated that the chloroform and methanol extracts of *Crinum asiaticum* L. administered orally were reduced carrageenan-induced hind-paw edema in mice. The mechanism may be due to anti-histaminic property. A literature search did not reveal any reports about the topical use of this plant or any experiments related to a similar useage. Thus, further study should be done in order to confirm the topical efficacy of this plant species for reducing edema.

***Sesbania grandiflora* (L.) Pers. (Leguminosae)**

The stem bark of *Sesbania grandiflora* (L.) Pers. was used as an antidiarrheal medicine in TTM and folk medicine (59, 118). At the study sites, the plant has been used for the same indication and has also been used for the treatment of aphthous ulcer (canker sore), pain, blisters and sores on and under the tongue, inside the mouth and along the salivary glands. These indications are often considered as symptoms of GI disorders. Anantaworasakul, et al. (211) reported that a butanol extract of the stem bark of *Sesbania grandiflora* (L.) Pers. could kill gram-positive bacteria (*Bacillus cereus*, *Enterococcus faecalis*, *Staphylococcus aureus*, *S. epidermidis*) and gram-negative bacteria (*Enterobacter cloacae*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Salmonella typhi*, *Shigella sonnei*, *Serratia marcescens*). The result suggested that the stem bark of *Sesbania grandiflora* (L.) Pers. contains promising antibacterial substance for clinical propose. However, there is no research about the water extract of *Sesbania grandiflora* (L.) Pers. on the inhibition of bacteria.

***Chromolaena odoratum* (L.) R.M.King & H.Rob. (Asteraceae)**

Chromolaena odoratum (L.) R.M.King & H.Rob. (synonym: *Eupatorium odoratum* L.) is widely used to stop bleeding (hemostatic) in many part of Thailand (29, 31-35, 38, 39, 45, 47, 49, 50, 55, 58, 59, 61, 63, 122-124, 126-128, 130, 135, 136, 154, 156), including the study area. The Thai-Khmer used the crushed fresh leaves or mixed the fresh leaves with slaked lime and applied it external to the wound. Thongpraditchot, et al. (212) studied the effect of *Eupatorium odoratum* L. on vascular tone and the toxic effects of this species. They found that the water extract of the leaves (at 0.025, 0.05 and 0.1 mg/ml) increased the vascular tension in a dose-dependent manner. In addition, Wongkrajang, et al. (213) suggested the hemostatic activity may be due to the calcium content of the leaves of *Eupatorium odoratum* L.. They also found that after the removal of the calcium from the leaf extract, the activity was less effective.

***Aloe vera* (L.) Burm.f. (Asphodelaceae)**

In Thailand, the mucilage from the leaf of *Aloe vera* (L.) Burm.f. has been reported for the treatment of headache (120, 124), acne (59), flatulence, heartburn, to produce a sensation of warmth in the abdomen (39), and burns (29, 45, 47, 55, 57-59, 63, 122, 124). At the study sites, a combination of the mucilage from the leaf of

Aloe vera (L.) Burm.f. and the latex of *Jatropha multifida* L. was applied on the burns. The healers claimed using both plant together increased the efficacy.

Several studies supported the effective wound healing and inflammation reduction of *Aloe vera* (L.) Burm.f. (214-216). A randomized controlled trial of Thamlikitkul, et al. (214) showed that the fresh mucilage can be used to treat first or second degree burns. In 20 patients, 95% efficacy of the wound healing rate was reported. Maenthaisong, et al. (217) indicated that *Aloe vera* (L.) Burm.f. might be effective in shortening the duration of wound healing in first to second degree burns. Chithra, et al. (215) found that *Aloe vera* gel had good efficacy for wound contraction (82-85% compared to 70% for the control) and shortened the period of epithelialization (20-22 days compared to 24 days for the control). Its healing may be due to effects by changing fibroplasia, collagen synthesis and contraction. Vázquez, et al. (216) demonstrated that the aqueous and chloroform extracts of the *Aloe vera* (L.) Burm.f. leaves given orally were effective in reducing carrageenan-induced hind-paw edema in rats.

***Jatropha multifida* L. (Euphorbiaceae)**

The latex of *Jatropha multifida* L. was applied to treat wounds in folk medicine (122), including the study area. Kosasi, et al. (218) found that non-dialyzable procyanidine with catechin was the major anti-complement constituent in the latex of *Jatropha multifida* L. The active constituents of *Jatropha multifida* L., interfered with human neutrophil functions and affected human T-cell activation and IL-2 production.

***Harrisonia perforata* (Blanco) Merr. (Simaroubaceae)**

The fruit of *Harrisonia perforata* (Blanco) Merr. was used for the treatment of toothache (34). In the study sites, the Thai-Khmer used the fresh fruit for cleaning the teeth. Limsong et al. (219) reported an inhibitory effect on the adherence of *Streptococcus mutans* by six different plants, including the twig of *Harrisonia perforata* (Blanco) Merr. The results showed that *Harrisonia perforata* (Blanco) Merr. reduced the adherence of *S. mutans*. However, there is no report about effect of the fruit of *Harrisonia perforata* (Blanco) Merr.

The distribution of medicinal plants over different families and taxonomic classification

There was a wide diversity of medicinal plants in the study site. The most dominant families in the study were Leguminosae (14 species), Apocynaceae (six species), Euphorbiaceae (six species), Rubiaceae (six species), and Rutaceae (six species), Annonaceae (five species), and Malvaceae (five species), and Acanthaceae, Palmae, Bignoniaceae, Labiatae, Gramineae, and Vitaceae (three species). Other families with low number were listed below: Amaranthaceae, Anacardiaceae, Celastraceae, Compositae, Lauraceae, Melastomaceae, Menispermaceae, Phyllanthaceae, Sapindaceae, and Simaroubaceae (two species), Amaryllidaceae, Ancistrocladaceae, Araliaceae, Asphodelaceae, Bixaceae, Boraginaceae, Bromeliaceae, Capparaceae, Chrysobalanaceae, Connaraceae, Costaceae, Cucurbitaceae, Cyperaceae, Dilleniaceae, Ebenaceae, Gnetaceae, Icacinaceae, Lygodiaceae, Lythraceae, Meliaceae, Moraceae, Myrsinaceae, Myrtaceae, Nyctaginaceae, Polygalaceae, Rhamnaceae, Rhizophoraceae, Scrophulariaceae, Solanaceae, Vitaceae, and Zingiberaceae (one species) (Table 4.6).

Total of 116 medicinal plant species belonged to 110 genera in 53 families, and were grouped into dicotyledon (102), monocotyledon (12), gymnosperm (one), and fern (one) (Table 4.7).

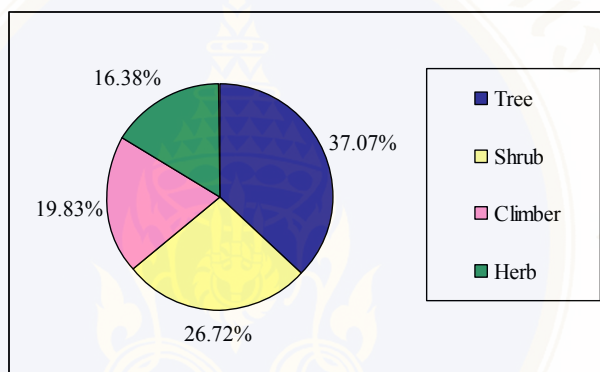
Table 4.6 Numbers of medicinal plants over different families

Families	Medicinal plant species		% total
	Number in each family	%	
Dicotyledonae			
1. Fabaceae	14	12.07	12.07
2. Apocynaceae, 3. Euphorbiaceae, 4. Rubiaceae, 5. Rutaceae	6	5.17	20.68
6. Annonaceae, 7. Malvaceae	5	4.31	8.62
8. Acanthaceae, 9. Bignoniaceae, 10. Labiatae, 11. Vitaceae	3	2.59	10.36
12. Amaranthaceae, 13. Anacardiaceae, 14. Celastraceae, 15. Compositae, 16. Lauraceae, 17. Melastomaceae, 18. Menispermaceae, 19. Phyllanthaceae, 20. Sapindaceae, 21. Simaroubaceae	2	1.72	17.20
22. Ancistrocladaceae, 23. Araliaceae, 24. Bixaceae, 25. Boraginaceae, 26. Capparaceae, 27. Chrysobalanaceae, 28. Connaraceae, 29. Cucurbitaceae, 30. Dilleniaceae, 31. Ebenaceae, 32. Icacinaceae, 33. Lythraceae, 34. Meliaceae, 35. Moraceae, 36. Myrsinaceae, 37. Myrtaceae, 38. Nyctaginaceae, 39. Polygalaceae, 40. Rhamnaceae, 41. Rhizophoraceae, 42. Scrophulariaceae, 43. Solanaceae	1	0.86	18.92
Monocotyledonae			
44. Palmae, 45. Gramineae	3	2.59	5.18
46. Amaryllidaceae, 47. Asphodelaceae, 48. Bromeliaceae, 49. Costaceae, 50. Cyperaceae, 51. Zingiberaceae	1	0.86	5.16
Gymnospermae			
52. Gnetaceae	1	0.86	0.86
Pteridophyta (Fern)			
53. Lygodiaceae	1	0.86	0.86
Total	116		100

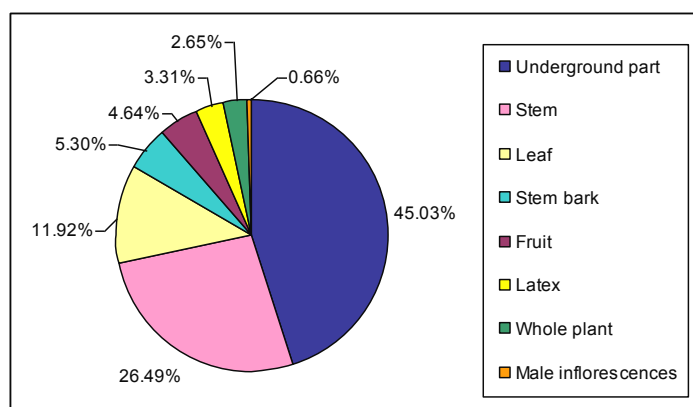
Table.4.7 Distribution frequencies of medicinal plants over taxonomic classification

Plant group	Family	Genus	Species
Dicotyledonae	43	96	102
Monocotyledonae	8	12	12
Gymnospermae	1	1	1
Pteridophyta (Fern)	1	1	1
Total	53	110	116

Tree (43 species, 37.07%) were found to be the most used plants followed by shrub (31 species, 26.72%), climber (23 species, 19.83%), and herb (19 species, 16.38%) (Figure 4.9).

**Figure 4.9** Habits of medicinal plants

Different parts of the plants were used as medicine by the healers. The most frequently used was underground part, including root and underground part (45.03%), followed by stem (26.49%), leaf (11.92%), and stem bark (5.30%) (Figure 4.10). Fruit, latex, whole plant, twig and male inflorescences were also recorded in minor percentages.

**Figure 4.10** Parts of medicinal plants used in different preparations

Libman (28), Virapongse (41) and Weckerle (220) reported that underground part was the most plant part use in their studies. They believed that underground part contained high concentration of bio-active compound (43). The harvesting of underground part together with stem and stem bark without good recommendations might lead to the extinction of the medicinal plants (221). The specifications of the qualified crude plant materials must be urgently done to guarantee for both efficacy and existence.

Conclusion

This field survey was carried out during August 2006 and December 2007, in Kanthararom and Lumpuk villages of Khukhan district, Si Sa Ket province. Five healers, ages range between 53–86 years old, were interviewed for the utilization of medicinal plants. They were divided by their expertise into 2 types: two herbalists and three blowing healer.

The oral tradition was the preferred method to pass on their knowledge. Only *Mor Phayak* had a document of traditional knowledge on palm leaves scriptures. Lack of documentation might lead to the loss of this traditional knowledge.

Most of the medicinal species were collected from the wild. Eighteen plant species could not be found in the villages, estimated to be endangered and needed conservation.

The healers preferred to use poly-herbal formulations than single plant remedy. The formulations composed many ingredients, varied from 2 to 11 plants. In Traditional Thai medicine, the prescriptions often contain many ingredients, and the principles of preparing, and administrating the medicines are common to the tradition. The curing process aimed at restoring the elements to their normal state, thus bringing harmony back to body (222). The healers in study sites also commented that many medicinal plants in the formulations might help to keep balance in the body as well as curing property. From 83 reported herbal formulations, *Mor Liad*, and *Mor Phayak*, the herbalists, used 55 and 23 formulations for 28 and 18 symptoms respectively.

Mor Yian, *Mor Sawoei*, and *Mor Kid* were blowing healers, each of them used only one formulation for the treatment of fever, *Kho sabun*, and *Kra dao kra nong* respectively. Magical practices and incantations are an integral part in Traditional Thai medicine (222). The method of collecting plant and the incantation on medicinal plants in the study site were based on their beliefs which might help to harmonize between mind and body of the patients. Anantarawan (223) concluded that the blowing healers had limited knowledge in the utilization of medicinal plant. Boonchai (40) noted that incantation helped to encourage between healer and patient. Wirth (224) suggested that the healer's opinion was correlated with the patients' progress.

The ethnopharmaceutical use of 83 formulations and 40 plant species was documented in the study area. The frequency of citation for each of the reported ailments was used as a basis to identify the most frequently occurring human ailment in the study area, which in this case was women disease (40 preparations or 48% and two plants). The highest ranking of women disease was the formulation to relieve *Kho sabun*, symptoms of post-labor, 23 formulations, and two plant species, followed by eight, and three formulations to increase milk secretion, and promote lochia discharged respectively. Only four formulations were prescribed for non-pregnant women, dysmenorrhea, irregular menstruation and leukorrhea. These findings indicated that women diseases especially post-labor were the important health problem which the villagers still believed in the potential of herbal medicine. Other reasons might be the poverty, and low standard of living or unhygienic sanitary conditions especially in children, and woman after delivery.

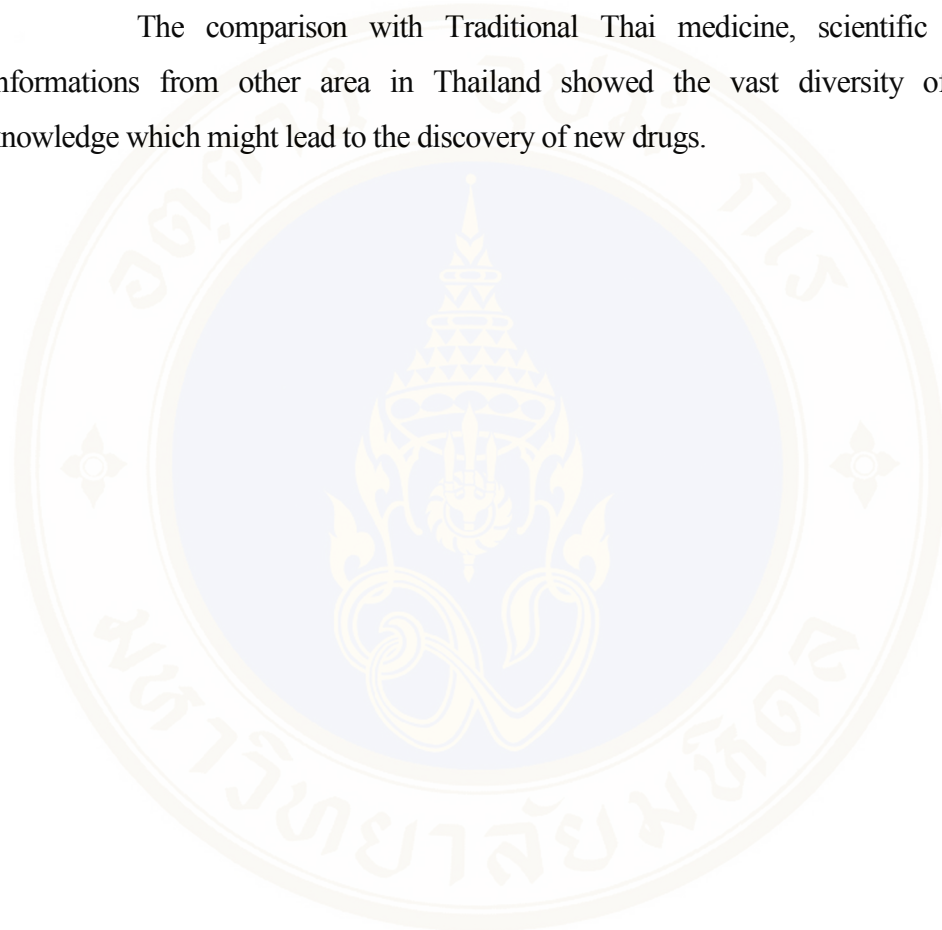
Prasopnate (133) and Pipitkul (225) concluded in their studies that the decoction was the common method of preparation. In this study, 60 from 83 formulations (72.29 %) were prepared by decoction. For single plant remedy, 8 from 40 plant species. The common pharmaceutical forms of the 83 formulations were orally taken (85.5%). In contrary, only 35% of single plant remedy was orally taken and the rest 65% were externally applied. It was recognized that the healer preferred only externally used to relieve fever in children.

One hundred and sixteen medicinal plant species were collected and taxonomical identified. They belonged to 110 genera in 53 families, and were grouped into 102 dicotyledons, 12 monocotyledons, one gymnosperm, and one fern. The five most predominant families were Leguminosae (14 species), Apocynaceae (six species),

Euphorbiaceae (six species), Rubiaceae (six species), and Rutaceae (six species). However, two species were only identified to genera, *Proem* (*Psychotria* sp, Rubiaceae) and *Tam ling khao* (*Ventilago* sp., Lemnaceae).

The most frequency plant form and part used for medicinal purposed were tree (37%), and root, and underground stem (45.03%).

The comparison with Traditional Thai medicine, scientific papers, and informations from other area in Thailand showed the vast diversity of indigenous knowledge which might lead to the discovery of new drugs.



CHAPTER V

RITUAL AND PLANTS FOR HEALTH MANAGEMENT

Plants played important roles in healthcare of villages, including both physical and mental health and were used for the treatment of various ailments either in folk medicine or as a part of rituals. Villagers believed that the spirits could cause illnesses. The rituals were performed to appease the spirits and guarantee the village health situation. Likewise the other parts of the world, villagers had particular plants which were used due to its special status.

In this chapter, the detail about ritual health management through *Ram Ma-Mod* or *Ma-Mod* dancing ritual (รำแม่มด) was described. The respectable ritual informants were named by villagers. The key informants included folkloric healers or herbalists, former *Ma-mod* mediums and villagers. The interviews were performed in mutual convenient time or during performing ritual.

Table 5.1 Names of ritual key informants

No.	Name	Age	Key informants	Address
1	Mrs. Sawai Kokwan	78	Former <i>Ma-mod</i> medium	110 Moo 1
2	Mrs. Ngam Klongsap	81	Former <i>Ma-mod</i> medium	1 Moo 11
3	Mrs. Sam Rahan	36	Ritual informants	61 Moo 1
4	Mrs. Naree Poemchalat	44	Ritual informants	65 Moo 10
5	Mrs. Mesa Kongsap	31	Ritual informants	10 Moo 11
6	Mrs. Kid Sukchaloem	53	Translator	110 Moo 1
7	Mr. Phayak Thongpha	52	Translator	37 Moo 10

Field notes, audio recordings and photographs were taken. All key informants already checked for the information and gave their permission before writing this thesis.

However, all expressions in this chapter were written under the context of study sites and might changed according to the others view points, particular place and period of time. Thus, this study was not intended to establish the pattern of knowledge realm in ritual.

Ram Ma-Mod or Ma-Mod dancing ritual

Ram Ma-Mod ritual was a tool to relieve some psychological problems based on belief of Thai-Khmer group in north-eastern part of Thailand. In some areas, it's called *Ma-Muad* (มมัวด) (226, 227) or *Reum Ma-Muad* (เรียมมมัวด) (228). There were two reasons to perform this ritual. Regularly during February to April each year, this ritual would be held while *Thong kwao* (*Butea monosperma* (Lam.) Taubert) still blooming and the purpose were to strengthen *Ma-Mod*'s power. However, the ritual could be held as soon as possible to relieve severe symptoms of the patients.



Figure 5.1 *Ram Ma-Mod* ritual: (A) *Ma-Mod bo ri wan*, (B) Musicians, (C) Patient

Ma-Mod was ancestral spirit or guardian spirit and believed to influence their descendants' body and mind. Anyway, no historical documentary evidences were recorded. The following information was recorded from the interview.

Normally, when the villagers in Moo 1 and Moo 10 got sick, they would first go to see the folk healers or the doctor at health center or hospital. In some cases,

the patient did not recovered after several treatments, they would consult Spirit Mediums or *Pan chon* (ปันจอน). If *Pan chon* concluded that the illness was caused by *Ma-Mod* spirit, a vow or *bon* (โบน) was made. They beg *Ma-Mod* for the patient's recovery and tied the cotton string around the neck of bottle. In return, *Ma-Mod* ritual would be held after success.

Mrs. Mesa Kongsap told about her relative condition. Her aunt was ill and her relatives made "bon" to Ma-Mod. After her aunt got better, the ritual was not conducted because her uncle did not believe in Ma-Mod ritual. Next, her grandmother became sick and they decided to "bon" and again the ritual was still not conducted. At last, her uncle turned to be sick. This time they decided to conduct the ritual and Kru Ma-Mod would cut the "bon" cotton string. After that everything turned out well.

Ma-Mod ritual was a dancing ceremony. The important background was traditional music. The required music instruments comprised of *Klong ton* (กลองโพน) or *Sa kua re* (สกั่วเรอะ), *Kan* (แคน) or *Kian* (เกียน), *Khong* (ฆ้อง) or *Khuang* (กวาง), *Khloi* (ขลุ่ย) or *Khloi* (ขลุ่ย), and *Pi* (ปี่) or *Poi* (ปอ). The composition of *Ma-Mod* ritual were leader of *Ma-Mod* spirits or *Kru Ma-Mod* (ครูแม่มด), invited dancers in the ritual or *Ma-Mod bo ri wan* (แม่มดบริวาร), patients, musicians, and other members, such as patient's family, relatives and neighbors. The ritual area was set up in the open space of patient's house. The arrangement and process to perform *Ma-Mod* ritual was a long story. The brief information were written and guided to the usage of ritual plants.

In the beginning, *Kru Ma-Mod* invited the ancestral spirit by holding *Khan Ma-Mod* which composed of *Mak* (*Areca catechu* L.), *Phlu* (*Piper betle* L.), and *Khao* (*Oryza sativa* L.).

After that she changed her dress, paid the respect to deity with *Lep khрут* leaves in a cone of banana leaf and started to dance with big sword in her hand. *Mod bo ri wan* would be the second groups to invited spirit by holding *Khan Ma-Mod* and joined the dancing. The patients were the last groups to follow and danced among *Kru Ma-Mod* and *Mod bo ri wan*. The patient's symptoms would be recovered. During dancing, other patients were brought to *Kru Ma-Mod* diagnosis and treatment for their illness.

For example a boy was suffered from leg weakness, could hardly walk and got bone pain and failed so many treatments. This patient was taken to see *Kru Ma-Mod* during *Ma-Mod* ritual. After diagnosis, *Kru Ma-Mod* concluded that this boy was suffered from *Don khong* (โดนของ) or evil things. In this case *Kru Ma-Mod* used massage and blowing therapy to chase the evil things.



Figure 5.2 Massage and blowing therapy by *Kru Ma-Mod*

Medicinal plant use in *Ram Ma-Mod* ritual

Plant was one of a significant part in *Ram Ma-Mod* ritual. The names of ritual plant species and their families together with Thai-Khmer names were arranged alphabetically as shown in table.

Table 5.2 List of plants used in *Ram Ma-Mod* ritual

No.	Family/Scientific name Thai name Thai-Khmer name	Plant part used	Ritual use	Authentic specimens
1	Annonaceae <i>Melodorum fruticosum</i> Lour Lamduan (ลำตวน) Ram nol (รำโนล) រម្ល	Leaf	Dipped in holy water and sprinkled on spirit-medium body	PBM04894
2	Araliaceae <i>Polyscias fruticosa</i> (L.) Harms Lep khрут (เล็บครุท) Pu yom, Prue yom (ปูยวมหรือ อปรียวม) ពលយ៉ុំ	Leaf	Essential plant in the offering for deity	HWR00002

Table 5.2 List of plants used in *Ram Ma-Mod* ritual (cont.)

No.	Family/Scientific name Thai name Thai-Khmer name	Plant part used	Ritual use	Authentic specimens
3	Arecaceae <i>Areca catechu</i> L. Mak (หมาก) Sa la (สลา) ស្លា	Fruit	Essential plant in the offering and used in <i>Khan Ma-Mod</i> (ขันแม่มด)	PBM05054
4	Arecaceae (PALMAE) <i>Cocos nucifera</i> L. var. <i>nucifera</i> Ma prao (มะพร้าว) Dong (โดง) ផ្លែដូង	Leaf	Used as the roof of ritual area	HWR00003
5	Gramineae (Poaceae) <i>Oryza sativa</i> L. Khao (ข้าว) Sa Lao (สะเลา) ស្លែ	Seed	Used in <i>Khan Ma-Mod</i>	Crude drug
6	Leguminosae– Papilionoideae <i>Butea monosperma</i> (Lam.) Taub. Thong kwao (ทองกวาว) Pha ka chan (ผกาจาน) ផ្កាខ្លា	Flower	Used as decoration in the ritual area	PBM05096
7	Piperaceae <i>Piper betle</i> L. Phlu (พลู) Blu (บลู) ម្សៅ	Leaf	Used as a component of offering to deity and used in <i>Khan Ma-Mod</i>	HWR00013
8	Musaceae <i>Musa</i> sp. - Chaek (เจ๊ก) ចេក	Leaf, shoot	Leaf was used as a component of offering to deity and shoot was used as decoration of spirit altar	HWR00015

Eight plants belonging to eight genera and seven families were used in *Ram Ma-Mod* ritual. Two species were listed in Arecaceae while one species was listed in Annonaceae, Araliaceae, Gramineae, Leguminosae, Piperaceae, and Musaceae. One species was identified only genera, *Musa* sp. Among these, four species were used as the medicinal plant in study site as followed: *Melodorum fruticosum* Lour., *Polyscias fruticosa* (L.) Harms, *Areca catechu* L., and *Cocos nucifera* L. var. *nucifera*.

Discussion and conclusion

Ram Ma-Mod ritual was popular among Thai-Khmer ethnic groups in Isan. From this point of view, *Ma-Mod* ritual and the mystic atmosphere together with excited sound of music and applause sound from other members, might be psychological therapy. It would encourage the patients to dance, dared to move and joined with others. Moreover, this inspiration might solve some mental problems and stimulated the patients to live with others pleasantly. Even though, there was no clear explanation, this culture was still haunted in the villager's mind and influence their living and health.

Plant played an important role in ritual. It represented the belief through the activities and helps people to get to the point of ritual. Four species was used as medicinal plant and the items in the ritual. This indicated that plant was used in the treatment both mind and body.

CHAPTER VI

CONCLUSION

The population in Kanthrarom Village and Lumpuk village composed 95 and 159 households with totally 487 and 865 members and ratio between male and female were quite the same, 241:246 (1:1.02) and 410: 455 (1:1.11) respectively. The major occupations were farming, raising and handling cattle. Even though modern lifestyle influenced their living, they still relied on environment and natural resources, especially food and maintained their beliefs in Buddhism together with traditional culture and ceremony. They still used “Khmer lue or Upper Khmer or Khmer Surin language” for communication.

Medicinal plant utilization of Thai-Khmer ethnic group in Kanthrarom Village and Lumpuk village

One hundred and sixteen medicinal plant species belonging to 53 families and 110 genera were recorded as medicinal plants from five healers. However, two species were only identified to genera, *Psychotria* sp. and *Ventilago* sp. The five most predominant families were Leguminosae (14 species), Apocynaceae (six species), Euphorbiaceae (six species), Rubiaceae (six species), and Rutaceae (six species).

In the treatment, both polyherbal formulation and single plant were used. The formulations composed many ingredients, varied from two to eleven plants. Forty single plants and 83 formulations were prescribed for 39 symptoms or diseases and nine indications. For the single plant use, neurological disease was the most predominant group. There were 18 species were used in the treatment. Among those, six species were used to treat *Saang*. Forty formulations were used in the treatment of gynecological disease. There were two single plants and 36 formulations for woman after delivery. Among those, 23 formulations were used to treat *Kho sabun*, symptoms of post-labor. In the treatment of children, there were five single plants and two formulations to treat *Saang*, fever and for prevent fever.

For the routes of administration of 40 single plants, it could be concluded that 26 plants (65%) were applied externally to treat 17 symptoms. Another 14 plants (35%) were orally taken to treat 6 symptoms. Fourteen plants (35%) were orally taken to treat six symptoms. The routes of administration of 83 recorded formulations were both orally taken (71 formulations) and externally applied to the affected area or taken a bath (12 formulations). In the treatment of children, healer preferred only externally used to relieve fever in children.

For the preparation, decoction was the most frequency method in formulations while grinding was the commonly used for single plants. The common administration of formulations was orally taken. In contrary, externally used was the highest number of single plant remedy. Tree and underground part were commonly used for the treatment.

Medicinal plant related to the belief and ritual in this area

Ma-Mod ritual is a tool to appease the spirits and promote the health of the villages. Villagers believed that the illness was influenced by ancestral, guardian spirits or even evil spirits. Thus, the ritual was set up for the treatment. *Kru Ma-Mod*, *Ma-Mod bo ri wan*, musicians and patient played a significant part in the ritual. It might solve mental problems of the patients without separating from familiar surrounding. Besides these, eight plants were important part in the ritual as followed: *Melodorum fruticosum*, *Polyscias fruticosa* (L.) Harms, *Areca catechu* L., *Cocos nucifera* L. var. *nucifera*., *Butea monosperma* (Lam.) Taub., *Piper betle* L., *Oryza sativa* L., and *Musa* sp. Among these, four plants were used both medicine and ritual.

Comparison on indications of medicinal plants used by Thai-Khmer with those records in traditional Thai medicine

Based on a comparison of the ethnobotanical data between Thai-Khmer people (in Kanthararom and Lumpuk villages) and *Pramuan sapphakhun ya thai wa*

duai phrueksachat watthuthat le satwatthu nana chanit (ประมวลสรรพคุณยาไทย ว่าด้วย พืชยชาดิ วัดฤทธาตุ และสัตตวัดถุนานาชนิด) (volume 1-3), 51 species were found to be used as medicines both at the study sites and in Thai traditional medicine (TTM).

In both studies, only three of these species were used for the same symptoms and from the same plant part: the leaves of *Crinum asiaticum* L. were used for the treatment of bruise and sprains, the leaves of *Annona squamosa* L. were used for killing head-lice, and the stem bark of *Sesbania grandiflora* (L.) Pers. was used as an antidiarrheal.

Two plants were reportedly used for the same indications but from different plant parts. At the study sites, the twig of *Polyscias fruticosa* (L.) Harms was used as antidiarrheal, whereas the leaves were reported for the same indication in TTM. Also, villagers used the fruits of *Acacia concinna* (Willd.) DC. as an antidandruff while TTM used the stem as a hair tonic and antidandruff.

At the Thai-Khmer villages, the roots of *Brucea javanica* (L.) Merr. were used for the treatment of *Pue* (which is a disorder manifested by fever, excessive internal heat, aphthous ulcer, vertigo and vomiting). In TTM, the roots of *Brucea javanica* (L.) Merr. have also been reported for fever treatment. These two studies support the role of *Brucea javanica* (L.) Merr. in the treatment of fever.

At the Thai-Khmer villages, *Sesbania grandiflora* (L.) Pers., *Anomianthus dulcis* (Dunn) J. Sinclair, and *Imperata cylindrica* (L.) Raeusch. were reportedly used as medicines in combination with other plants. In TTM, they were used alone. The stem bark or roots of *Sesbania grandiflora* (L.) Pers. was traditionally used in these villages in combination with other plants for the treatment of dysentery, while the TTM reported only the efficacy of the stem bark for the same symptoms. In the study sites, the roots and the stem of *Anomianthus dulcis* (Dunn) J. Sinclair have been combined with other plants to increase milk secretion. In TTM, the roots and the stem of *Anomianthus dulcis* (Dunn) J. Sinclair were also used for the same indications, but not in association with any other plant.

At the Thai-Khmer study sites, the root of *Imperata cylindrica* (L.) Raeusch. was reported in the formulation for the treatment of *Saang* (a disorder manifested by fever with wounds in the mouth, appetite and weight loss, furred tongue and *Pue*). While in TTM, the root of *Imperata cylindrica* (L.) Raeusch. was used for

the treatment of fever and aphthous ulcer. In both studies, these roots seem to be efficacious for at least these two symptoms, thus we can say that the roots of *Imperata cylindrica* (L.) Raeusch. was indicated for the treatment of fever and aphthous ulcer.

The future trend of traditional medicine in study site

Nowadays, villagers still used medicinal plant for their health problem. A trend toward the use of traditional medicine in study site was gradually decreased. The development of economic, the acculturation of villagers, lack of the documentation, the expansion of agricultural area, and overharvesting were affected to traditional medicine. Thus the documentation on traditional medicine was necessary. This study was the initial step to conserve Thai-Khmer traditional knowledge on medicinal plant in study sites.

Recommendation

1. This study was the early attempt to record the medicinal knowledge in Thai-Khmer ethnic group. Nevertheless, the result reported only medicinal plant used by healers. Therefore, a lack of study in villagers' knowledge was required further study.
2. Interview was the significant method to gather the information. In study site, it was necessary to seek for the interpreter because key informants preferred to communicate in their local language. Thus, the mistake might be occurring.
3. The study was conducted with five key informants. Later, the other healers were still found. Further research might be recorded for the complement of the medicinal knowledge in study site.
4. The patients should be followed up their symptom and satisfy after treatment from healers. The view of villagers might be indicated the trend of medicinal plant in study site.

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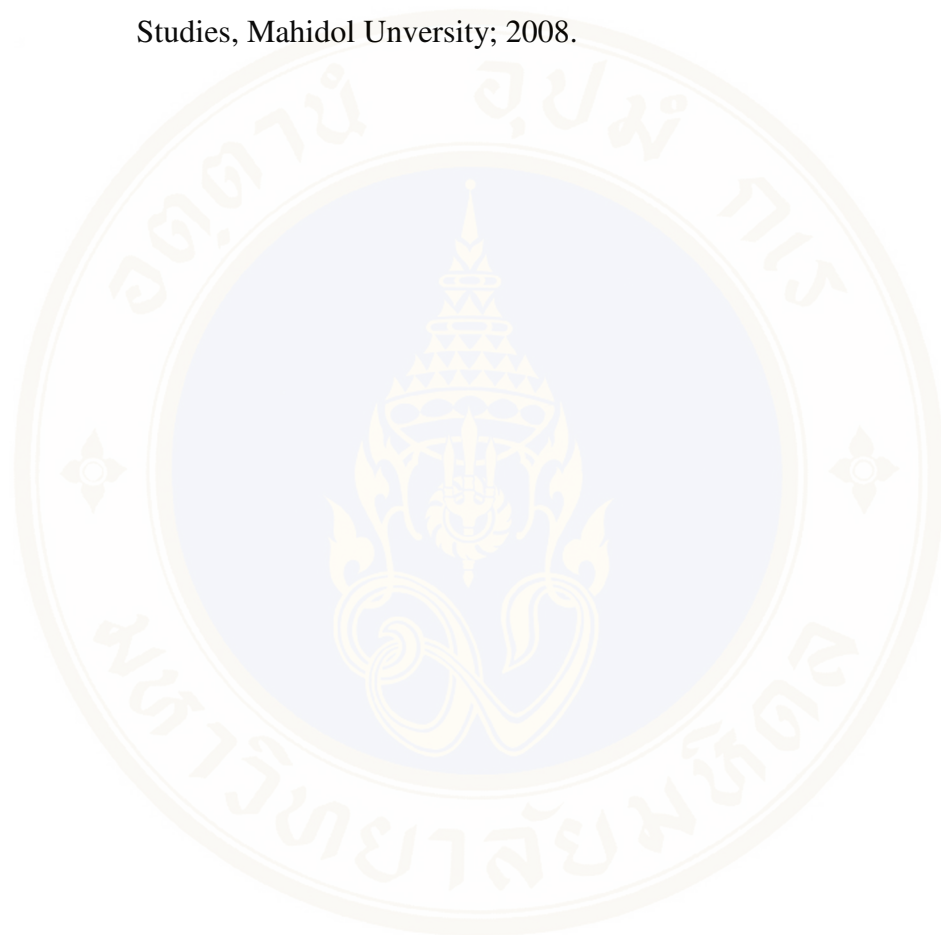
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APPENDIX A

BOTANICAL NAME INDEX

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APPENDIX B

MEDICINAL PLANTS USED BY THAI-KHMER PEOPLE IN TWO VILLAGES OF KHUKHAN DISTRICT, SI SA KET PROVINCE



Abrus precatorius
Fabaceae
(Leguminosae-Papilionoideae)



Abutilon indicum var. *indicum*
Malvaceae



Acacia concinna
Fabaceae
(Leguminosae-Mimosoideae)



Acacia farnesiana
Fabaceae
(Leguminosae-Mimosoideae)



Achyranthes aspera
Amaranthaceae



Aganonerion polymorphum
Apocynaceae



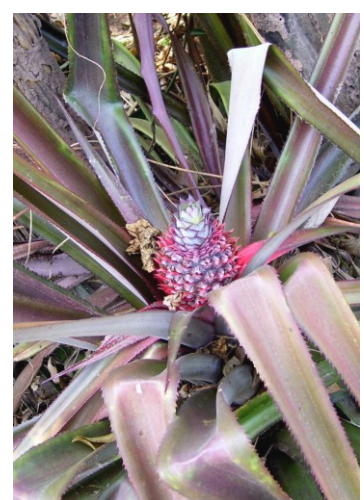
Allophylus cobbe
Sapindaceae



Aloe vera
Asphodelaceae



Amaranthus spinosus
Amaranthaceae



Ananas comosus
Bromeliaceae



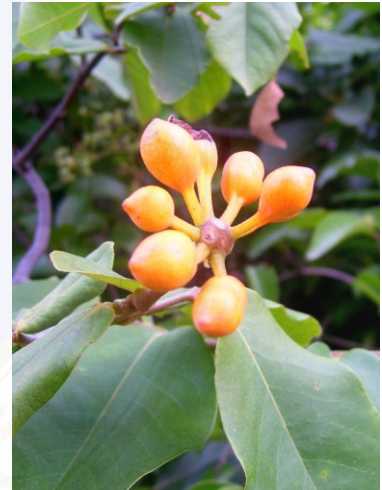
Ancistrocladus tectorius
Ancistrocladaceae



Andrographis paniculata
Acanthaceae



Annona squamosa
Annonaceae



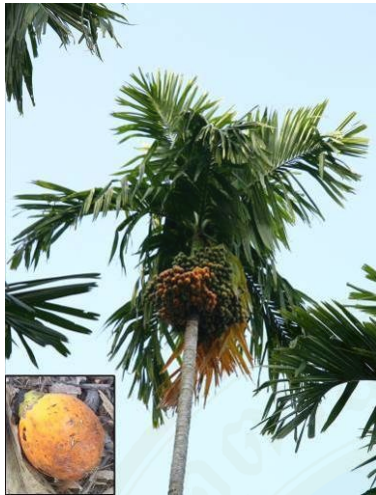
Anomianthus dulcis
Annonaceae



Antidesma ghaesembilla
Euphorbiaceae



Ardisia crenata var. *crenata*
Myrsinaceae



Areca catechu
Palmae (Arecaceae)



Artabotrys siamensis
Annonaceae



Atalantia monophylla
Rutaceae



Azadirachta indica var. *siamensis*
Meliaceae



Baliospermum solanifolium
Euphorbiaceae



Barleria strigosa
Acanthaceae



Bauhinia pulla
Fabaceae (Leguminosae-Caesalpinioideae)



Bixa orellana
Bixaceae



Blumea balsamifera
Compositae (Asteraceae)



Boerhavia diffusa L.
Nyctaginaceae



Borassus flabellifer
Palmae (Arecaceae)



Breynia vitis-idaea
Phyllanthaceae (Euphorbiaceae)



Brucea javanica
Simaroubaceae



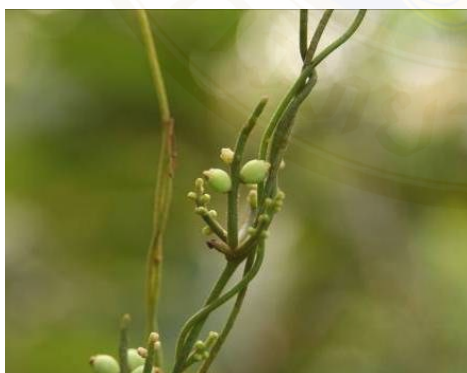
Buchanania siamensis
Anacardiaceae



Capparis micracantha
Capparaceae



Carallia brachiata
Rhizophoraceae



Cassytha filiformis
Lauraceae



Cayratia trifolia
Vitaceae



Chromolaena odoratum
Compositae (Asteraceae)



Chrysopogon aciculatus
Gramineae (Poaceae)



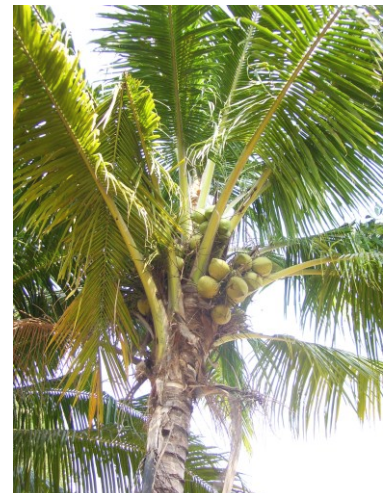
Cinnamomum bejolghota
Lauraceae



Clausena harmandiana
Rutaceae



Clerodendrum paniculatum var. *paniculatum*
Labiatae (Lamiaceae)



Cocos nucifera var. *nucifera*
Palmae (Arecaceae)



Costus speciosus
Costaceae



Crinum asiaticum
Amaryllidaceae



Crotalaria spectabilis subsp. *spectabilis*
Fabaceae (Leguminosae-Papilionoideae)



Cucurbita moschata
Cucurbitaceae



Cyperus rotundus
Cyperaceae



Datura metel var. *fastuosa*
Solanaceae



Derris scandens
Fabaceae (Leguminosae-Papilionoideae)



Desmodium gangeticum
Fabaceae (Leguminosae-Papilionoideae)



Diospyros curranii
Ebenaceae



Droogmansia godefroyana
Fabaceae (Leguminosae-Papilionoideae)



Dunbaria punctata
Fabaceae (Leguminosae-Papilionoideae)



Ellipanthus tomentosus var *tomentosus*
Connaraceae



Feroniella lucida
Rutaceae



Glycosmis pentaphylla
Rutaceae



Gnetum montanum
Gnetaceae



Gonocaryum lobbianum
Icacinaceae



Harrisonia perforata
Simaroubaceae



Heliotropium indicum
Boraginaceae



Hoya kerrii
Apocynaceae-Asclepiadoideae



Hymenocardia punctata
Euphorbiaceae



Imperata cylindrica
Gramineae (Poaceae)



Ixora coccinea
Rubiaceae



Ixora finlaysoniana
Rubiaceae



Jatropha curcas
Euphorbiaceae



Jatropha multifida
Euphorbiaceae



Kailarsenia hygrophila
Rubiaceae



Leea guineensis
Vitaceae (Leeaceae)



Leea macrophylla
Vitaceae (Leeaceae)



Leonotis nepetifolia
Labiatae (Lamiaceae)



Lepisanthes rubiginosa
Sapindaceae



Lygodium flexuosum
Lygodiaceae



Markhamia pierrei
Bignoniaceae



Melodorum fruticosum
Annonaceae



Memecylon edule
Melastomaceae



Microcos tomentosa
Malvaceae-Grewioideae (Tiliaceae)



Micromelum minutum
Rutaceae



Millingtonia hortensis
Bignoniaceae



Mimosa pudica
Fabaceae (Leguminosae-Mimosoideae)



Naringi crenulata
Rutaceae



Nauclea orientalis
Rubiaceae



Ocimum tenuiflorum
Labiatae (Lamiaceae)



Oroxylum indicum
Bignoniaceae



Osbeckia stellata var. *crinita*
Melastomaceae



Parinari anamensis
Chrysobalanaceae



Phyllanthus amarus
Phyllanthaceae (Euphorbiaceae)



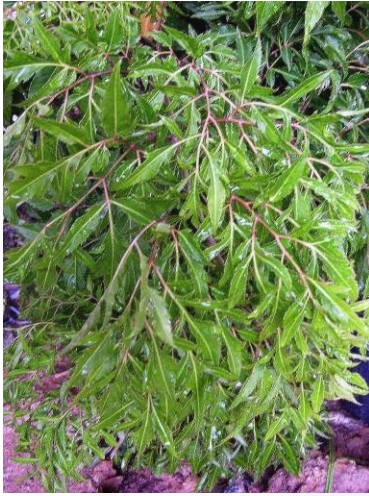
Phyllodium pulchellum
Fabaceae (Leguminosae-Papilionoideae)



Plumeria rubra
Apocynaceae



Polyalthia evecta
Annonaceae



Polyscias fruticosa
Araliaceae



Psidium guajava
Myrtaceae



Psychotria sp.
Rubiaceae



Punica granatum
Lythraceae (Punicaceae)



Saccharum officinarum
Gramineae (Poaceae)



Salacia chinensis
Celastraceae



Scoparia dulcis
Scrophulariaceae



Sesbania grandiflora
Fabaceae
(Leguminosae-Papilionoideae)



Sida acuta
Malvaceae



Sida rhombifolia
Malvaceae



Siphonodon celastrineus
Celastraceae



Spatholobus harmandii
Fabaceae
(Leguminosae-Papilionoideae)



Spondias pinnata
Anacardiaceae



Streblus asper
Moraceae



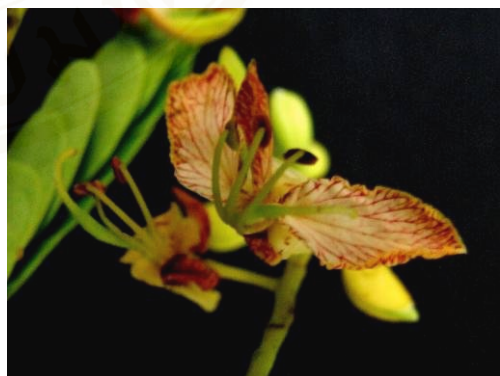
Streptocaulon juvenas
Apocynaceae-Periplocoideae



Suregada multiflora
Euphorbiaceae



Tabernaemontana bufalina
Apocynaceae



Tamarindus indica
Fabaceae
(Leguminosae-Caesalpinioideae)



Tetracera loureiri
Dilleniaceae



Thunbergia laurifolia
Acanthaceae



Tiliacora triandra
Menispermaceae



Tinospora crispa
Menispermaceae



Urena lobata
Malvaceae



Ventilago sp.
Rhamnaceae



Willughbeia edulis
Apocynaceae



Xanthophyllum lanceatum
Polygalaceae



Xantonnea parvifolia
Rubiaceae



Zingiber montanum
Zingiberaceae

APPENDIX C

PLANT USED IN RAM MA-MOD RITUAL BY

THAI-KHMER PEOPLE IN TWO VILLAGES OF KHUKHAN

DISTRICT, SI SA KET PROVINCE



Areca catechu
Palmae (Arecaceae)



Butea monosperma
Fabaceae (Leguminosae-Papilionoideae)



Cocos nucifera var. *nucifera*
Palmae (Arecaceae)



Melodorum fruticosum
Annonaceae



Musa sp.
Musaceae



Oryza sativa
Gramineae (Poaceae)



Piper betle
Piperaceae



Polyscias fruticosa
Araliaceae

APPENDIX D

KHMER LUE LANGUAGE

Table A.1 Common words in Khmer lue language comparing with Thai and English language

Thai-Khmer language	Thai language	Meaning
Ta (ตา)	Pu (ปู่), Ta (ตา)	Grandfather
Yai (ยาย)	Ya (ย่า), Yai (ยาย)	Grandmother
Aw (อาว)	Pho (พ่อ)	Father
Mae (แม่)	Mae (แม่)	Mother
Bong (น้อง)	Phi (พี่)	Elder brother or sister
Niang (เนียง)	Nong saw (น้องสาว)	Younger sister
Kra ban (กระบาล)	Srisa (ศรีษะ), Hua (หัว)	Head
Sok (ซ็อก)	Phom (ผม)	Hair
Muk (มุก)	Na (หน้า)	Face
Pa naek (ปะแนก)	Ta (ตา)	Eyes
Tra chaek (ตระแจก)	Hu (หู)	Ears
Cha mo (ชะโมะ)	Cha muk (จมูก)	Nose
Dai (ดัย)	Mue (มือ)	Hands
Choeng (เจิง)	Kha (ขา)	Leg
Cha-ruk (จื้อรุก)	Su kon (สุกร), Moo (หมู)	Swine
Cha-kae (จากร)	Ma (หมา)	Dog
Muean (เมื่อน)	Kai (ไก่)	Chicken
Ku (กู)	Wua (วัว)	Bull and cow
Kra bai (กระบไบ)	Kwai (ควาย)	Buffalo
Tuek ma ti (ตึกมะติ)	Nam prik (น้ำพริก)	Chili paste
Bok la hong (บ๊อกละฮ้อง)	Som tam (ส้มตำ)	Papaya salad
Nom roi (นมโรย)	Ka-nom chin (ขนมจีน)	Rice noodle
Pla ra (ปลาร้า)	Pla ra (ปลาร้า)	Pickled fish
Kang ka dam (แกงกะดาม)	Kang pu (แกงปู)	Spicy crab soup
Sam puat (ซำปัวะ)	Pha thung (ผ้าถุง)	Sarong
Sa bai (สไบ)	Pha kaw ma (ผ้าขาวม้า)	Loincloth
Ao (เอา)	Suea (เสื้อ)	Shirt
Ko (คอ)	Kang kang (กางเกง)	Trousers
Sa-bak ka-nueai (สะแบกกะเนือย)	Rong tao (รองเท้า)	Shoe

APPENDIX E

PRESENTATION AND PUBLICATION

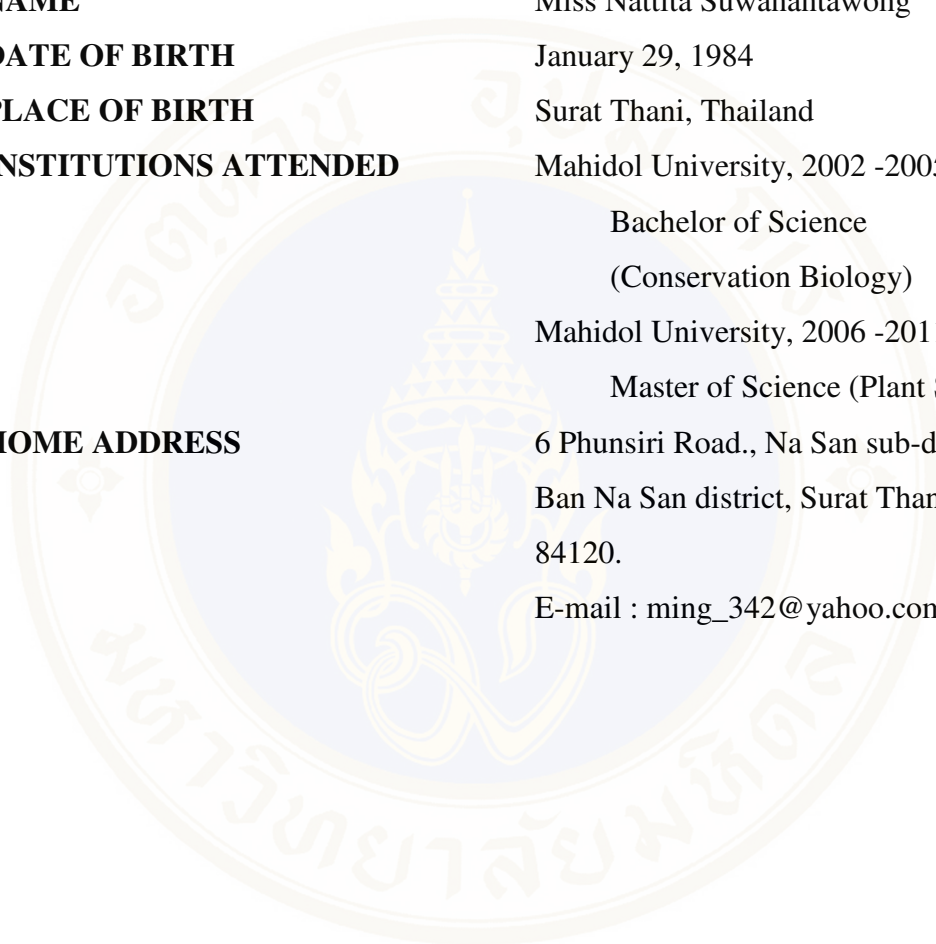
Oral presentation

- Suwanantawong N, Paonil W, Chuakul W, Jenjittikul T. Pharmaceutical Ethnobotany Study of Thai-Khmer Ethnic Group in Two Villages of Khukhan District, Si Sa Ket Province. The 2nd symposium of the Botanical congress of Thailand, 2008 March 26-28, Department of Biology, Faculty of Science, Khon Kaen University. Khon Kaen; 2008.

Publication

- Chantaranothai P, Pornpongrungrueng P, editors. Pharmaceutical Ethnobotany Study of Thai-Khmer Ethnic Group in Two Villages of Khukhan District, Si Sa Ket Province. Proceedings of the 2nd symposium of the Botanical congress of Thailand; 2008 March 26-28; Khon Kaen: Applied Taxonomical Research Center, Department of Biology, Faculty of Science, Khon Kaen University and Biodiversity Research and Training Programme (BRT); 2008.

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