

WALL INSCRIPTION ON HERBAL MEDICINE AND HERMIT EXERCISE AT SALA
RUESEE WAT MATCHIMAWAS WORAWIHAN SONGKHALA PROVINCE THAILAND

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เอกสารต้น คิวะพงษ์ธงชัย : จารึกตำรายาและฤกษ์ตัดตนในศาลาฤกษ์วัดมัชฌิมาวาส
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วัดมัชฌิมาวาสวรวิหารเป็นวัดอารามหลวงชั้นวรวิหาร สร้างขึ้นเมื่อสมัยกรุงศรีอยุธยาตอนปลาย
 เป็นวัดซึ่งมีความสัมพันธ์กับองค์ความรู้ทางการแพทย์แผนไทย ในศาลาฤกษ์วัดมัชฌิมาวาสมีตำรับยาแผน
 ไทยและท่าฤกษ์ตัดตน ถูกจารึกในรัชสมัยรัชกาลที่ ๔ จารึกในศาลาฤกษ์วัดมัชฌิมาวาสนับเป็น องค์ความรู้
 ที่มีคุณค่าทางประวัติศาสตร์และทางการแพทย์แผนไทยที่ควรอนุรักษ์ จารึกในศาลาฤกษ์เป็นจิตรกรรมสีฝุ่น
 ข้อมูลบางส่วนจางหายไป อย่างไรก็ตามศาลาฤกษ์และ จารึกได้ถูกรื้อณะหลายครั้งตั้งแต่ปี ๒๕๒๒ และมี
 การบันทึกรายละเอียดต่างๆไว้ทำให้สามารถสืบค้นข้อมูลได้ การศึกษานี้ดำเนินการรวบรวมตำรับยาและท่า
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WALL INSCRIPTION ON HERBAL MEDICINE AND HERMIT EXERCISE AT SALA
RUESEE WAT MATCHIMAWAT WORAWIHAN SONGKHLA PROVINCE THAILAND
ADVISOR: CHANIDA PALANUVEJ, Ph.D., CO-ADVISOR: ASSOC. PROF. NIJSIRI
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Wat Matchimawat Worawihan is a royal temple in Songkhla province which was built around the end of the Ayutthaya period. This temple has been associated with the body of knowledge of traditional Thai medicine. Traditional Thai medicine formulae and Ruesee Dat Ton murals were inscribed at Sala Ruesee, Wat Matchimawat in the reign of King Rama III – IV between 1836 and 1846. The inscriptions were made by powder color which faded by time. However, Sala Ruesee and the murals have been renovated several times since 1979 and the information has been recorded by documentation and photographs. These chronicles are references for this study to accomplish the body of knowledge of traditional Thai medicine at Sala Ruesee in addition to the investigation of the murals *in situ*. The aims of this study are to compile traditional Thai medicine formulae and Ruesee Dat Ton available at Wat Matchimawat, analyze and classify the medicinal materials used in the formulae. Medicinal plants are identified by scientific name. Each plant description and its efficacy are demonstrated. Ruesee Dat Ton postures are explained step by step and figures of position are illustrated. Altogether 31 formulae of traditional Thai medicine and 40 postures of Ruesee Don Ton are founded at Wat Matchimawat. The formulae consisted of the medicines for internal uses and the medicines for external uses. Medicinal usage forms are tablets, powders, decoctions and liniments to alleviate 31 diseases or symptoms. Among 31 formulae, 16 of 31 are for treatments of fever, 8 are for various treatments of dizziness and fainting, the rest are for other treatments. Formulae of traditional Thai medicine to treat fever in children and homeostatic treatment for women are also found. There are 102 species of medicinal plant materials divided to 27 species of monocotyledons from 12 families, 81 species of dicotyledons from 52 families and 4 species of fern from 4 families. The other medicinal materials found in the formulae are 2 animal materials and 2 element materials. Zingiberaceae is the most prevalent family of plant ingredients in the formulae while *Pterocarpus santalinus* Linn. f. is the most prevalent species found in the formulae. Forty postures of Ruesee Dat Ton including 30 sitting postures and 10 standing postures are utilized in healing 37 diseases or symptoms. Besides the healing of wind obstruction by the four elements theory of traditional Thai medicine, Ruesee Dat Ton posture which is slowly performing and stretching is found to be an exercise capable to strengthen muscle and be appropriate to any ages of people. This study explains each posture according to the posture's poem and transforms to each position step for muscle stretching and breathing training. Moreover, some postures are found to be relevant to the others and can be grouped into set of postures to gain more benefits in muscle movement.

Field of Study : Public Health Sciences Student's Signature

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CONTENTS

	Page
ABSTRACT (THAI)	iv
ABSTRACT (ENGLISH)	v
ACKNOWLEDGEMENTS	vi
CONTENTS	vii
LIST OF TABLES	ix
LIST OF FIGURES	x
CHAPTER	
I INTRODUCTION	1
Background and Rationale.....	1
Objectives.....	2
Conceptual Framework.....	3
II HISTORIC REVIEW	4
Traditional Thai Medicine Defined.....	4
Traditional Thai Medicine Concept.....	5
Anatomy and Physiology in Traditional Thai Medicine.....	9
The Principles Traditional Thai Pharmacy.....	17
The History of Ruesee Dat Ton in Thailand.....	25
Chronological Development of TTM Formulae Inscriptions.....	28
Brief History of Wat Matchimawas Worawihan.....	30
Sala Ruesee Wat Matchimawas Worawihan.....	30
Literature Related with Sala Ruesee, Wat Matchimawas.....	31
III METHODOLOGY	35
Wall Inscription Survey.....	33
Herbal Medicine Formulae Analysis.....	33
Ruesee Dat Ton Analysis.....	34

	Page
CHAPTER	
IV RESULTS	35
Traditional Thai Medicine Formulae	35
Ruesee Dat Ton Mural	40
Benefit of Ruesee Dat Ton (Hermit Excerises).....	42
Recommendations Before Practice Ruesee Dat Ton.....	43
Caution in Doing Ruesee Dat Ton	44
Important Technical Practice.....	45
Ruesee Dat Ton Wat Matchimawas Worawihan.....	48
V DISCUSSION	128
Benefits of this Study.....	132
REFERENCES	133
APPENDICES	150
Appendix A.....	152
Appendix B.....	173
Appendix C.....	183
VITA	350

LIST OF TABLES

Table		Page
1	Distribution of monocotyledons family.....	36
2	Distribution of dicotyledons family.....	37
3	Distribution of fern over family.....	39
4	Thirty- seven symptoms from Ruesee Dat Ton at Wat Matchimawat.....	40

LIST OF FIGURES

Figure		Page
1	Releases severe muscular cramp or severe Wata disease.....	49
2	Foot problems.....	51
3	Weakness of knees and leg.....	53
4	Low back pain, Lumbar pain.....	55
5	Generalized Weakness.....	57
6	Shoulder, Abdomen and Chest.....	59
7	Facial palsy, generalized weakness and numbness.....	61
8	Generalized weakness or not alert.....	63
9	Vertigo.....	65
10	Hands & Foot cramp.....	67
11	Migraine.....	69
12	Wata for Knee spasm, Leg and Chest.....	71
13	Arm Movement.....	73
14	Knee Discomfort.....	75
15	Chest pain.....	77
16	Vertigo.....	79
17	Lower back pain and hip discomfort.....	81
18	Leg and Neck pain.....	83
19	Abdominal Discomfort and Ankle's joint pain.....	85
20	Chest and Abdominal Discomfort.....	87
21	Scapular and Shoulder Discomfort.....	89
22	Secretion in throat.....	91
23	Knee Trouble.....	93
24	Arm Discomfort.....	95

Figure		Page
25	Low back pain.....	97
26	Chest Discomfort.....	99
27	Hand and Foot Trouble.....	101
28	Weakness.....	103
29	Chronic Muscular Discomfort.....	105
30	Chronic Disease with Bleeding and Congestion.....	107
31	Low abdominal pain and scrotal distension.....	109
32	Wrist trouble.....	111
33	Leg Discomfort.....	113
34	Problem of Penis and Scrotum.....	115
35	Arm Discomfort.....	117
36	Throat's Problem.....	119
37	Weakness and Numbness of leg.....	121
38	Stiffness of neck and shoulder.....	123
39	Shoulder and Neck Discomfort.....	125
40	For a state of Drowsiness.....	127

CHAPTER I

INTRODUCTION

Background & Rationale

Traditional Thai medicine (TTM) has had a close relationship with Thai people since ancient times before the modern medical system came to Thailand. The herbal seeds, more than 5,000 years old had been found by Professor Douglas Yea and Dr. Gorman, anthropologists at archaeological sites in Ban Chiang, Udontani, confirming the use of herbal medicinal plants from early on. Currently, some herbal medications are still being used in urban and rural Thailand [1]. TTM, a unique system, is based on real experiences and situations in the treatment of patients; the knowledge has been passing along from generation to generation.

In former times, the transmission of TTM knowledge had been transferred by word of mouth, then from word to text in TTM textbooks and inscriptions. Some of TTM knowledge were studied from inscriptions written on palm leaves , Khoi barks or engraved on stone tablets, and also displayed on paintings as well.

The first inscription was recorded in Pre-Sukhothai period; There was a list of 29 medicinal plants at Arokayasala (hospital). Others inscriptions were recorded in the temples such as Wat Ratcha Orasaram Ratchawor rawiharn “Wat Ratchaoros”, Wat Phra Chetuphon Vimolmongkhalaram Rajwaramahaviharn, “Wat Pho”. TTM formulae were found there. The two temples were prototype records of the knowledge for the people in the old days because “Wat” or temple in the past is the learning center.

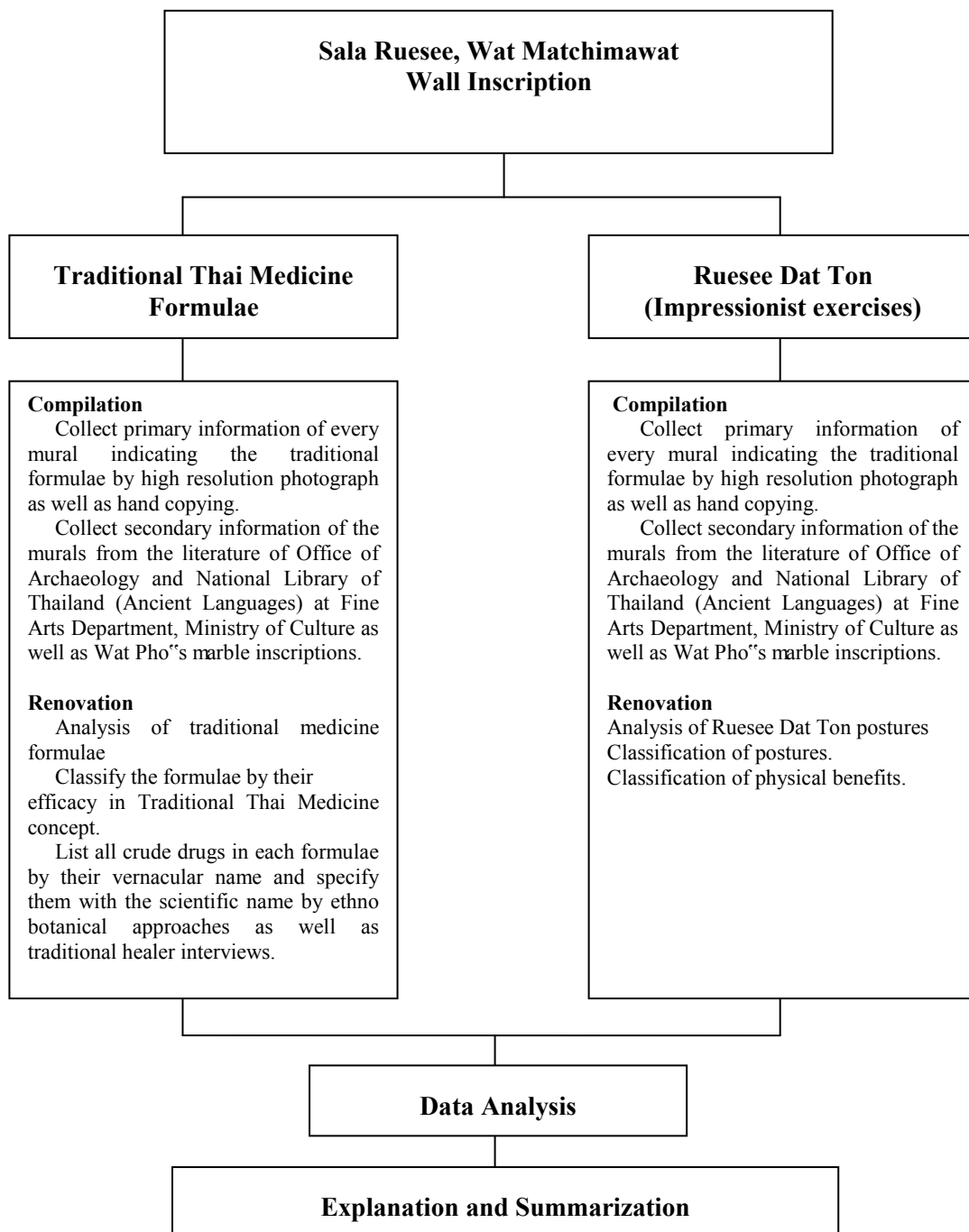
Wat Matchimawat Worawihan, “Wat Matchimawat” at Songkhla province has a long association to TTM, there are TTM formulae and Ruesee Dat Ton murals inscribed in the Sala Ruesee of this temple. Ruesee Dat Ton at Wat Matchimawat was an excerpt at Wat Pho’s inscription. There mural inscription are not only valuable of historicity but also for TTM wisdom

Wall inscriptions of TTM formulae and Ruesee Dat Ton postures at Wat Matchimawat were painted by colored powder. Although Sala Ruesee has been renovated by Department of Fine arts many times which have faded because of rain and moisture, TTM inscriptions has never been investigated in the view of ethnopharmacology. Herbal material authentication is essential for medicinal efficacy. TTM formulae inscribed at the wall of Sala Ruesee, Wat Matchimawat are the medicinal wisdom needed to be deciphered and herbal material ingredients needed to be identified. Ruesee Dat Ton is traditional Thai exercise or may be called as hermit exercise. The postures of Ruesee Dat Ton which are relevant to TTM theory of symptoms should be promoted for health related physical fitness.

Objectives

1. To revise the indigenous traditional Thai medicine formulae on wall inscriptions at Wat Matchimawat Worawihan.
2. To specify the medicinal plants in the formulary with scientific names and classify them by botanical characteristics as well as ethno-pharmacological properties.
3. To analyze the postures of Ruesee Dat Ton paintings on wall inscriptions and demonstrate Thai traditional exercises and explain the effect on the physical body with illustrations.

Conceptual Framework



CHAPTER II

HISTORIC REVIEW

Traditional Thai medicine defined

As defined by the Protection and Promotion of Thai Traditional Medicine Wisdom Act B.E.2542, TTM is the medical process dealing with the examination, diagnosis, therapy, treatment, or prevention of diseases; promotion and rehabilitation of the health of humans or animals, midwifery, Thai massage, as well as the preparation and production of Thai traditional medicine, manufacturing of devices and instruments for medical purposes. Furthermore, TTM is based on oral traditional knowledge and /or textbooks that were passed on and developed from generation to generation [2].

In other words, TTM is composed of traditional philosophies, bodies of knowledge and modes of practice to care for the health of Thai people in accordance with Thai culture, way of life, and based on the principles of Buddhism. Various forms of practices are used to complement each other, i.e. medicinal plants formulae, massage, midwifery, maternal and child healthcare, Buddhist rites and meditation, as well as other rituals derived from the belief in supernatural powers or powers of the universe. TTM is a holistic and natural approach of healthcare, the observation and respect of nature, and the wisdom of Thai ancestors [3].

In addition, Vichai Chokevivat and Anchalee Chuthaputti define the knowledge of TTM as “the processes of selection, adaptation and utilization of traditional medicine and are related to other Asian countries that Thailand had contact with in the past, e.g., India and China and adapted to the Thai way of life” [4].

In summary, TTM is a holistic medicine. The way to treat patients is by using herbal medicines, massage and exercise. The knowledge in ancient times was transmitted from the actual experience and by word of mouth. Later it was recorded

by hand and passed along from generation to generation, using the natural way to treat diseases.

Traditional Thai medicine concept [5]

Sources of diseases in TTM are variation in the elements, seasonal variation, age variation, place variation, time variation and behavioral variation.

Variation in the elements

The body consists of four body elements or *Dhaatus*. It is believed that imbalance and disharmony between the four body elements cause diseases. The four body elements are:

Earth which refers to any entity that is non-liquid, tangible and visible.

Water which means the fluid composition of the human body, e.g., blood, tears, nasal mucous secretion and urine.

Wind which is the air that circulates throughout the body.

Fire which burns the food which is consumed and transforms it into body waste material.

Human diseases can be traced back to irregularity and abnormality in these four body elements.

Seasonal variation

The different seasons could cause imbalance of the four body elements. In the rainy season, for example the wind body element could be responsible for a fever. Humans should adjust themselves to the diseases which occur in the different seasons. These are given below:

Summer	Diseases of fire element
Rainy season	Diseases of air element
Winter	Diseases of water element

Age variation

Age can be related to the propensity of a particular disease to occur in a particular person. Different age groups are correlated with the diseases of a particular element. This relationship is shown below:

Primary age (0- 16 years)	Water element diseases
Middle age (17-32 years)	Fire element diseases
Old age (over 32 years)	Air element diseases

Place variation

The environment has a relationship with the occurrence of a particular disease. Illness can be caused by a different geographical location, extremes of temperature or a new water supply. It is suggested that such an influence could be mediated through the immune system. Information as regards to the birthplace of the patient or the actual place of residence may give the physician clues regarding the diseases which are likely to afflict the patient. The correlation between geography and diseases is given below:

High mountains are associated with diseases of the fire element.

Rain, water and mud are associated with diseases of the air element.

Rain water, soil and ground water are related to diseases of the water element.

Salt water, mud and the beach are related to diseases of the earth element.

Time variation

The time of the day or night has an influence on the different body elements or *Dhaatus*. These are described below:

06.00 - 10.00 a.m. and 18.00 - 22.00 p.m.: Nasal secretion problems or indigestion

10.00 - 14.00 p.m. and 22.00 - 02.00 a.m.: Fever caused by the fire element, stomachache or hunger pains

14.00 - 18.00 p.m. and 02.00 - 06.00 a.m.: The air element causes dizziness, feeling of being worn out, exhaustion and fainting in the afternoon.

Behavioral variation

Certain behavioral patterns are associated with diseases. Some of these are: having too much or too little food and eating spoiled food; imbalance in activities such as standing, sitting, walking or lying down, exposure to hot or cold weather; going without food, water and sleep, delayed defecation or urination, overwork, excessive sorrow and excessive anger.

Diagnosis

A correct diagnosis is extremely important as a wrong diagnosis would lead to inappropriate treatment, which could be fatal. The method of arriving at the correct diagnosis in TTM consists of two factors - history-taking and physical examination.

History taking

Attention is paid to the birth date of the patient because it shows the essential elements or Dhaatu of the patient. The history will also indicate illnesses, which occurred during childhood, seasonal illnesses, lifestyle and behavior which could have related to the illness.

Physical examination

The physical examination consists of confirming the characteristics of the essential elements, palpation of the wrist pulse, checking the body temperature, checking the disordered organ, examination of the blood, using meditation for checking the cause of illness and checking the astrological configuration.

Curative methods

TTM is a holistic medicine which considers several factors which can be associated with the illness. Some of these are given below:

Behavioral factors have to be taken into account, such as the need for exercise and physical stretching (Ruesee dat Ton). Thai traditional massage and meditation, which is a principle of the Dharma treatment, need to be taken into account also.

Probable treatments:

Physical treatment, such as exercise including body twisting.

Mental treatment such as meditation and merit making.

Treatment which consists of altering lifestyle so that the four elements and the external environment are in balance.

The use of herbal food or herbal medicine for adjusting the elements of the body to achieve balance according to the taste of the herbal medicine. These tastes are cool taste (to adjust the fire element), hot taste (to adjust the wind element), bland taste (to adjust the water element) and nine other tastes to adjust the body elements such as astringent, sweet, intoxicating, bitter, creamy, aromatic, sour, spicy and salty.

Herbal food should be administered according to the body element or *Dhaatu*. Examples are given below:

Body element of earth

These persons should consume food with astringent, sweet, creamy and salty flavors such as raw guava, mangosteen, pumpkin, rambutan, taro, bean, milk and molasses.

Body element of water

These persons should consume food with sour and bitter flavors such as lemon, orange, pineapple, tomato, cavalla fruit, mangosa and kiffer lime.

Body element of wind

These persons should consume spicy food such as ginger, galangale, lemongrass, pepper, sweet basil and holy basil.

Body element of fire

These persons should consume food with bitter or tasteless flavors such as morning glory, watermelon, cassia, ivy gonro and tiger herbal.

Healing is carried out by using a single herb preparation or a mixed medicinal plant prescription. Mixed herb preparations are used for chronic diseases.

Anatomy and physiology in TTM [6]

In *Phrakhampee roknithan* (พระคัมภีร์โรคคันทาน), *Phrkhampee Samutthan Vinijchai* (พระคัมภีร์สมุฏฐานวินิจัย), *Phrakhampee Dhatu Wipunk* (พระคัมภีร์ธาตุวิภังค์), *Phrakhampee Dhatu Wiwon* (พระคัมภีร์ธาตุวิวรรณ), a human has 42 components of the body, made up of and classified as 4 elements, which can cause diseases as follows: *Patthawi Dhatus*, *Apo Dhatus*, *Wayo Dhatus* and *Techo Dhatus*. Listed below are the components of the body and the symptoms which arise when they are not functioning normally.

Patthawi Dhatus (ปฐวีธาตุ: the earth element) consist of twenty components of the body. They are:

Kesa (เกศา: the hair), which is the hair growing on the head. The hair serves to protect the brain from being affected excessively by heat and cold. Abnormalities of the hair cause a painful scalp, falling hair, and grey hair.

Loma (โลมา: the body hair), which is the hair growing on the body, such as the eyebrows, beard, and body hair. When symptoms arise from changes in the body hair, the skin hurts, and the hair falls out.

Nakha (นขา: the nails), which grows on the fingers and toes. Disorders of the nails produce pain at the base of the nail, sometimes with inflammation giving rise to pus, and sometimes loss of the nail.

Thanta (ทันตา: the teeth), which are 1. the incisors, 2. the canines, and 3. the molars. The first sets of teeth, altogether 20, are called milk teeth. The second sets of teeth, altogether 32, are the permanent teeth. Abnormalities of the teeth are the source of aching in the roots of the teeth, cavities, pyorrhea and alveolar abscesses.

Tacho (ตะใจ: the skin), according to the texts, this is understood to mean only the exterior covering of three layers, the thick skin, the middle layer, and the epidermis. Alterations in the skin cause itchiness, a feeling of roughness and irritation to the touch, and a stinging pain affecting the skin.

Mangsang (มังสัง: the flesh), this is the muscle tissue of the body. When it is abnormal, the flesh develops bruised, red patches and a burning, stinging pain and when the flesh becomes bruised, develops moles and warts.

Naharu (นหาฐู: the tendons), the tendons and sinews throughout the body. Disordered tendons cause a feeling of constriction of the heart, so that one becomes restless, weak, and hungry.

Atthi (อัฐฐิ: the bones), these are cartilages and hard bones, which form the structure of the body. Abnormalities create pain in the bones.

Atthiminchang (อัฐฐิมินฺชาง) yuanaikraduk (เยื่อในกระดูก: tissue in the bones), should actually be called khai (ไขกระดูก; marrow), nuer yuer (เยื่อ: tissue), because it is the oil in the bones. When the bone marrow is malfunctioning of tissue in the bones causes numbness.

Wakkang (วังกั๊ง: the spleen) which is attached to the side of the stomach. When it is impaired, it causes alternate feelings of heat and cold, resulting in diseases such as krasailom [กระษัยลอม] and painful spleen.

Hatthayang (หทัยัง: the heart), situated towards the left side of the chest. It is about the size of a person's fist. Disorders of the heart cause irritability, touchiness, short temper, and hunger.

Yaknang (ยักนัง: the liver), situated in the rib cage towards the right side of the body, the pancreas is attached to the liver. Abnormalities of the liver cause liver enlargement, downward displacement of the liver, and the painful symptoms of liver abscess.

Kilomkang (กิโคมกั๊ง: fascia or connective tissue) is the flexible tissue throughout the body or the tough, fibrous sheaths which hold the muscles together. Its impairment results in feelings of dehydration and thirstiness, and diseases such as ritsiduangaeng (ริดสีดวงแห้ง)

Pihakang (ปีหกั๊ง: the kidneys). There are two kidneys, on the right and left side situated right above the waist back. When the kidneys are impaired, there is obstruction and congestion in the chest, causing distention of the stomach, a feeling of exhaustion and weakness, and puffiness.

Papphasang (ปัพพาสัง: the lungs), situated on both sides of the chest. Disorders of the lungs cause thirst, heartburn, and labored breathing.

Antang (อันตัง: the large intestine). There are two sections; the upper part including the stomach; and the lower part, which continues from the small intestine to the rectum. Weakness and a feeling of fullness and contraction of the bowel result from its malfunction.

Antakhunang (อนัตคุนัง: the small intestine), connected to the lower section of the large intestine. (Some texts call it sairatsai (สายรัดไส้), the intestinal band. When abnormal it causes belching, yawning, blood and pus in the feces, faintness, aching muscles in the region of the waist, gripping pain in both sides, and burning in the stomach and throat.

Utthariyang (อุทริยั้ง: undigested food]. The food remains in the upper part of the intestines, and in the stomach. Disorders cause diarrhea, colicky pain, dry retching, and hiccoughs

Krisang (กรี้สัง). The waste matter, which is discharged from the small intestine into the lower section of the large intestine, and into the rectum. Abnormalities cause irregular bowel movements, and disorders of the that, generally due to tan khamoi (ตาลขโมย), and cause ritsiduang.

Matthakematthalungkhang (มัตถกเฆมัตถลุงคัง: the brain), the substance in the skull, as well as in the spinal cord. Symptoms resulting from disorders of the brain are headache, deafness, and stiffness of the tongue and jaw.

Apo Dhatus (อาโปธาตุ: the element water) constitutes twelve symptoms of the body. They are:

Pittang (ปีตตัง: bile), which is divided into two kinds: phatthapitta (พันธิปีตะ: bile in the gall bladder); and aphantthapitta (อพันธิปีตะ: bile outside the gall bladder), which flows into the intestines, the bile which is secreted in the liver.

Semhang (เสมหัง: mucus), which is divided into three kinds. They are: sosemha (สอเสมหะ) the mucus in the throat; urasemha (อุรเสมหะ) the mucus in the windpipe; and khutsemha (คุถเสมหะ), the mucus which comes from the rectum. Actually, it occurs in other places too.

Puppho (ปุพโพ: pus), which comes from wounds, and is produced as a result of cuts and bruises for example. Abnormal pus causes coughing, loss of appetite, and loss of weight.

Lohitang (โลหิตตัง: blood). There are two kinds: venous blood, and arterial blood, permeating various symptoms of the body. Blood disorders cause fever,

resulting in delirium, red urine spots, black and red patches on the skin, and diseases such as bubonic plague.

Setho (เสโท: perspiration). Perspiration which comes from all over the body. Changes in perspiration cause restlessness, make the body cold, and cause weakness and exhaustion, and depression.

Metho (เมโท: the body fat), the yellowish-white fat of the body. When it is impaired, it erupts in patches on the skin causing a burning, stinging pain of the skin, and exudation of fluid.

Atsu (อัศสุ: tears), a clear fluid which flows from the eyes. When changes occur in the tears, blurred vision may happen, the eyes may water, and there may be corneal opacity or corneal ulceration.

Wasa (วาสา: lymph), which releases the oil and serum into the body. Abnormalities result in jaundiced skin and eyes, and diarrhea.

Khealo (เคโฬ: saliva). The saliva which enters the mouth from the salivary glands. When the saliva is altered, the throat is sore, and there are pustules on the throat and at the base of the tongue.

Singkhanika (สิงขานิกา: clear mucus), is a clear liquid which comes from the nose. Changes in the nasal mucus cause pain inside the skull, blurred vision, and nasal discharge.

Lasika (ลสิกา: fluid in the joints). When it is abnormal, it causes pain in the joints and inside the bones.

Muttang (มุตตัง: the urine) which is discharged from the urinary bladder. Abnormal urine causes changes in its colour, and smarting pain in the urethra and bladder.

Wayo Dhatus (วาโย: the air element) constitutes six symptoms of the body. They are:

Utthangkhamawata (อุทกคัมภาวาตา), the air which starts from the feet and rises to the head, but some say, which starts from the stomach and rises to the throat, such as in yawning or belching. When it is impaired, it causes such things as restless hands and feet, suffering from abdominal discomfort, a feeling of heat in the stomach, yawning and belching, and flatulence due to mucus.

Ottakhamiawata (โธทคัมภาวาตา), the air which starts from the head and descends to the feet, but some say, which starts from the small intestine and descends to the rectum, such as in passing wind. Disorders cause inability to raise the hands and feet, and aching in all the joints.

Kutchisayawata (กุจฉิสยาวาตา), the air in the abdominal cavity. Abnormalities cause the stomach to rumble (borborygmi), dizziness, and aching in all the joints.

Kothlisayawata (โกฏฐาสยาวาตา), the air which circulates in the intestines and stomach. When it is changed, it causes congestion in the chest, colicky pain, vomiting, and avers.

Angkhamangkhanusariwata (อังคัมภังฆานุสาริวาตา), the air which circulates throughout the body. Blood used to be called lom (ลม: air). Abnormalities cause blurred vision, dizziness, pain in the front of the thighs, painful spleen, dry retching, inability to eat, and alternate sensations of heat and cold.

Atsasapatsasawata (อัศสาสะปะสสาสะวะวาตา: the breath), the air inhaled and exhaled. When it is disordered it causes difficulty in breathing. Breathing becomes shallower and shallower until there is inability to breathe.

Techo Dhatus (เตโช: the fire element) constitutes four symptoms of the body. They are:

Santappakkhi (สันตัปปักคิ), body heat, which warms the body. When it is impaired, it causes the body to become chilled.

Parithaihakkhi (ปรัหัยหัคคี), the heat which makes the body feels hot and uncomfortable, requiring bathing and fanning. When it is abnormal, it creates feelings of heat internally and externally, cold hands and feet, and perspiration

Chiranakkhi (ชীরณัคคี), the heat which causes senility, enabling the body to wither and dry, to deteriorate, and lose condition.

Parinilmakkhi (ปรีณามัคคี), the heat to digest food and cause its decomposition. When it is altered, it causes stiffness in the wrists and ankles, phlegm in the throat and air passages, that is, a cold with pain, causing coughing, painful palms of the hands and soles of the feet, rigidity of the stomach and nausea.

The ten energy lines/sen of the source of life in the TTM physiology [7]

Twelve inches out and around the navel is the centre of the source of life. The root of air has 6 branches and is divided into 72,000 small lines with 10 main lines.

Sen Ittha (เส้นอิทธา) One *sen* called “*Ittha*” runs out of the navel passing the pubis, the inside upper leg down to the knee and goes behind the left upper leg on the back and up along the left side of the spinal cord, up to the head and ends at the left nostril and stationed here called “*Chantagala*”.

The air blocked along this *sen* will prevent the blood circulation to the nerve system because the red blood cells flow along the blood vessels through the suction of air and air is created from the difference of an electric charge, i.e. Air Element from the mind, action, food and weather. The congestion or the lack of flowing blood cells causes all pains and aches.

Sen Pingkhala (เส้นปิงคฺลา) One *sen* called “*Pingkhala*” runs out of the navel passing the pubis down to the right upper leg and goes behind the right upper leg on the back along the right side of the spinal cord, up to the head and down to the right nostril and stationed here called “*Surayagala*”. The air blocked on the *sen* “*Pingkhala*” causes facial expressions.

Sen Sumana (เส้นสุมนา) This *sen* runs out of the navel into the chest along the throat and ends at the tip of the tongue. The *sen* “Sumana” is as if on top of the *sen* “Susumana” from the connection of the pure flowing of the air from the *sen* “Ittha” and the *sen* “Pingskhala”. The air blocked on this *sen* “Sumana” is harmful and is called “Lom Dantakhun”, “Lom Mahasadom” or “Lom Chewhasadom”.

Sen Kalathari (เส้นกาละทारी) This *sen* runs out of the navel by breaking into 4 lines going out both sides, left and right, along the arms, along the legs and breaks into 10 fingers and 10 toes. The air blocked on this *sen* “Kalathari” will cause food poisoning, fatigue, numbness and cramps.

Sen Sahatsarangsi (เส้นสหัสรังสี) This *sen* runs out of the navel along the upper leg, down to the left foot, passing the sole and up to the left shin, along the left torso, up to the left breast, passing under the chin and breaks to be the root of the left eye. The air blocked on this *sen* “Sahatsarangsi” if harmful called “Akkhane Watakhun” may occur from food that is too sweet and too oily.

Sen Thawari (เส้นทวารารี) This *sen* runs out of the navel down to the right foot, passing the right sole and back up to the shin, and to the right nipple and up to under the right chin and up, breaking to be the root of the right eye.

Sen Lawusang (เส้นลาอุสัง) This *sen* runs out of the navel, up to the left breast line, passing the left neck tendon and breaks to be the left ear root. The other *sen* running the same as “Lawusang” is called “Chantrasang”. The air blocked on this *sen* “Lawusang” if harmful, is called “Lom Kanphaha”, “Lom Tharatrana”.

Sen Ulangka (อุรังกะ) This *sen* runs out of the navel up to the right breast-line, passing the right neck tendon and breaks to be the right ear root. The other *sen* running on top of another *sen* “Ulangka” is called “Suku”.

Sen Nanthakrawat (นันทะกะหวัด) This *sen* runs out of the navel down to the urinary bladder and the anal fissure.

Sen Khitchana (คิชณะ) This *sen* runs out of the navel, passing the pubis down to the testicles. Another *sen* running on top of *sen* “*Kitchacha*” is called “*Ratanamane*”.

The Principles of TTM pharmacy [8]

Thai traditional pharmacist must know about four methods of TTM pharmacy:

Herbal material (เภสัชวัตถุ)

Traditional Thai pharmacist must know about the herbs, or substances used as medicine; the properties of herbs; the classification of herbs; and whether they were obtained from plants, animals and/or minerals.

The parts of the ingredients or herbs have different remedial applications. These parts of the plants are the vine (*thaw* เถา), the inner lining of the bark or the sap-wood of trees (*gapi* กะพี้), the pod (*fag* ฟัก), the shoot (*naw* หน่อ), the deep root (*neow* เถ่า), the core (*gean* แก่น), the grain of wood (*nua mei* เนื้อไม้), the bark (*biork* เปลือก), the rough and lumpy part of the bark (*datdrat* ตะคร้อ), the thorn (*nam* หนาม), the trunk (*ton* ต้น), the root (*rak* ราก), the fruit (*juk* ทุก), the inflorescence (*dok* ดอก), and the leaf (*bai* ใบ). Traditional Thai herbalists must know which parts of the plants or which plants possess therapeutic properties for the patients’ symptoms and diseases.

The more the herbalists know of medicinal plants and their indications, the better they can cure their patients. For example, the bark of the tamarind tree is used as an antidote to diarrhea, but the young tamarind leaves and pods are used as a laxative. Insufficient knowledge of plants’ therapeutic properties can jeopardize the patients’ lives and abuse the drugs qualities.

When most parts of a plant can be used for the same therapeutic purpose without counteracting each other, the Thai refer to the five (*tangha* ห้า) which means the five plant parts of a particular medicinal plant. These plant parts are the trunk (*ton* ต้น), root (*rak* ราก) fruit (*luk* ทุก) inflorescence (*dok* ดอก) and leaf (*bai* ใบ)

For example, when it is prescribed that the five of *Senna siamea* (ขี้เหล็กทั้งห้า) be used as a therapeutics nerve system, insomnia and anthelmintic, it indicates all the trunk, root, fruit, flowers, and leaves of the plant.

Indication of herbal medicine (สรรพคุณเภสัช)

Traditional Thai pharmacists must know about the herbal properties and their tastes. There are three major principle tastes; hot (ร้อน), cool (เย็น) and mild (สุขุม) and nine minor principle tastes; astringent (ฝาด), sweet (หวาน), toxic (เมาเบื่อ), bitter (ขม), hot (เผ็ดร้อน), oily (มัน), aromatic (หอมเย็น), salty (เค็ม), and sour (เปรี้ยว). There is also a bland (จืด) taste.

The tastes and scents of remedial substances, particularly those of plant origin, indicate their healing properties and values. Prescribed rules of taste and scent govern the concoction of medical prescriptions as well as experimental concoctions of unfamiliar substances into appropriate medications. In other words, the principles of taste and scent direct medical personnel to make use of both familiar and unfamiliar plants in creating medications suitable for their purposes. The ancient Thai pharmacopoeias divide medicinal substances into ten categories of taste and their correspondent properties as follows:

The three major and nine minor principal tastes: These are given by Phrakhamphisapphakhun lae mahaphikat (พระคัมภีร์สรรพคุณ และมหาพิภักดิ์) [7].

Major principle tastes

Hot-tasting drugs (ยารสร้อน), which when mixed have a hot taste, for example *benjakun* (เบญจกุล), *hadsakun* (หัดศุณ), *ngaokhing heng* (เหง้าขิงแห้ง), *ngaokha* (เหง้าข่า) etc. They are used in the treatment of diseases due to *Wayo Dhatu*s or air element, such as *lomchuksiat* (ลมจุกเสียด).

Cool-tasting drugs (ยารสเย็น) are those such as pollens, flowers, leaves and animal substances such as bones, teeth, horns, antlers and tusks which when mixed, or

after being burnt to ashes, have a cool taste. For example: *Yaa Mahanin* (ยามหานิล) and *Yaa Mahakan* (ยามหากาฬ) They are used in the treatment of diseases caused by *Techo Dhatus* (เตโช) or fire element, such as toxic fevers, and to subdue the heat of poisons.

Mild-tasting drugs (ยารสสุขุม) are used in the treatment of diseases when disorders of the blood and of mucus occur to treat diseases due to air, and to nourish the heart and counteract toxic fevers. They get from the medicinal plants which do not contain hot tasting or cool tasting. Example of mild-tasting drugs: *Yaa Hom* (ยาหอม)

Minor principle tastes:

The astringent taste (ฝาด) has properties to close wounds, heal and protect the element to treat diarrhea and dysentery, and to counteract constipation.

The sweet taste (หวาน) has properties of permeating and moistening the tissues, providing energy, treating exhaustion, counteracting diseases due to increased mucus, and treating cuts and wounds.

The toxic taste (เมาเบื่อ) has antitoxic properties, and is used to treat poisoning of the bile, blood, and mucus, poisoning due to bites of venomous animals, toxic fevers, and to counteract heart diseases of the bile.

The bitter taste (ขม) has properties to nourish the blood and bile, to treat fevers due to bile and abnormalities of the blood, to improve the appetite, and to counteract heart diseases.

The hot and spicy taste (เผ็ดร้อน) has properties to treat *lom* (ลม), *lomchucksiat* (ลมจุกเสียด), indigestion, and passing wind; to nourish the element, and to counteract toxic fevers.

The oily taste (มัน) has properties to treat abnormalities of and nourish the tendons, to enrich the body fats so as to provide warmth to the body, and to counteract mucus disorders.

The aromatic taste (หอมเย็น) has refreshing properties, nourishes the heart and womb, and counteracts diseases due to air.

The salty taste (เค็ม) has properties of permeating the skin, treating skin diseases, preserving the condition of the skin, and counteracting diseases of the bowels, and abnormal element.

The sour taste (เปรี้ยว) has properties of treating mucus, cleansing the blood, loosening the bowels, counteracting jaundice, and treating cuts, wounds, and diarrhea.

In addition, the bland taste is for treating diseases due to the element fire, and is diuretic. Drug tastes are also classified for use in treatment according to the causes of the diseases, whether it results from the effects of the elements, the seasons, ages or times.

Classification of traditional herbal medicine (คณาเภสัช)

Traditional Thai Pharmacists must know about the set in which the herbal medicine belongs to, such as the small set (*chunlaphikat*, จุลพิกัด), the large set and the great set (*mahaphikat*, มหาพิกัด).

Phikat means „set“ or „fix“ of herbal medicine, the purpose of this classification is to overcome difficulties which arise when two or more drugs are very similar, and to simplify prescribing and measuring procedures.

Chunlaphikat (จุลพิกัด), the small set group's herbs of similar name which are for the same part, but which have variations in qualities such as shape, colour, smell, taste and gender. For example, *Chan Tang Song* (จันทงสอง) contains one part of each of *Chan Dang* (*Pterocapus santalinus*) and *Chan Khaw* (*Diospyros decandra*).

Phikatya (พิกัดยา), the large set groups together equal proportions and weights of several herbs under one name. There are 5 groups by set herbal as 3, 5, 7 and 9. For example, *phikat benchakun* (พิกัดเบญจกกุล) contains one part of each of *piper sarmentosum*, root of the wild betel leaf bush, stem of wild pepper equal, *Plumbago* root, and ginger root; i.e, five drugs of equal weight, so that the prescriber has only to

write “*phikat benchakun*” to order equal portions of each of these five. Other groups may contain as many as nine or more drugs, so the advantage is obvious.

Mahaphikat (มหาพิกัถ์), the great set groups several herbs under one name, but in different proportions. These are to make special compounds to treat aggravations, deficiencies, and abnormalities of the *Dhaatus*, and complications and secondary diseases following these. For example, *mahaphikat benchakun* contains the same drugs as *phikat benchakun*, but in different proportions

Traditional pharmaceutical (เภสัชกรรม)

Traditional Thai pharmacists must know about the preparation and dispensing of herbal medicine. There are twenty-eight methods to prepare TTM pharmacological formulae. For example, liquid medicine, powder medicine, pill form, and steam for inhalation therapy. Traditional Thai drugs consist of numerous ingredients which may be classified into the following categories:

Major ingredient(s) - those which exert the main action.

Auxiliary drug(s) - those with complimentary or synergistic action.

Flavorings agents - to make the drug more palatable.

Preparation in TTM: in some prescribed remedies patients are directed to take the internal remedial substances or externally apply substances to the infected area without preparation. However most medications require preparation generally being mixtures of several ingredients or concoctions especially when poisonous herbal materials are used. There are numerous methods of detoxification of substances of medicinal value including those that are too strong in their natural state or even poisonous. The major methods of the preparation of medicines are as follows:

The toxic substances within medicinal plants, such as latex, seeds, and leaves, must be processed to clean and detoxify before being used. In TTM it is called “*Satu*” (สตุ): to remove most of the toxins with a small amount remaining for healing, clearing out harmful properties so as not to contain any germs. Refining the

substances, for example salt when it is desiccated it will be finer, easier for mixing, mild and so on.

Satu steel: steel is filed with a file to become a powder, place powdered steel into a clay pot, squeeze lemon juice into the pot and cover. Set fire to dry out, repeat 7-8 times until powdered steel is crispy, and bring powdered steel to mix as medicine.

Satu alum: grind alum to be a fine powder, place in a clay pot, melt *Alum* with heat until alum is white and fluffy, then remove from the stove and use as medicine.

Satu rong thong (*Garcinia handuryi*): grind *Rong Thong* finely, then wrap *Rong Thong* with lotus leaves or galingale leaves up to 7 layers and grill *Rong Thong* until it is cooked and crispy, then mix as medicine.

Satu mahahing (*Ferula sinkiangensis*): Put *Mahahing* in a container, place red basil (*Ocimum sanctum*) leaves into water and boil, cook until it is fully boiled, pour boiling water and red basil (*Ocimum sanctum*) leaves into *Mahahing* for melting. Then filter to clean *Mahahing*.

Satu dinsopong (*calcium carbonate*): place *Dinsopong* into a clay pot, close the lid, and set *Dinsopong* on a stove until cooked and ready to be used.

Satu borax: put *Borax* into a clay pot, melt over the heat until it is white and fluffy, then lift it off the fire, use the borax to mix as medicine.

Satu shells: put the *Shells* in a clay pot, heat until the shells are cooked and remove from fire. Leave the *Shells* to cool down, then mix as medicine.

Satu yaadum: (*Aloe* spp): put *Yaadum* into a clay pot on the stove, add a little water, cook until, and then bring *Yaadum* to mix as medicine.

Thai medicine requires aqueous vehicle or *Namkrasaiyaa* (น้ำกระสายยา) because traditional physicians want to enhance the medicines with the medicinal properties of *Namkrasai* in order to resist diseases, or to recover from illness faster. *Namkrasaiyaa* makes medicine which can be easily consumed by patients without bad odor or bitter taste.

Namkrasaiyaa comes from fresh water or boiled water without germs. It is used to make water soluble drugs, both tablets and powder can be swallowed with *Namkrasaiyaa* so the drug does not get stuck in the throat.

Namkrasaiyaa comes from plants, grass, minerals or animals. Boil, grind or beat such plants, minerals, animals and then press or squeeze the ingredient to mix or put in some drug to eat. *Namkrasaiyaa* reduce the bitterness of the drug so that the drug is easy to swallow. The drug effect or property will achieve its goal faster. Ancient medicine doctors considered *Namkrasaiyaa* an important part of curing diseases and patients could recover from sickness faster. When it is necessary, *Namkrasaiyaa* may be used immediately.

The importance of *Namkrasaiyaa* elixir is explained below: The ancient doctors used *Namkrasaiyaa* from generation to generation. *Namkrasaiyaa* contains good properties. To make the drug more potent *Namkrasaiyaa* is mixed with it and can cure various diseases. A variety of *Namkrasaiyaa* can be used to treat symptoms such as:

Fever: *Namdokmai* (*Rosa damascene*) mixed with the medicine for drinking.

Asthma - boil *Makamdeekwai* (*Sapindus emarginatus*) to be a soluble drug.

Fever and thirst - boil lotus roots to water-soluble drugs.

Feel chilly: use water from washed rice or nutmeg (*Myristica fragrans*) to be dissolved in water as a drug.

Dysentery: put *Hua Krathue* (*Zingiber zerumbet*), *Hua Plai* (*Zingiber montanum*), *Hua Krachai* (*Boesenbergia rotunda*) onto a stove, grind and dissolve in water as drug

Diarrhea: boil bark of *Khae Dang* (*Sesbania grandiflora*) and bark of *Madua Chumpron* (*Ficus racemosa*) to make water-soluble drugs.

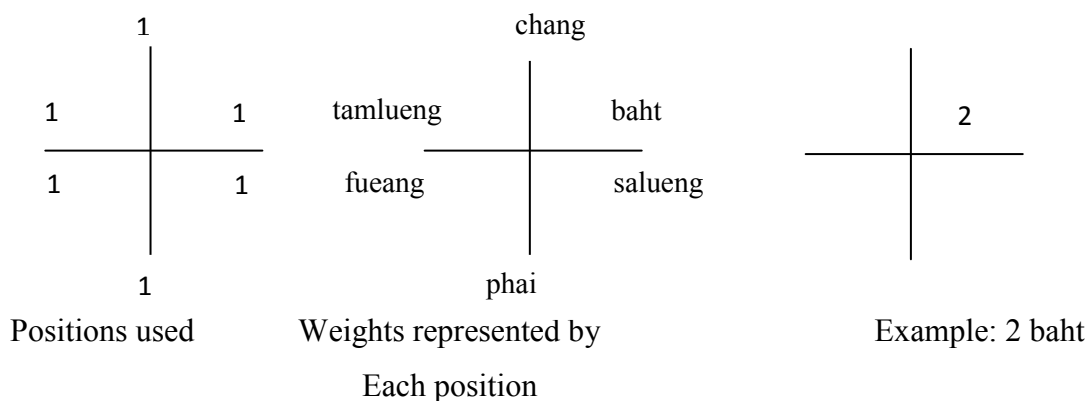
Non-stop diarrhea: boil five parts of pomegranate (*Punica granatum*) -stem, flower, root, fruit and leaves with lime water (*carbon dioxide*) to be water-soluble drug.

Loss of appetite, loss of taste: boil vine of *Borapet* (*Tinospora crispa*), branch of *Sadao* (*Azadirachta indica*) and coriander seed (*Coriandrum sativum*) as water soluble drug.

Vomiting: boil Yo (*Morinda citrifolia*) to drink.

Hiccup: boil root of *Songbadan* (*Cassia surattensis*), root of *Maklamkrua* (*Abrus precatorius*) and root of *Ma uk* (*Solanum stramonifolium*) as water-soluble drug.

In the formulation of traditional Thai medicine, the old system of measurements is utilized. The most common denominations for weight are the 'baht' and 'salueng'. An example of the traditional system of measurements for weight, volume and length is given below.



The Thai system of weights and measures used in dispensing is as follows:

4 phai	=	1 fueang <small>เฟื้อง</small>
2 fueang	=	1 salueng <small>สลึง</small>
4 salueng	=	1 baht <small>บาท</small> = approx. 15 grams
4 baht	=	1 tamlueng <small>ตำลึง</small>

20 tamlueng	=	1 chang ชั่ง
50 chang	=	1 haap หาบ 1
2 malet ngaa (sesame seeds)	=	1 malet khaao plueak เมล็ดข้าวเปลือก (grain of paddy [unhusked rice])
4 grains of paddy	=	1 klom กลุ่ม
2 klom	=	1 klam กำ
2 klam	=	1 phai ไพ
150 grains of paddy	=	1 yip mue หิบบมือ, (a pinch)
4 yip mue	=	1 kam mue (yom mue kam mue) กำมือ (ห้อมมือกำมือ)
4 kam mue	=	1 faa mue ฝ่ามือ
2 faa mue	=	1 kop mue กอบมือ
4 kop mue	=	1 thanaan ทะนาน

The histories of *Benchakun* remedy (ยาเบญจกถูล)

The general belief of TTM is that Thai people respect Ruesee as a teacher. The *Benchakun* (เบญจกถูล: the five herbal medicines) story gives details regarding who made important discoveries about herbs and their benefits and who compiled all herbal medicine and gave them names. There were once six Rueseesees as follows:

Papphatang (ปีพพะตั้ง) who discovered *dok di pli* (ดอกดีปลี) or *phon di pli* (ผลดีปลี), the flower of the fruit of Chab pepper or Long pepper, which relieves or suppresses incurable diseases, regularity substances for ***Patthawid Dhatu***

Uttha (อุทา) who discovered *rakchaphlu* (รากชำพลู), the root of the wild betel leaf bush, for muscular aches and pains, regularity substances for ***Apo Dhatu***

Bupphathewa (บุพเพทวา) who discovered *thaosakhan* (เถาสะข้าน), the stem of a species of wildpepper vine, for the relief or suppression of mucus, wind or air, regularity substances for **Wayo Dhatu**

Buppharatta (บุพพรต) who discovered *rakchettanninphloeng* (รากเจตมูลเพลิง), Plumbago root, for diseases arising from bile, which can cause symptoms of feeling cool or cold, regularity substances for **Techo Dhatu**

Mahitithikam (มหิทธิกรรม) who discovered *ngaokhingheng* (เหง้าขิงแห้ง), dried ginger root for treatment of diseases arising from the *tridosha* (ตรีโทษ), regularity substances for **Akard Dhatu**

Murathathon (มูรธาธร) who mixed equal symptoms of these five drugs. He called the mixture *benchakun* (เบญจกุกูล: the five spices). Medicine prepared from this mixture gives relief from or suppress diseases arising from any of the thirty two symptoms of the body and will also improve the appetite and sleep by its action on the five elements (ธาตุ).

The history of Ruesee Dat Ton in Thailand [8]

Once Bangkok was established as the capital of Thailand, King Rama I the Great, the first Monarch of the Chakri Dynasty, ordered to build the Grand Palace built and the Emerald Buddha Temple on Rattanakosin Island, the central area of the capital. Later in the year 2401 B.E, His Majestic ordered the restoration of Wat Phodharam and establish as a royal monastery. This temple is an old temple since Ayutthaya period. It is located on the south of the Royal Palace. The first restoration in 2331 B.E. took 7 years, 5 months and 28 days. King Rama I ordered to have sculptures showing the exercise activities of a hermit, part of physical science and as an ancient heritage, called hermit exercise (Ruesee Dat Ton), consisting of 80 positions displayed at the pavilion around the shrine. This temple was named as Wat Phra Chetuphon Vimolmongkhalaram Rajwaramahaviharn in the reign of King Mongkut (King Rama VI). King Rama III ordered to have Wat Pho restored, taking up to 16 years and 7 months, with a commitment to build Wat Pho for the study of

public knowledge, without considering any rank or title. The body of knowledge in all disciplines throughout the kingdom were collected, revised and inscribed on marble decorated around Wat Pho. Therefore Wat Pho is equivalent to the open university today. It is inscribed with stories, literatures, poetries, poems, literary works, archaeologies, weapons, TTM formulae, Thai massage textbooks, traditional chiropractor texts, medical texts, etc.

As Ruesee Dat Ton statues were made of clay, they disintegrated over time. During Wat Pho restoration, King Rama III, ordered the remaking of Ruesee Dat Ton by using metal alloys of zinc and tin, to be set in place of the original one. The King and famous poets have composed sonnets lecturing about performing gentle exercises, properties and describing the breath patterns involved, then inscriptions and decorations were made on the walls in the pavilion.

Time elapsed and the present Wat Pho has been restored several times, some parts of the hermit exercise were lost or damaged; the temple has collected the remaining 24 hermit exercises at Khao Mo Hill, at the south side of the temple. While the verses and inscriptions describing the gestures of hermit exercises were almost all lost, there were only some remaining parts at the pavilion on the East, corresponding to the original.

The restoration had to be made by using the original drawings in order to create the mold for Ruesee Dat Ton. The many poems that were part of the drawing are kept and preserved at the National Library for use as prototype for source of the study.

"Ruesee Dat Ton" are various exercise positions in Thailand known since ancient times. The dictionary in the Royal Institute of 2525 B.E., said that Dat Ton (ตัดตน) is the body that is bent, bending is a verb meaning to exercise, to curve, decline, stretch, shrink, twist, or straight as required, so that the body and mind have flexibility, good health, and is active; the ability to be cured and recover from sickness, as therapy to relieve ailments, such as pain and fatigue, and stroke. whether it is weariness, fatigue, dizziness, palpitations, shaken heart, emotional disease, etc.

The name "Ruesee Dat Ton" derives from the Ruesse (yogi or hermit), one who practices religious teaching, including exercises to release stress, reduce the tension of the tendons, nerves and muscles and practiced several hours a day. The exercises also allow the body, especially the legs, arms, and elbows to be more active, makes the body fit without sickness, not fat or too skinny, etc., improves blood circulation- formerly known in Thai: "The best blood", fights against disease, maintains good health and longevity, keeps the mind clear and aware, reduces irritability, depression, anxiety, frustration, and/or fear and so on.

Chronological development of TTM formulae inscriptions

The Pre-Sukothai Period (before 1781 B.E.), during the reign of King Chiworaman VII, the first recorded evidence of the use of medicinal plants by Khoms was in the form of stone tablets at Angkor Wat, built together with 102 Arokayasala (hospitals). At Prasart Taprom, in Cambodia, there was a list of 29 items including botanical drugs. In Thailand there are 22 Arokayasala, influenced by Phra Bhisajkuru of Mahayana Sect of Buddhism [9].

During the Sukhothai Period (1781 - 1893 B.E.) the discovery of a stone metate and roller used in drug compounding from Dvaravati period, which predated the Sukhothai period, lent support to this theory of medicinal plant usage. King Ramkamhang the great ordered the establishment of the large medicinal plant garden atop Kao Luang, which now lies in the district of Kirimas, Sukhothai Province. It should also be mentioned that during this period, the Kingdom adopted by Jivaka Komarabhacca of the Hinayana Sect of Buddhism [1].

In the Ayutthaya Period (1893 – 2306 B.E.), a project initiated by King Narai Maharaj was “Tumra Phra Osod Phra Narai”, a medicine textbook. The King’s intention was to have private Thai herbal formulary collected and all the data compiled with the aim to have a comprehensive text for the education of future generations. This would include a system of TTM and the beginning of its recorded knowledge [10].

In the early Rattanakosin period, King Rama I (2325 – 2352 B.E.) had a prototype created in the ritual of medical knowledge in the form of TTM formulae and Rue See Dat Ton at Wat Pho. The principle of TTM knowledge had been carried over from Ayutthaya period to the present time. Wat Pho had initiated renovation in the reign of His Majesty King Rama I in 2321 B.E., with the intention of educating people about how to live a healthy life, which included the knowledge of TTM [1].

King Rama II (2353 – 2367 B.E.) ordered Praya Pongnarinrajchanukun (the son of King Taksin Maharaj), a traditional doctor in Kom Mo Luang (Royal Medicine Department), to collect all TTM formulae from the royalty, government employees and citizens. When the collection had been accomplished, it was recorded in a book, “Tum Ra Luang Sum Rub Pra O Sod” (The medicine formulae of Royal Department) [9].

When King Rama III (2367 – 2394 B.E.) was still a prince, he had ordered the inscription of TTM formulae at Wat Rajchaoros. Later on, after His Majesty accession to the throne, he renovated Wat Pho again and inscribed the TTM principles, formulae and various knowledge at the pavilion around the Ubosod. [1].

In the reign of King Rama IV (2393 – 2411 B.E.), the Mahasawat canal dredging was completed, the government ordered Chao Praya Tipakornwong (the local leader) to relocate the communities occupying land on both sides of the canal. The first residents moved from Nakhon Chai Si river, Don Wye, Daokanong, and Bang Teay. Chao Praya Tipakornwong also built a public pavilion for the people. Along a 4-kilometer ditch, he had pavilions built, which included a town hall 1-4. Town hall 1-4 had inscriptions on the walls of treatment of various diseases for the local community; later referred to as "Salaya", 6 and 7 were referred to as “Sala Din” and pavilion number 5 built for public cremation, known as "Sala Thammasop ". These pavilions were known as the City Hall. Nowadays, these buildings no longer exist but the area is called “Salaya” district in Nakorn Pathom province and “Sala Thammasop” is the train station in the district of Tawee Wattana [11].

In the same era of King Rama IV, Sala Ruesee was built in the south of Thailand at Songkhla Province. Sala Ruesee, located at Wat Matchimawat, was used

to respect His Majesty King Rama IV. There are TTM formulae and Ruesee Dat Ton located there [12].

During the reign of King Rama V (2411 -2453 B.E.) in 2431, Siriraj hospital was established, combining both western and traditional medicine practices. In 2438, the first medical textbook called “Paetsart Sonkhrau” was printed. In 2450, the next medical textbooks called “Vejasart Wanna” and “Tumra Paetsart Sonkhau Chabubluang”, were printed wherein references were made to the various khampee or old writing on traditional drug matters. In 2451 a simplified version of textbook was written with only relevant information. This series was entitled “Tumra Paesart Sungkheb” or “Vejsuksa” and consisted of three volumes, still available today [1,9].

Brief history of Wat Matchimawat [13]

Wat Matchimawat, known as Wat Klang is one of the grand royal monasteries related to important events of Thai history and also TTM. This temple is located in the ancient town on Saiburee Road, Bouyang Sub-District, Muang District in Songkhla Province.

The temple was built during the Ayutdaya Kingdom, about 400 years ago, founded by a rich old woman named “Yai Srichan”, so the temple had the same name as the founder and supporter. After that, two temples were constructed; Wat Liab in the north, Wat Pho in the south with Wat Yai Srichan in the middle, the people called Wat Yai Srichan as “Wat Klang”.

King Rama IV established Wat Klang as a grand royal monastery in August 2460 B.E. and its official name is “Wat Matchimawat Worawihan”. The temple was the first grand royal monastery in Songkhla Province. In June 2518 B.E., the temple was registered as an ancient historical place.

Sala Ruesee Wat Machimawat Worawihan

Sala Ruesee (Hermit Pavilion) is related to TTM because in the pavilion there are the murals of TTM formulae and Ruesee Dat Ton postures on the gables of the roof and on the fences around the pavilion.

The wall of Sala Ruesee is made of brick clay without a cement coat and has a pole arch. The width is 3 meters by 70 centimeters, the length is 4 meters by 50 centimeters, and the height is 8 meters by 20 centimeters. The gable in the west has a stucco relief of the Buddha receiving Mathupayad (มธุปายาส: rice mixed with sugar and honey) and the gable in the east has a stucco relief of the Buddha floating a tray on Neranchara River after having Mathupayad. There are Ruesee Dat Ton on two sides of the gables. Above the TTM mural inscriptions are altar paintings together with the year and the objectives of the recording. Sala Ruesee is a valuable health education center for monks, novices, and people of that region.

Literature related with Sala Ruesee, Wat Matchimawat

On behalf of the Finearts Department, Ministry of Culture, Thailand, Wannipa na Songkhla explored the murals on the wall at Wat Matchimawat in 2522 B.E. The survey can be considered as the first study to collect data from Wat Matchimawat and Sala Ruesee. The report described the history and location of Wat Matchimawat and explained the dimensions of the murals at the Sala Ruesee. The murals are displayed in two areas; one mural depicts the biography of Lord Buddha at ubosot, the second presents TTM and Ruesee Dat Ton at Sala Ruesee. The report stated that Sala Ruesee had been built in the reign of King Rama III- IV by Chaophraya Wichankiri (Boonsung Na Songkhla), the Governor, who had renovated the temple and built an Ubosod (ordination hall), Wihan (assembly hall), Chedi (stupa), Ho Rakhang (belfry), Salakanparian (study hall), Ho Trai (scripture house), Sala Ruesee (hermits pavilion), Kutikengjeen (Chinese style residential building), than Saotong (flagpole stand) and Kumpang Lae Soompratu (walls and gates). King Rama IV had visited this temple because His emblem was visible in several places. The report mentioned 13 of 31 TTM formulae and 40 traditional Thai poems of Ruesee Dat Ton but not the pictures [14].

In the same year Srinakharinwirot University published “Kong Dee Wat Matchimawat”, a memorial to the royal kathin ceremony describing Wat Matchimawat, Wat Matchimawat’s museum history and presented 20 from 40 pictures of Ruesee Dat Ton taken by Ajan Pulluang [13].

Muang Boran Publishing House had published Kaisri Thongtiew's Funeral book of Remembrance in 2533B.E. This book displays 20 individual Ruesee Dat Ton pictures from the 40 taken by Ajan Pulluang and gives some details about Sala Ruesee built in King Rama IV period. The Ruesee Dat Ton poems explain postures and give the physical benefits for each exercise. The book mentions the inscription of TTM on the wall of Sala Ruesee during King Rama V period, but the book doesn't give details of the formulae [12].

"The Study of Cultural Heritage Management of Wat Matchimawat (Wat Klang), Songkhla Province, Thailand" by Pensuda Chounchaisit, published in 2550 B.E., details the history of Wat Matchimawat and describes the buildings and objects found within Wat Matchimawat. The current heritage management of Wat Matchimawat is the focus of this study with analysis and evaluation of its conservation, site management, interpretation, site presentation, and a close examination of its historical perspective, physical fabric of the place, social and cultural aspects, including religious beliefs, as well as related issues. [15].

In 2550 B.E., Sivakorn Karnchang Co. Ltd. reported the renovation of Wat matchimawat. The report showed pictures of the repairs and completion of the renovation. Ubosod hall, Sala Ruesee, some pictures of TTM formulae and Ruesee Dat Ton were included [16].

CHAPTER III

METHODOLOGY

Wall inscription survey

The permission to survey and collect data of all murals at Sala Ruesee, Wat Matchimawat was officially obtained from the abbot and the assistant's abbot of Wat Matchimawat. Firstly, the bird nets that covered the murals were taken out. All mural were photographed by high resolution camera without flash. The characters were copied from there photographs by hand as well as comparing with the real mural again. The missing characters were filled by the chronicle survey as follows:

- Report on Wat Matchimawat's murals by Department of Finearts [14]
- The films of Wat Matchimawat collected by Muang Boran Publishing House
- Ruesee Dat Ton marble inscriptions at wat Pho
- Ruesee Dat Ton postures and poem recorded in Samud Thai Dam at Department of ancient Thai language, National library.

Herbal medicine formulae analysis

Each herbal medicine formula was investigated. The vernacular name of each ingredient was interpreted and specified by scientific name. The reliability of specifics was performed by expert consultation including ancient Thai linguist, TTM practitioners in southern region and other region, Thai herbalists, plant taxonomist and phytochemist. The indication of each formula was also considered for ingredient interpretation.

Herbal materials were classified according to TTM description as follows: plant materials, animal materials and mineral material. Plant materials were identified by its scientific name. All plant species description and indication were provided.

Ruesee Dat Ton analyses

The postures of Ruesee Dat Ton were studied from the pictures, the verses and mural exercises. Step by step of each posture was practiced. The researcher found that combination of correct breathing method with correct posture during Ruesee Dat Ton exercises could promote muscle strengthening. Workout routines for all Ruesee Dat Ton postures were introduced with step by step with illustrations.



Pictures of collation data at Sala Ruesee, Wat Matchimawat

CHAPTER IV

RESULTS

Traditional Thai Medicine Formulae

Altogether 31 formulae of Thai traditional medicine and 40 positions of Ruessé Dot Ton were found at Wat Matchimawat Worawihan. Regarding the formulae of Thai traditional medicine, medicinal plants, medicinal animal and medicinal minerals were found.

The nature of the medicines can be classified into two groups, first the medicine for internal use and second the medicine for external use. The medicines found were produced in the forms of tablets, powders, decoctions and liniments. Thirty-one diseases and symptoms were found in the inscription.

Among 31 formulae of Thai traditional medicine, 16 of 31 were for treatments of fever, 8 were for various treatments of dizziness and fainting, the rest were for other treatments. Formulae of Thai traditional medicine to treat fever in children and homeostatic treatment for women were also found.

Among herbal plants found in the inscription, there were 102 species of medicinal plants. Twenty-seven species of monocotyledons from 11 families, 81 species of dicotyledons from 49 families and 4 species of fern from 4 families. Two kinds of medicinal minerals (calcium hydroxide, น้ำปูนใส and alum, สารส้ม) and 2 kinds of animal material (honey, น้ำผึ้ง and urine from human or cow, น้ำมูตร). Zingiberaceae was most prevalent of plant family in the formulae while highest frequency of use was *Pterocarpus santalinus*.

Table 1 Distribution of drug in monocotyledons family

Family	Scientific name	Thai name (frequency)
AGAVACEAE	<i>Cordyline fruticosa</i> (L.) Gopp. [17-20]	Makphu (1)
ALLIACEAE	<i>Allium sativum</i> L. [17, 21-23]	Krathiam (2)
ARACEAE	<i>Acorus calamus</i> L. [17, 24, 25]	Wan nam (2)
	<i>Typhonium trilobatum</i> (L.) Schott [17, 26, 27]	Ut ta phit (1)
ASCLEPIADACEAE	<i>Dischidia major</i> (Vahl) Merr. [17, 28]	Chukrohini (1)
COLCHICACEAE	<i>Gloriosa superb</i> L. [17, 29, 30]	Dong dueng (1)
GRAMINEAE	<i>Cymbopogon citratus</i> Stapf [17, 31, 32]	Ta khrai(1)
	<i>Cynodon dactylon</i> L. [17, 33-37]	Yapraek(2)
	<i>Imperata cylindrica</i> (L.)P.Beauv. [17, 38 - 43]	Yakha(1)
	<i>Leersia hexandra</i> Sw. [17]	Yasai(1)
	<i>Oryza sativa</i> L. [17, 42-45]	Khao(1)
	<i>Panicum repens</i> L. [17, 46]	Yachankard(1)
MARANTACEAE	<i>Schumannianthus dichotomus</i> (Roxb.) Gagnep. [17, 47, 48]	Khla(2)
PALMAE	<i>Areca cstechu</i> L. [17, 49, 50]	Makmia(1)
	<i>Calamus caesius</i> Blume [17]	Wai ta khla thong(1)
	<i>Borasis flabellifer</i> L. [17, 51, 52]	Tan tanot(1)
PANDANACEAE	<i>Pandanus tectorius</i> Blume [17, 53, 54]	Lam chiak(1)
SMILACACEAE	<i>Smilax micro-china</i> Roxb. [17]	Huayaakhaao yen(2)
ZINGIBERACEAE	<i>Boesenbergia rotunda</i> (L.) Mansf. [17, 55-57]	Kra chai(3)
	<i>Globba malaccensis</i> Ridl.	Wan ron thong(1)
	<i>Curcuma longa</i> L. [17, 58]	Khaminchan(5)
	<i>Curcuma zedoaria</i> (Berg) Roscoe [17, 59-61]	Khaminoi(5)
	<i>Kaempferia galangal</i> L. [17, 62, 63]	Prohhorm(1)
	<i>Kaempferia roscoeana</i> Wall. [17]	Proh pa(2)
	<i>Zingibe rofficinale</i> Roscoe [17, 42, 43, 64]	Khing(5)
	<i>Zingiber cassumunar</i> Roxb. [17]	Plai(1)
	<i>Zingiber zerumbet</i> (L.) Sm. [17, 65, 66]	Krathue(1)

Table 2 Distribution of drug in dicotyledons family

Family	Scientific name	Thai name (frequency)
ACANTHACEAE	<i>Justicia adhatoda</i> L. [17, 67-69]	Sa niat(1)
AMARANTHACEAE	<i>Rhinacanthus nasutus</i> (L.) Kurz [17, 70]	Thong pan chang (2)
	<i>Alternanthera sessilis</i> (L.) DC. [17,- 71, 72]	Pak pet (1)
	<i>Iresine herbstii</i> Hook. [17, 73]	Pak paeodaeng (1)
ANACARDIACEAE	<i>Semecarpus cochinchinensis</i> Engl.[17]	Rak(1)
ANNONACEAE	<i>Spondias pinnata</i> (L. f.) Kurz [17, 74-77]	Ma kok (3)
	<i>Cyathostemma micranthum</i> (A.DC.) J. Sinclair [17, 78]	Nom maeo (1)
APOCYNACEAE	<i>Rauvolfia serpentine</i> L. Benth. ex Kurz [17, 79, 80]	Ra yom(1)
ASPHODELACEAE	<i>Aloe vera</i> (L.) Burm.f. [17]	Wan hang chorakhe (1)
AVICENNIACEAE	<i>Avicennia marina</i> (Forsk.) Vierh. [17, 81]	Samaethale (2)
BRASSICACEAE	<i>Brassica alba</i> (L.) Rabenh. [43]	Med pan pakkad (1)
CANNABACEAE	<i>Cannabis sativa</i> L. [17,43]	Kan cha (1)
CAPPARACEAE	<i>Capparis micracantha</i> DC. [17]	Ching Chee (1)
COMBRETACEAE	<i>Terminalia chebula</i> Retz. varchebula [17]	Samothai (2)
COMPOSITAE	<i>Artemisia vulgaris</i> L. [17, 82, 83]	Kotchu la lum pa (1)
	<i>Carthamus tinctorius</i> L. [17, 42, 43, 45]	Dokkum Foy (1)
CUCURBITACEAE	<i>Gymnopetalum chinensis</i> (Lour.) Merr. [17, 84, 85]	Kradom (3)
	<i>Solena amplexicaulis</i> (Lam.) Gandhi [17, 86]	Tam luengtua poo (1)
CYPERACEAE	<i>Cyperus rotundus</i> L. [17, 87]	Haew moo (6)
DIPTEROCARPACEAE	<i>Dryobalanops aromatic</i> Gaertn. f. [88, 89]	Pimsen (1)
EBENACEAE	<i>Diospyros decandra</i> Lour. [17, 90]	Chan (4)
EUPHORBIACEAE	<i>Bridelia ovata</i> Decne. [17, 90]	Ma kaa (2)
	<i>Croton roxburghii</i> Balak. [17, 91]	Paolyai (1)
	<i>Croton tiglium</i> L. [17, 41, 42, 92]	Sa lord (1)
	<i>Sapium indicum</i> Willd. [17, 92]	Samothale (1)
GUTTIFERAE	<i>Mesua ferrea</i> L. [17,93, 94]	Bun nak (3)
(CLUSIACEAE)	<i>Mammea siamensis</i> Kosterm. [17, 95]	Saraphi (4)
LABIATAE	<i>Clerodendrum petasites</i> (Lour.) S.Moore. [17, 96]	Thaoyai mom (3)
	<i>Vitex trifolia</i> L. [17, 97, 98]	Khonthi so (2)
LAURACEAE	<i>Cinnamomum camphora</i> (L.) J. Presl. [17, 99, 100]	Karaboon (1)
	<i>Cinnamomum porrectum</i> (Roxb.) Kosterm. [17, 101]	Theptharo (4)

Table 2 Distribution of drug in dicotyledons family (cont.)

Family	Scientific name	Thai name (frequency)
LEGUMINOSAE - CAESALPINIOIDEAE	<i>Caesalpinia bonduc</i> (L.) Roxb. [17, 102] <i>Cassia fistula</i> L. [17, 103, 104] <i>Senna alata</i> L. Roxb. [17, 105-107] <i>Senna siamea</i> (Lam.) Irwin & Barneby [17, 108,109]	Sa wat (1) Ratchphruek (1) Chum hed ted (1) Kheehlak (2)
LEGUMINOSAE - PAPILIONOIDEAE	<i>Dalbergia candenatensis</i> (Dennst.) Prain [17, 110, 111] <i>Erythrina fusca</i> Lour. [17, 42, 43, 81, 112, 113] <i>Glycyrrhiza glabra</i> L. [17, 114-116] <i>Pterocarpus santalinus</i> L. f. [117, 118] <i>Sophora exigua</i> Craib [17, 119]	Sakkhee (2) Thong hlangbaimon (2) Cha am (1) Chandeang (9) Phitsanat (1)
LEGUMINOSAE - MIMOSOIDEAE	<i>Acacia concinna</i> (Willd.) DC. [17, 120, 121]	Som poi (1)
MAGNOLIACEAE	<i>Michelia champaca</i> L. [17, 122, 123]	Cham pa (2)
MELIACEAE	<i>Azadirachta indica</i> var. <i>Siamensis</i> Valetton [17, 124, 125]	Sa dao (1)
MENISPERMACEAE	<i>Tiliacora triandra</i> (Colebr.) Diels [17, 126, 127]	Yanang (4)
MORACEAE	<i>Tinospora crispa</i> L. [17, 128, 129] <i>Ficus racemosa</i> L. [17, 130, 131] <i>Maclura cochinchinensis</i> (Lour.) Corner [17, 28, 132]	Bora phet (7) Ma dueautum pho(1) Kaelae (1)
MYRSINACEAE	<i>Embelia ribes</i> Burm. F. [133-135]	Som kung (1)
MYRISTICACEAE	<i>Myristica fragrans</i> Houtt. [17, 136]	Chan thet (6)
MYRTACEAE	<i>Syzygium aromaticum</i> (L.) Merr.&L.M.Perry [17, 137-139]	Kanplou (1)
NELUMBONACEAE	<i>Nelumbo nucifera</i> Gaertn. [17, 140-142]	Bua Luang (3)
NYCTAGINACEAE	<i>Mirabilis jalapa</i> L. [17, 143, 144]	Ban Yen (1)
OLEACEAE	<i>Jasminum sambac</i> (L.) Aiton [17, 145, 146]	Mali/Malila (2)
OPILIAEAE	<i>Urobotrya siamensis</i> Hiepko [147]	Phak wan mao (1)
PIPERACEAE	<i>Piper Interruptum</i> Opiz [17, 148, 149] <i>Piper nigrum</i> L. [17, 149, 150] <i>Piper retrofractum</i> Vahl [17, 151, 152] <i>Piper sarmentosum</i> Roxb. [17, 153, 154]	Sa khan (3) Prikthai (8) Dee plee (7) Cha phlu (4)
PLUMBAGINACEAE	<i>Plumbago indica</i> L. [17, 155, 156]	Cheat ta moon pleongdaeng (1)
PUNICACEAE	<i>Punica granatum</i> L. [17, 157, 158]	Tub tim (1)
RHAMNACEAE	<i>Colubrina asiatica</i> (L.) Brongn. [17, 159, 160]	Khan song (1)
ROSACEAE	<i>Rosa damascene</i> Mill. [161]	Kuhlabmon (1)
RUBIACEAE	<i>Morinda citrifolia</i> L. [17, 162-164] <i>Tarenna hoensis</i> Pit. [17, 165]	Yor, Yor Ban (1) Chan thana (2)

Table 2 Distribution of drug in dicotyledons family (cont.)

Family	Scientific name	Thai name (frequency)
RUTACEAE	<i>Aegle marmelos</i> (L.) Correa ex Roxb. [17, 166, 167]	Matoom (3)
	<i>Citrus aurantifolia</i> (Christm.) Swingle [17, 168, 169]	Manao (1)
	<i>Citrus hystrix</i> DC. [17, 170, 171]	Makrut (3)
SAPINDACEAE	<i>Cardiospermum halicacabum</i> L. [17, 172, 173]	Khokkraom
SAPOTACEAE	<i>Mimusops elengi</i> L. [17, 174]	Phikun (6)
SCROPHULARIACEAE	<i>Limnophila rugosa</i> (Roth) Merr. [17, 175, 176]	Phakkachom (1)
SIMAROUBACEAE	<i>Harrisonia perforata</i> (Blanco) Merr. [17, 177, 178]	Khonthaa (2)
SOLANACEAE	<i>Capsicum frutescens</i> L. [17, 179, 180]	Phrikkinu (1)
	<i>Datura metel</i> L. [17, 181, 182]	Lum pong gasaluk (1)
RANUNCULACEAE	<i>Nigella sativa</i> L. [183-186]	Thian Dam (6)
STRYCHNACEAE	<i>Strychnos nux-blanda</i> A.W. Hill [187-189]	Tumkakhao
THYMELAEACEAE	<i>Aquilaria crassna</i> Pierre ex Lec.[17, 190]	Kritsana
UMBELLIFERAE	<i>Anethum graveolens</i> L. [191-193]	Thian ta takkataen (1)
	<i>Angelica dahurica</i> Benth. [42, 43, 194, 195]	Kot So(1)
	<i>Coriandrum sativum</i> L. [17, 196, 197]	Phakchee (4)
	<i>Ferula assa – foetida</i> L. [198, 199]	Mahahing (1)
	<i>Petroselinum crispum</i> (Mill.) [200]	Thianyaowapanee (1)

Table 3 Distribution of drug in fern family

Family	Scientific name	Thai name (frequency)
CYATHEACEAE	<i>Cyathea gigantean</i> (Wall. ex Hook.) [201-203]	Neraphusi (3)
MARATTIACEAE	<i>Angiopteris evecta</i> (G.Forst.) Hoffm. [204, 205]	Wan kib raet (2)
	<i>Drynaria quercifolia</i> (L.) J. Sm. [206-208]	Kra tee tai mai (1)
PTERIDACEAE	<i>Acrostichum aureum</i> L. [209-213]	Prong tha le (1)

Ruesee Dat Ton mural

Among the total positions of Ruesee Dat Ton, all of them are identical to Wat Pho except that a few words are different but same meaning. Ruesee Dat Ton at Wat Matchimawat can be utilized in healing 37 disease symptoms. The positions found can be divided into two groups, which are sitting position and standing position. The sitting positions are classified into 30 postures which are while the standing positions are classified into 10 postures.

Table 4 thirty- seven symptoms from Ruesee Dat Ton at Wat Matchimawat

symptoms	posture no.	among
Severe muscular cramp	1	1
Foot's problem	2	1
Weakness of knee and leg	3	1
Low back pain, lumbar pain	4	1
Generalized Weakness	5	1
Shoulder, abdominal and chest problem	6	1
Facial palsy, generalized weakness and numbness	7	1
Generalized weakness or not alert	8	1
Vertigo	9, 16	1
Hands and foot cramp	10	2
Migraine	11	1
Spasm knee leg and chest	12	1
Arm movement	13	1
Knee discomfort , Knee trouble	14,23	1
Chest pain	15	2
Low back pain and hip discomfort	17	1

Table 4 thirty- seven symptoms from Ruesee Dat Ton at Wat Matchimawat (Cont.)

symptoms	posture no.	among
Leg & neck pain	18	1
Abdominal discomfort and ankle's joint pain	19	1
Chest and abdominal discomfort	20	1
Scapular and shoulder discomfort	21	1
Secretion in throat	22	1
Arm discomfort	24,35	1
Low back pain	25	1
Chest discomfort	26	2
Hand and foot trouble	27	1
	28	1
Chronic muscular discomfort	29	1
Chronic disease with bleeding and congestion	30	1
Low abdominal pain and scrotal distension	31	1
Wrist trouble	32	1
Leg discomfort	33	1
Problem of penis and scrotum	34	1
Throat's problem	36	1
Weakness and numbness of leg	37	1
Stiffness of neck and shoulder	38	1
Shoulder and neck discomfort	39	1
For a state of drowsiness	40	1
	total	40

Benefit of Ruesee Dat Ton (Hermit Exercises)

Apart from the benefits of treating symptoms, as mentioned in the ancient texts, the Ruesee Dat Ton also acted as specific exercise of Thailand which expresses the gentle softness to perform by oneself manually; there is no impact, there will be no cause of injury. It can stimulate blood circulation; promote healthy body and good health. Ruesee Dat Ton is good for all people. The benefits of Ruesee Dat Ton are divided as follows:

1. Help warm the muscles and prepare the body by joining muscles and joints, to get ready for exercise, play sports, or a mission in daily life.

2. Help stretch the muscles, reduce the spasms and stress in the muscles, after exercise, sports and hard work. To relax the body.

3. Help keep the body healthy. Moving fluently. Elegant personality. Upright, back straight, not bent.

4. Help to tie all of the muscles and joints in the body.

5. Help improve blood circulation in the body.

6. Allow full training breathing in full lungs, allow deep breath and exhale long, help expand the chest cavity, improve breath control both the chest and abdomen properly.

In the abdominal surgery, after surgery, the patient will have difficulty in breath as there is painful abdomen, it needs help breathing by the chest. On the other hand, after chest surgery, breathing with abdomen is essential. If there is practicing control of breathing regularly, it helps adjust breathing easily and it helps the body to have sufficient oxygen. Damaged cells are repaired quickly.

7. Proper exercise stimulates the body to produce substance of Endorphin which is substance that enhances the immune, it will help prevent diseases, it nourishes health, and it makes life longer.

8. It helps calm the mind and elevates mind, it prepares mind to be ready for life operation.

9. Help in the treatment of ailments such as posture throughout the whole body stroke facility. Aches, sprains, etc. to solve by medical science that the ancient relic.

10. Allow extremities or joint to move smoothly and without disruption. The movement is natural. It also enhances the width of the joint corner. It helps movement easily.

11. Ruesee Dat Ton is economical exercise, no charge; it can be made easily at home or anywhere, without the need to wear specifically or use any device, but there is maximum impact on the body.

Recommendations before practice Ruesee Dat Ton

- Any person, who begins training, should start slowly so that different parts of the body including muscles, joints, and elbow can adapt gradually.
- Before each exercise prepare your body and mind and make peace. Do not rush the exercise. If you arrive home, you should take a rest first.. If you have sweat, you need to wipe the sweat flooded before.
- Bending, stretching or rolling of the body, practice as possible, not force or too rigid, follow by own ability. Do not get help from others. It may cause injury. When training a body will gradually adapt to the stretching, extending or bending until it has full capacity of the body.
- After practice exercise, the person should not stop immediately while the person is being tired. Reduce or slow the movement of the body slowly. Maintain a balance between heart rate with the flow of blood back to the heart. Prevent the bottleneck of the blood in the various parts of the body. Do not make Ruesee Dat Ton severely or quickly to prevent injuries. If you feel severely painful, stop it immediately.

Inhale the most slowly and deeply before you exhale gently, do not hold breath, when you train until you have expertise, you can inhale deeply, and exhale in long time and naturally.

Bending, or rolling in each posture, may make some sprain; if you do not feel that you have sprain, it is because you have incorrect posture.

□ Almost all Ruesee Dat Ton, repeat about 3-5 times, the number of times for doing depends on ability of each person. If you are too tired, reduce the number of times. For exercise, should do constantly for at least three times a week. In each time, Ruesee Dat Ton should be done continuously for at least 20 minutes; it will have the full benefit.

Generally, hermit exercises of this study are divided to be standing posture and sitting posture. The person may adapt postures to be suitable to body, for example, any person who has problems of standing, or half part of lower part of body is not strong, may change from standing to sitting. Any person who has problems of knee joint, making unable to sit with crosses legs or unable to sit on heel, the person may change from sitting to standing. You can practice in the posture that you have determined, gradually check your body; if you cannot do, you practice until you have expertise, you try again.

Caution in doing Ruesee Dat Ton

1. Any person who was operated for changing hip joints, knee joints and bone fracture, should consult a doctor.
2. The person may have infection around joints.
3. If there is operation to change joints, bending of hermit exercises should not be more than ability, for example, person who changes hip joints should not bend legs for more than 90 degrees.
4. If the person does not do exercise every day, he/she should warm body before exercise, by doing warm to body every time.
5. Hermit exercise will not cause injury; if there is injury, it shows force until it is over ability of muscle, or bending is done too much until there is arthritis.
6. A little sprain will happen during hermit exercises.
7. Do not use hermit exercises severely and quickly, it may cause danger and injury.
8. Do not exercise in organs having inflammation, swelling, redness or heat.

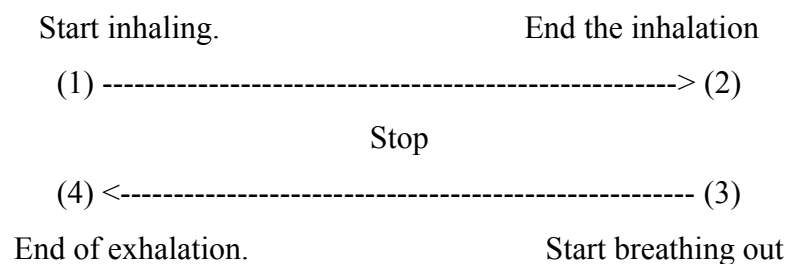
9. Do not do for vertigo and unstable blood pressure.
10. In practice in each hermit exercises, please be careful for some symptoms or disease. Please study and be careful in each posture prudently.

Important technical practice

Training of exercises "Ruesee Dat Ton" makes the relationship between gesture, movement and breathing as significant principles and makes slowly (The person makes mind to be in the current stance according to the gestures, or makes mental to mix with physical figure, deeply inhale and exhale correctly). This will be a way to lead to good health. As breathing is the introduction of oxygen into the respiratory organs to purify blood for nourishing organs in the body and exercise inside the body, it helps massage organs in chest, the abdominal organs and makes involved organs to be strong and works more effectively. As a result, training will help trainees to have strong health physically and mentally.

Breathing out (shrink - um) breathing in (swelling - um)

Correct breathing is the important key to unlock the way to make the body to be healthy which normally there is a four-stroke cycle:



The end of strokes 2 and 4 is end of the inhalation and end of the exhalation. Usually this stopping is a very short stop until it becomes almost to inhale and exhale consecutively, without any pause before the inhaling is changed to be exhaling and before the exhalation is changed to inhaling. Breathing should be made with a conscious awareness. There should be development to make the most benefits as good

breathing is the "science" and "art" that should be trained to create a routine practice and expertise, as follows:

1. The person has the deepest inhaling and allows the chest and abdomen to bulge out and cozy up to the fullest.
2. If the person inhales in the deepest level, holds breathe for a few minutes and be mindful that inhaling cannot be made any longer, the person will stop inhaling in order to change the rhythm of breathing. (Because the person cannot endure); the person begins to exhale.
3. The person will exhale and flatten the chest and abdomen; the person will flatten the chest until it is in the fullest size.
4. After the person exhales to the fullest, he will hold breath for a few minutes and will have conscious awareness to know that exhaling cannot be made any longer and then stopped to change to be inhaling.

Finally, it should come back from 1 to 4 on a cycle of breathing for the rest of the human life span according to life, or until life ends. Practice breathing in the early stage, there is suggestion that the person should take a deep breath and hold breath in a short time enough to do a little bit as casual and not to overdo it, as fatigue will happen or lung will be fatigue and may cause lung inflammation.

So in new breathing, exercises should be done moderately and gradually increase the number of breathing training when there is more expertise. In the first stage of training, training should sit in a comfortable position with back straight (do not sit against anything) in a place with fresh air flow area. For those living near the road in the city such as Bangkok practice of breathing should be made in the early morning (03:00 to 05:00) as less pollution from the traffic. The proper breathing exercises should be made in the time when the stomach is not full, or not hungry, so it should be a time before having meal or two hours after meal.

In addition, please always note that the "Ruesee Dat Ton" is used for preventing disease which is more effective than treatment. Therefore, those who fall ill should not rely on the practice of "hermit exercises" only for treatment. The person should be treated by modern medicine together with hermit exercises for treating

concurrently. Ruesee Dat Ton can alleviate diseases. If you want to cure from diseases promptly, it should be treated with medicine, you will get better. If you practice Ruesee Dat Ton, without having diseases will help you not to be suffered from diseases, it is better than having suffered from diseases, and been treated.

Releases severe muscular cramp

(ทำดัดตนแก้ลมมหาบาทย์กษ)

Instructions (Figure 1)

1. Sit with crossed legs. Both hands catch your shin and pull your shin up. Try to pull shins up and push chest with full force.
2. Inhale and hold your breath for a while and rock body to left hand side.
3. Exhale back to starting position, repeat and rock body to the right.
4. Repeat 3-5 times.

Explanation

When you sit with crossed legs, you will feel comfortable. Your base will be stable. Both hands catch shins when ready pull shin up. Pull shins up and push chest with full force stretching and contracting of back muscles, waist and neck fully. The poem said that “push chest to move body”. There will be moving of body and it should move to left, right, stretching shins will make a rocking motion to be in balance. This gesture is very useful causing muscle contraction strength. This exercise benefits the muscles of shoulders, neck, back, arms and waist.



Figure 1 Releases severe muscular cramp

Foot Problems

(ทำดัดตนแก้เท้าขัด)

Instructions (Figure 2)

1. Separate legs and raise one knee.
2. Use hands to massage from shins to soles on both sides while pressing in each time.
3. Inhale and release while exhaling. Repeat 3 - 5 times on each side, and then switch sides.

Explanation

Separating legs and the knee raised up is a comfortable posture of Thai people. It doesn't look polite but it is comfortable. This posture is suitable for relaxing; sit with one knee rose up and can alternate as you raise the other knee easily. You can change to sit with legs folded back down. This posture benefits your knees, making easy massage from thigh to foot, but the correct massage is from knee to foot. The key points of massage plan, such as the Pingcala Line to release Athoka Wata to be soft. In a foot massage, you should massage down from knee to the shin then ankle and foot.



Figure 2 Foot problems

Weakness of Knees & Legs

(ท่าตัดต้นแก้มเข้าต่าย)

Instructions (Figure 3)

1. Fold your knees and raise knees up. End of foot can be crossed or apart.
2. Put arms on the floor. Fold your elbow and place your palm on the floor, breathing along with the hand pressed on the floor, at the same time try to fold your knees against it to have resistance.
3. Exhale and pull the arms to extend the knees while exhaling.

Explanation

The focus is on the knees and legs. Commonly sitting with one knee up affects the muscles stretching the knees, if you have force to do like this, extend your knee and then fold your knee back and at the same time try to spread out. This exercise stretches and tightens your knees, exercise in the manner of using resistance according to the rhythm.



Figure 3 Weakness of knees and leg

Low back pain, Lumbar pain

(ท่าตัดต้นแก้มปีศาจในเอว)

Instructions (Figure 4)

1. Sitting while you fold your knees. Cross one of your legs against the other leg to the side.
2. Use your hand to catch your shin, which is folded. Stretch the other arm to the front. Swing your arm and stretch your arm to your side and then tilt your face forward and look at the end of your arm. Stretch your arm fully and inhale and exhale.
3. Rotate arms forward as original posture. Start swinging your arm by swinging your hands to extend. With the other hand pull shin and repeat 3 – 5 times.

Explanation

Sitting with one knee crossed to catch the stretching arm is to cause the hip to be straight. Catching shin of the folded leg with one arm and stretching one arm and tilting your face to look at stretching hand, when you catch your shin, you will have force to pull, your waist twists to do better. Muscles in the arms will have benefit as they can exercise at the same time.

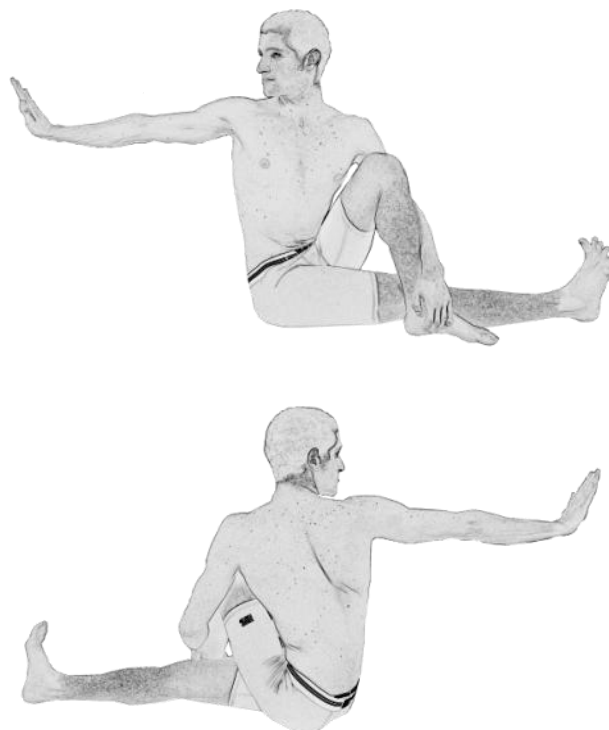


Figure 4 Low back pain, Lumbar pain

Generalized Weakness

(ทำดัดตนแก้ลมทั่วสารพวงค์)

Instructions (Figure 5)

1. Sit with folded knees pressed together, body is upright sitting on the thighs or the upper legs, at the midway between the hip or thigh area. When arms are already changed, sit with buttocks on the heels and rise up the chest and face fully.
2. Inhaling raising the buttock up a little bit. Return hand and gently place the buttocks down, raise chest and face 3-5 times, or sit and do without raising buttocks only raising chest and pressing hands.

Explanation

The result of this exercise is physical therapy, kneeling flat with the muscles and tendons especially will help tighten the tendons in the front leg for stretching. When the arms are turned back, stretch muscles to stretch arms fully. Pressing on legs and moving wrists, wrist tendons will have a beneficial effect. It is expected that this exercise helps release the aches throughout the whole body as it has effect on many muscles.



Figure 5 Generalized Weaknesses

Shoulder, abdomen and chest problem

(ท่าตัดต้นแก้มไหล่ ท้อง ออก)

Instructions (Figure 6)

This exercise is in sitting posture. “Feet crossed”, crossing of feet is difficult. One interpretation is crossing of feet to kneel. Sitting cross-legged in diamond kneeling posture is not easy because the person has to raise buttocks up and kneel. It is like doing a cross-legged position and sliding the leg out to adjust the ankles, which are crossing, but it seems very difficult.

Instruction

1. Feet will be placed to the contrary to be separate, until the person can be very stable.
2. Use one hand to press on the temple.
3. Open the chest so the back is pressed forward against the chest, stretching both hands lifted up with full inhale.
4. Then release and exhale, repeat 3-5 times, and then change to the other side.

Explanation

The crossed legs in diamond position may not be an important issue. The important issue is spreading the knees while bent and hands on the forehead, chest stretched. And neck movements cause neck muscles and shoulder muscles to lift the shoulders.



Figure 6 Shoulder, abdomen and chest problem

Facial palsy, generalized weakness & numbness

(ทำตัดตนแก้ลมชักปากเบี้ยว, เส้นตาย, เท้ามือเหน็บ)

Instructions (Figure 7)

Sitting on folded legs is very difficult. Sit by fixing one wrist either side at the ankle. Fold knees, the other hand holds the shoulder. In the poem, there isn't any description it just says "hold shoulders, hold feet". If the patient is very sick, the patient cannot stand. Sit as shown in the picture because when sitting cannot fall. However, if the symptoms are mild, the person can exercise the knees because the patient can pull into the folded edge of the hip.

Instruction

1. Sit on folded legs, or kneel by the body upright. One hand catches leg at ankle, pull and fix and the other hand pulls the shoulder according to the arm pulling.
2. Turn to the opposite side while inhaling deeply. Then relax, repeat 3-5 times, or as much as you can.

Explanation

Patients with disease of palsy due to hemorrhage of blood vessels in brain or stroke, constricted blood vessels, or clogged blood vessel. Some of the nearby nerves function instead, so exhausted arms and legs are temporary. Doing exercises is essential because it stimulates different muscles and will help with disabilities. This posture is used with patients who can help himself/herself. "Pulling shoulders and stretching feet and turning feet" have anatomical description of stretching shoulder muscles. In the compressing of shoulders, it is exercising muscles while the wrist pulls on the feet. If not, pulling the shoulders has less tension. The muscles for stretching the knees are fully extended. This posture is for people with symptomatic knees, which are flexed. It can be concluded that it is beneficial for the shoulder, hip, knee joint and wrist. This posture is perfect for the person who suffers from palsy with contraction of muscle wall.



Figure 7 Facial palsy, generalized weakness & numbness

Generalized weakness or not alert

(ท่าตัดตนแก้เกี้ยว)

Instructions (Figure 8)

Sit in cross- legged position with knees raised up or down. The movement is of the hand stretching, turning and bending forward position.

1. Sit with crossed legs, or sit with your knees rolled up, put your hands together; bend hands so that the palms of the hands are bending facing forward.
2. Arms stretched to the fullest. Deep breath. Hold your breath for a few seconds and then release alternate arms.

Explanation

This posture seems to be very natural. Nowadays, many people still use it regularly. It is called stretching oneself. This may have the effect of stretching the muscles around the shoulder area, elbow and wrist, and also the waist. It will affect treatment. It should be studied further.

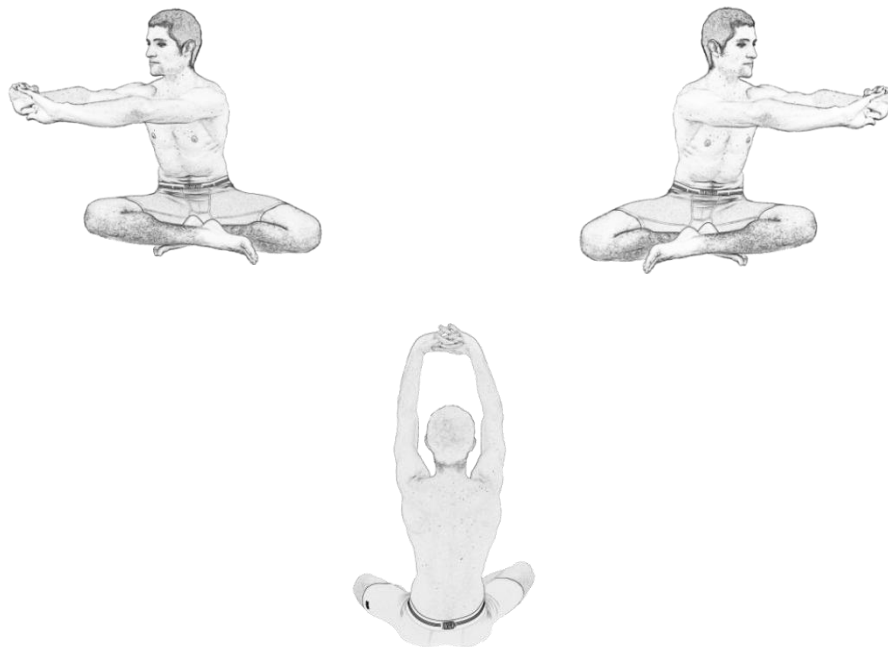


Figure 8 Generalized weakness or not alert

Vertigo

(ตัดตนแก้วิงเวียน)

Instruction (Figure 9)

In verses it indicates clearly that “bending in sitting posture is difficult”, sitting with feet raised up. Turn face to the focus the sky. This is to release dizziness or vertigo. Sit on toes, feet, and hands in prayer position. Raise chest up to the side with hands overhead. Turn face up like paying respect to the King.

1. Inhale deeply. Then relax with hands down on one side, swing back and inhale. Then raise hand to pay homage. Raise face to the maximum.
2. Exhale to swing back to the other side, repeat, alternating back and forth for 3-5 times.

Explanation

Dizziness may be caused by many reasons, such as eyes, ears, stress, pressure, not enough blood to the brain, etc. Dizziness in traditional plan is organized in groups of epileptic "Wata". Wind to nourish the upper part is called “Uthangkama Wata”. Sitting position is to exercise ankles, knees, hips, elongation, turning the body, raising face. It can affect the arms, hands, neck muscles, waist and back, with deep breath, can stretch the chest muscles and abdomen muscles. This may have effect of stimulating more blood flow to the brain. It may relieve the tension of the muscles around the shoulder, neck, and relieving dizziness. This is just hypothesis, it should be researched further.



Figure 9 Vertigo

Hands & Foot cramp

(ตัดตนแก้ตะคริวมือเท้า)

Instruction (Figure 10)

According to the poem, "Standing as a giant, dance, spread two cones in emphasis type" The posture is Khon playing as giant.

1. Standing and spreading of legs in Khon dance, end of feet will separate at the side, put down knees, stretch elbow, hand catching thighs turning hand back to one side up, to be against the pressing of the two hands until one leg is off the ground.
2. Exhale; press your toes down, press both hands, stop for a while, inhale and exhale the first time and start to lift the other leg and repeat the same.

Explanation

Standing with spread legs in Khon dance, putting knees down has an effect on the waist, hips, knees, ankles and feet. Pressing the thighs - like helping to close and open wind door in traditional switch. The person should raise one leg up and inhale and putting weight on the other leg. The weight will drop down the side of the leg. It causes resistant force of muscular rump to shrink hips. Muscles will extend knees. There is more stretching of the leg down to the foot or toes. If you do this the result will be as mentioned, it will release cramps at feet. It should be researched further.



Figure 10 Hands & Foot cramp

Migraine

(ตัดตนแก้ลมปะก้าง)

Instructions (Figure 11)

This posture massages the area of the forehead, one hand holds the chin, the other hand is placed on forehead and temple.

1. Sit with crossed legs. Use right hand to hold the chin. Use left hand to hold your forehead. Use your thumb to press your temples.
2. Use full force of the left thumb to press at the temple. Then reverse the hand position. While you are pressing fingers, slowly inhale and exhale to bring relief. Repeat 3-5 times.

Explanation:

This posture should be done in a sitting posture because the person may feel dizzy and eyes blurred. You should be in a stable position without falling. Sitting posture with crossed legs is comfortable and stable. Use one hand to hold the chin. The other hand presses the temple with full pressure. This position is based on Thai medical theory on massage.

Using the left thumb to press at the temple with pressure on the left temple then the right thumb on the right temple. The Thai theory of anatomy says that the temple area has major blood vessels and nerves through the superficial artery and vein and temporal branch of facial nerve. Pressing and releasing hands may affect the contraction and expansion of blood vessels and stimulates nerves. Therefore, this posture may result in alleviating headaches. There should be more study and research on Thai massage regarding the result of additional treatments.

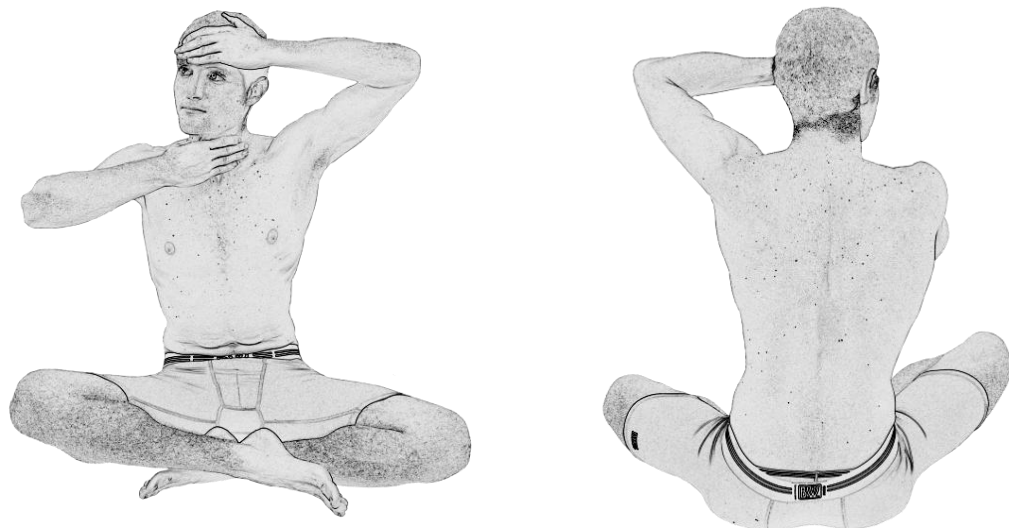


Figure 11 Migraine

Knee, leg and chest spasm

(ตัดต้นแก้มจันทผาดเข้า, ขา, หน้าอก)

Instructions (Figuer12)

Stand on the left foot while bending the right knee and grabbing the right ankle. Apply pressure down while pulling ankle up slightly and inhaling fully, exhale and change sides.

Explanation:

Standing on one foot while exerting pressure on the thigh exercises the ankles, knees, thighs and muscles. Pulling on the ankles will raise your chest. This also builds strength in the muscle of the chest, abdomen and back.

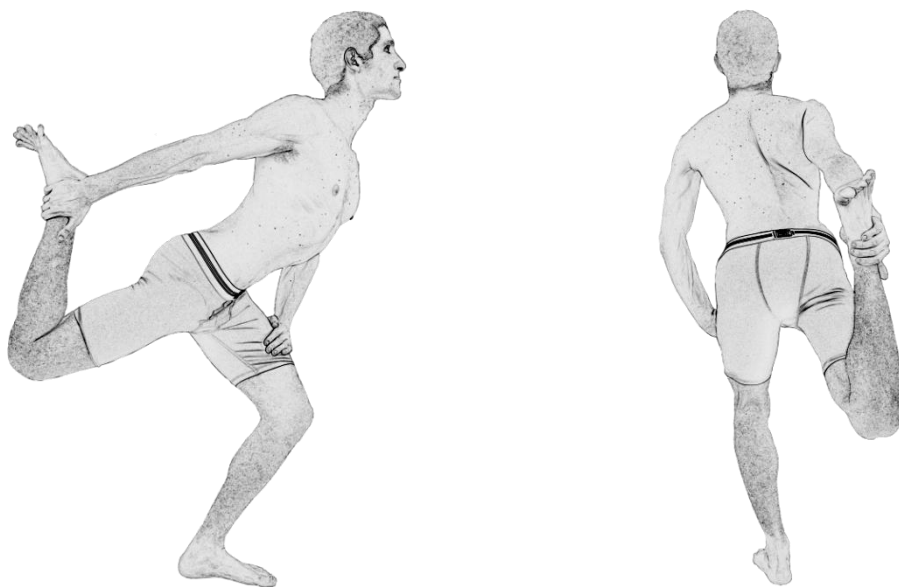


Figure 12 Knee, leg and chest spasm

Arm movement

(ดัดตนแก้ลมในแขน)

Instructions (Figure13)

The inscription poem says, "Sit on the floor, bend the knees, place the soles of the feet flat on the floor, stretch your arms out a little above the knees, palms facing forward – right palm closest to body presses back of left hand, bend the fingers back."

Explanation:

Sitting on the floor bending the knees in this position effects the muscles of knees, thighs and hips. There is contraction of the muscles which are indirectly affected. The arms stretch forward. This will have an effect on some muscle groups. Bending the wrists back will benefit the flexor group; muscles of the wrist will benefit the wrist flexor group also having an effect on the muscles around your shoulders as well. However, the poem does not specify how to bend the fingers, but is shown in the painting illustration.



Figure 13 Arm movement

Knee Discomfort

(แก้เข่าขัด)

Instructions (Figure14)

1. Stand on left leg and bend the right knee, press the right ankle on the left leg above the left knee.
2. Place the palms of hands together in prayer pose and press palms at the sternum (center of chest), in this position twist the body to the left and to the right 3 to 5 times, then reverse the leg position.

Explanation:

Pain in the knees can be symptoms of common diseases. Those with knee problems, such as knee pain, knee injury should not put the weight on the knee. So the patients with knee pain should stand on the leg that has no knee pain and not reverse the position. Balance cannot be maintained if standing on a painful leg. If you want to exercise knees in general, alternately exercise both legs. The effect will be as you twist your body your knee will twist. When you contract your knee, you will rotate your ankle and knee joint.



Figure 14 Knee Discomfort

Chest pain

(ดัดตนแก้เสียดอก)

Instructions (Figure15)

1. Stand on left leg. Stretch out the arm with the palm of hand facing forward same side as your standing leg. Use the right hand to hold your right ankle.
2. Raise your face upwards until you cannot see the left hand, pull on the ankle and inhale deeply, exhale and relax. Repeat 2-3 times. Then switch the standing leg and reverse the posture.

Explanation:

Chest pain is a symptom that can be caused by several things, for example stomachache, a lot of gas or acid in the stomach, very sore ribs, heart diseases, or due to lung diseases. It will effect the chest muscles and abdominal muscles. Holding the ankle will stretch muscle group quadriceps femoris; these muscles are used for the legs. Abdominal muscles - rectus abdominis are stretched a lot also. Whether this posture can cure chest pain or not needs further study.

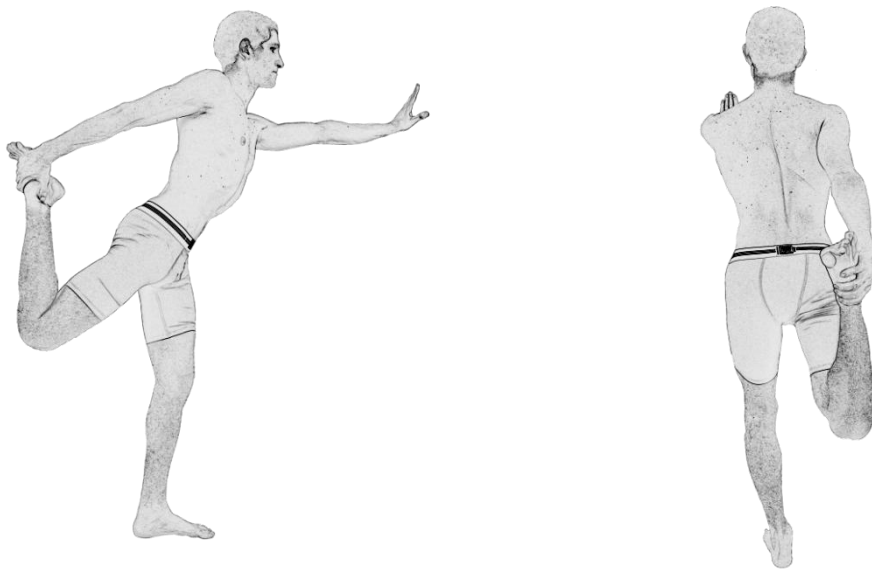


Figure 15 Chest pain

Vertigo

(แก้ลมเวียนศีรษะ)

Instructions (Figure 16)

Sit with crossed legs, use the left hand to press at occipital area behind the ear at the base of the skull. Use your thumb to press at this groove. Press with force while using the other hand to press the knee of the right. Use the thumb to press down continuously on throat muscle which is like the ridge. Then move the left hand, while continuing to press, along the neck and shoulder to the edge of the shoulder. Repeat 2-3 times. Then reverse the position – change sides. All the while inhaling and exhaling releasing pressure. Repeat each side 5 times.

Explanation:

Dizziness may be due to several reasons, for example, eye disease, blood pressure, stress. In the inscription of traditional massage, there are 2-3 important spots on the back of the head. Pressing at these spots will solve the problems of headaches, as the spots No. 1 and 2 are at occipital area. It is the spot that makes your eyes bright. It solves eye problems. When you massage yourself you have to arrange the posture, so that you can use your fingers press the correct spots. The hands will massage the neck muscles (Trapezius Muscle group) specifically and with enough force. While massaging be careful not to cause the muscle to have spasms.



Figure 16 Vertigo

Lower back pain and hip discomfort

(ดัดตนแก้ตะโพกสลักเพชร)

Instructions (Figure 17)

Standing with the legs apart more than the hips, feet facing forwards, hands on hips, then bend the knees, keeping the back straight. Make fists and roll the fists from the waist past the hip to the inner thigh. Inhale in straight position and exhale while bending. Repeat 3-5 times.

Explanation:

Stretching the feet and contracting the knees causes the muscles to contract and the hip muscles are stretched out. Muscles which will stretch the knees will stretch as well. Thus, the weight on the hips presses the leg with force can relax the hips.

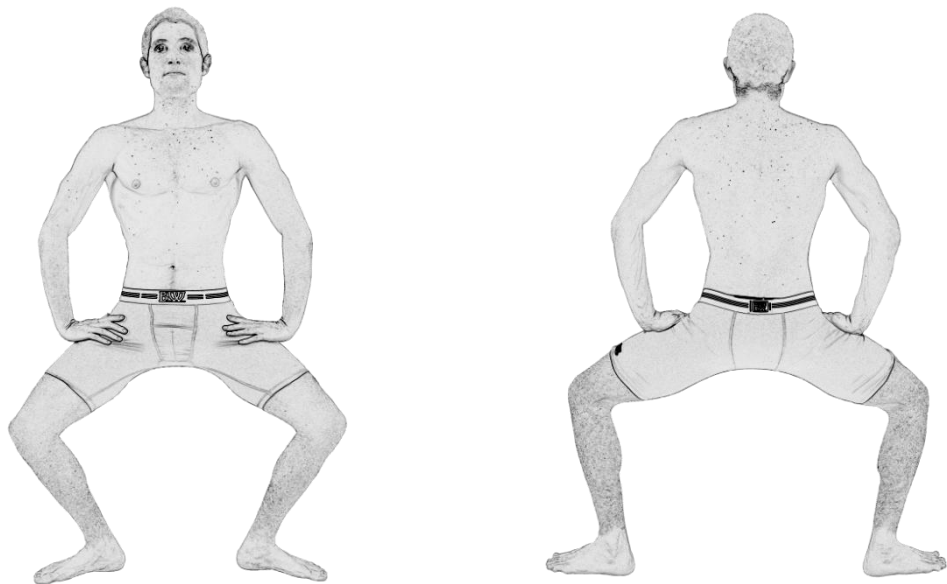


Figure 17 Lower back pain and hip discomfort

Leg and neck pain

(แก้ขัด คอ ขา)

Instructions (Figure 18)

Bend the knees out to the sides and knell down sitting on the raised heels of the feet with the toes raised and pressed against the floor, hands on the thighs, heels of feet are touching. In this position bend the head and back backwards. Open chest, inhale fully and exhale – release and come sitting straight. Repeat 2 or three times.

Explanation:

The exercise will have an effect on the ankles, knees, muscles and ligaments. Stretch the knees fully stretching, so the weight falls on heels. This will help in keeping the knees bent. Turn face upwards, making the muscles of the chest expand fully. Stretching muscles at neck will move the neck bone. When stretching the neck backwards slightly it will help relieve neck pain.



Figure 18 Leg and neck pain

Abdominal discomfort and ankle's joint pain

(แก้ปวดท้อง ปวดคอ)

Instructions (Figure 19)

Sit on the knees with the legs spread apart so your buttocks are on the floor. Bend both arms backwards with the palms facing up and alongside each other. Press the hands up as much as possible while bending backwards, this may be difficult so the practitioner should be mindful of their limits, inhale and exhale in this position. Repeat three times.

Explanation:

It can be seen that ancient wisdom is valued greatly. Producing statues of the postures from the poems recorded at Wat Pho, there weren't any recording devices, made it easier to understand the exercises.

Describing the exercise in a poem was a tactic used by ancient people, so it could be easier to memorize and could be used as a summary of key spots. It represents Thai people who like to write poems but poems cannot give details, so statues of Ruesee Dat Ton postures together with poems describing the images were a wise strategy to preserve the knowledge for future generations. Clarification of the important benefits of this Ruesee Dat Ton exercise is mentioned below:

Ruesee Dat Ton

Two verses describe this exercise (see above) in curing pain in the ankles and stomach problems in the same way. Abdominal discomfort is not only abdominal pain, but can be a symptom of disease in that general area.



Figure 19 Abdominal discomfort and ankle's joint pain

Chest and abdominal discomfort

(แก้แน่นหน้าอก)

Instructions (Figure 20)

Stand upright with knees slightly bent, raise the face towards the sky, open the chest and stretch backwards to the fullest. Stretch the arms back with the palms of the hands facing up and the sides of the palms touching. Bend the hands up as much as possible.. Inhale and exhale back to straight position. Repeat 2-3 times.

Explanation:

This position will have a beneficial effect on relieving congestion of the chest because inhaling deeply and raising the chest expands the chest muscles and the lungs. Chest congestion has several causes, which can be studied further.

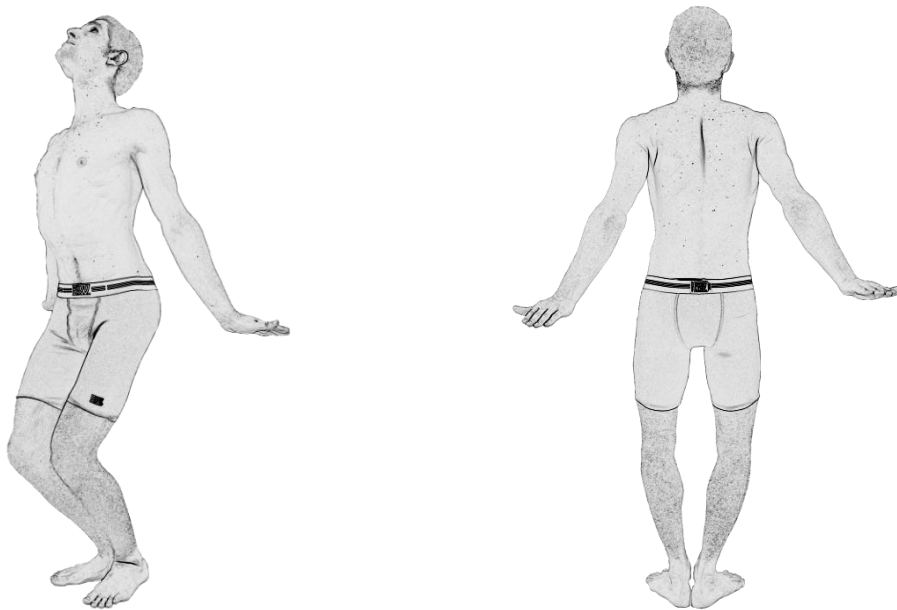
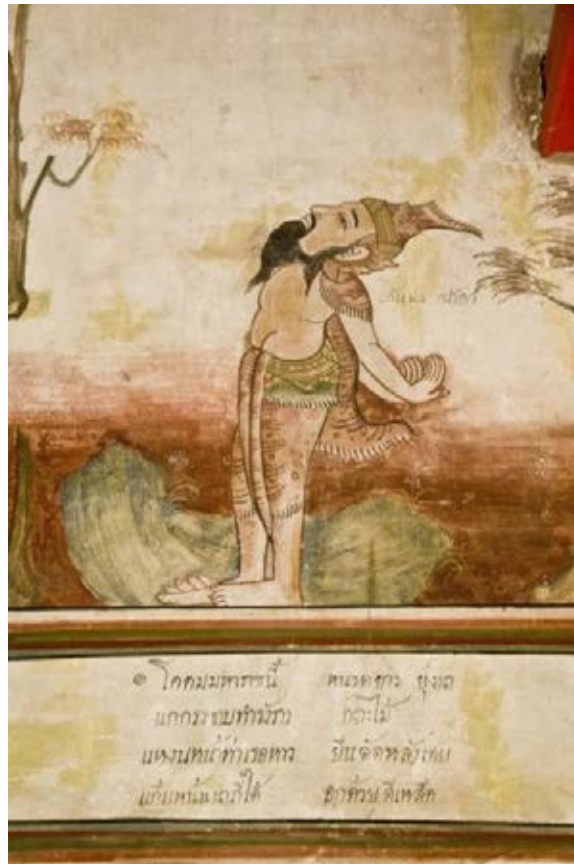


Figure 20 Chest and abdominal discomfort

Scapular and shoulder discomfort

(แก้สะบักหน้าจม)

Instructions (Figure 21)

Sit on the floor with the knees bent, sitting on the buttocks between the lower legs which are spread apart. If necessary use a pillow to support the ankles and feet. Arms are pulled backwards and grabbing the feet with the hands near the toes around the top of the foot, then raise the chest. The head is bent back slightly with the face upwards. Inhale fully and use force to press the feet and release. Repeat 2-3 times.

Explanation:

Sitting on a pillow helps to expand the chest and raise the shoulders, helps strengthen the shoulder muscles, and shoulder joints will be extended fully, muscles in the back will contract. A pillow will help strengthen the upper muscles and give them support.

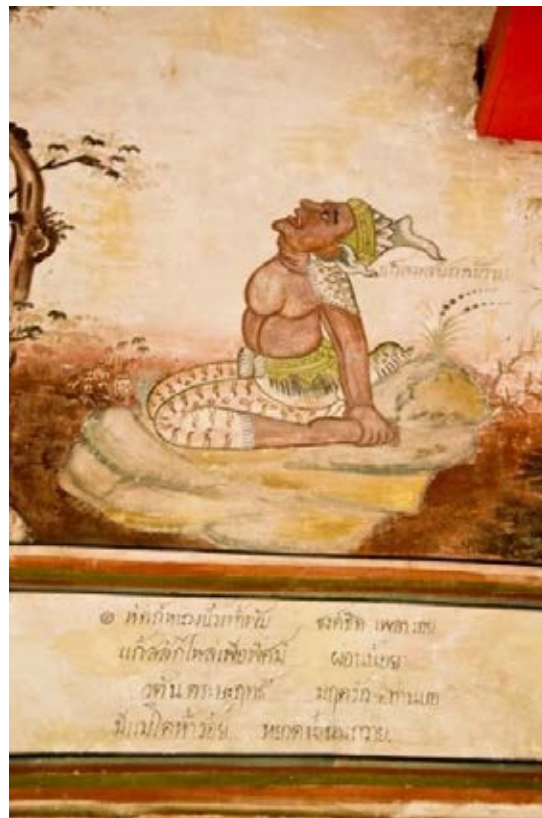


Figure 21 Scapular and shoulder discomfort

Secretion in throat

(แก้เสมหะในลำคอ)

Instructions (Figure 22)

Sit with crossed legs. The right hand holds the left ankle, the left hand is placed at the side of the head with the thumb pressing the occipital lobe, located at indent of the muscle right below the skull at the back side of the neck.. Pull the ankle with full force, while pressing the ankle inhale and exhale, release. Reverse the position. 3-5 times.

Explanation:

This posture has an effect on muscles of the back and the side of the throat. It will benefit the muscles at the top of shoulder (trapezius muscles), muscles of the chest (pectoralis major muscle) and muscles in the arms (deltoid muscles). The benefit of pulling and pressing the ankles will effect the knee muscles for stretching, and the muscles used in bending the elbows quadriceps muscles or elbow Flexor Muscle will also benefit.

Explained according to Thai medical theory in Thai massage, the occipital area is important and has several spots. When pressing their phlegm will be released, traditionally called “*Apo* or water element.” Phlegm is also a part of *Apo*. In fact, it is called “Sputum” because phlegm is a word which has a wide meaning. Pressing the occipital lobe can result in curing a stiff tongue.

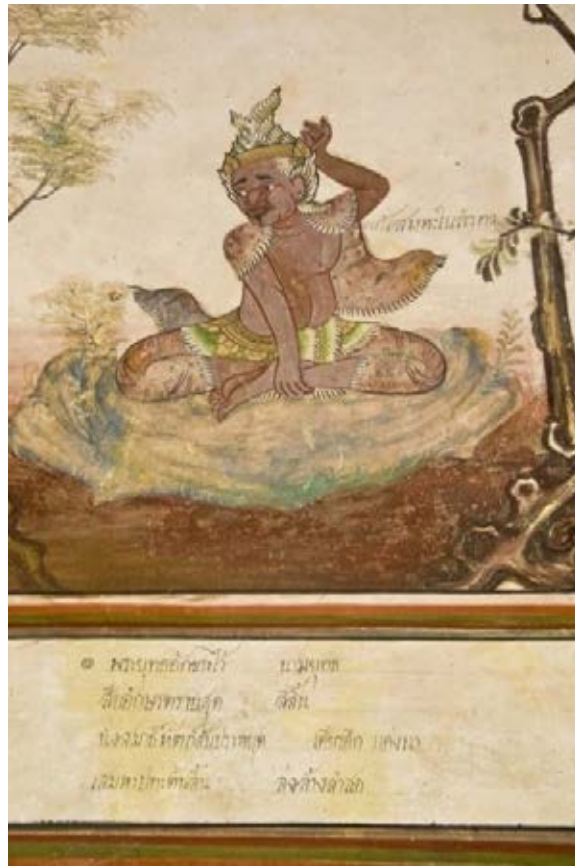


Figure 22 Secretion in throat

Knee Trouble

(แก้เข่าขัด)

Instructions (Figure 23)

Sit on the floor with legs stretched out straight with one hand on each knee. Massage the knees by pressing. At key spots around the knee with the fingertips. Each time the knee is pressed deeply inhale and exhale completely. Massage for 1 minute. This can also be done in standing position if there is a problem with knees.

Explanation:

Knees are considered very important in terms of anatomy and the ligaments around the knee. Knees are connected to the front of the thigh muscles (Rectus femoris) and lateral (Vastus Lateraris). Tendons of the muscles are grouped together as fascia of the knee (Iliotibial Tract) attached to the shin bone, (Patellar ligament) . The back of the knee has important muscles that hold the area together.. The back thigh muscles (Biceps femoris) and calf muscles (Gastrocnemius) are extended during this exercise. Compression massage around the knees has a direct effect on the tendons and the muscles have an effect on the blood vessels and nerves which nourish this area. In Thai traditional medical massage, the spots surrounding the knees are an important part of therapy and can cure knee pain. When the spot on the inside and outside of the right knee is pressed it effects the energy line of Pingala and when the spot on the inside and outside of the left knee is pressed it effects the energy line of Ida; allowing the energy to flow and relieving knee pain.

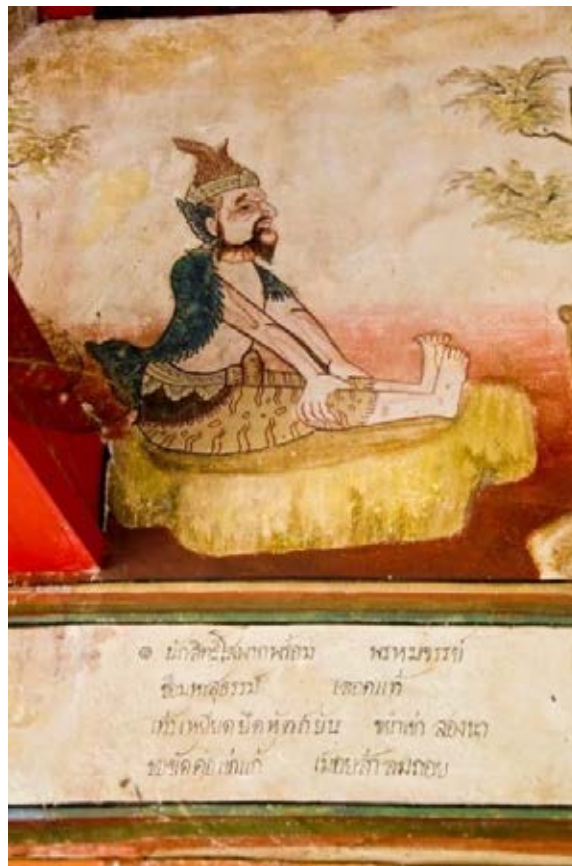


Figure 23 Knee Trouble

Arm discomfort

(แก้ข้อเขน)

(Arm Discomfort)**Instructions (Figure 24)**

In a sitting position with knees bent and feet flat on the floor twist both knees to the right side, twist the upper body to the left. The right arm is bent slightly at the elbow and turned to the left with the left hand twisted at the wrist to come forwards as much as possible and held up towards the face, index finger pointing straight at 60 degree angle and the other fingers held down with the thumb. The left hand grabs the bottom of the right elbow. While inhaling twist the upper body to the left and while exhaling twist the upper body back to center, practice with rhythmic breathing. repeat 2-3 times.

Explanation:

This position will work on the shoulders, and muscles of the wrists. Twisting the hand makes the wrists more flexible. The arms also get exercised.



Figure 24 Arm discomfort

Low back pain

(แก้ขัดเอว)

Instructions (Figure 25)

Sit with crossed legs, the right hand at the right side with the palm pressing against the rib cage and the fingers pointing up as much as possible with the thumb pressing at the pelvis. The left arm is bent with the elbow parallel to the floor bring the left hand near to the left shoulder twisting the hand at the wrist so that the palm is facing upwards as much as possible. Inhale and press the right hand, exhale release the pressure. Reverse the hand position; repeat 3-5 times each side.

Explanation:

This posture is beneficial for the waist muscles which are connected to the pelvis and the pelvis muscles. The muscles of the back will contract and release.



Figure 25 Low back pain

Chest discomfort

(แก้แน่นหน้าอก)

Instructions (Figure 26)

In standing position bend the left knee slightly; bend the right leg at the knee bringing the side of the right foot to rest at the upper thigh of the left leg. Press the palm of each hand at the side of the face starting at the chin up to near the side of the eyes. Lift the chin up and press, exhale and release. Then reverse the position. This is called, Tiptoe Pose but be carefull when doing it because it is easy to fall.

Explanation:

It is not easy to maintain balance in this exercise, but with practice can result in balancing the body. Try to stretch the body while supporting the chin while pressed up; it will benefit the front of the neck muscles (Platysma) and abdominal muscles (Rectus Abdominis), including the muscles between the ribs.



Figure 26 Chest discomfort

Hands and feet Trouble

(แก้มือแก่ง่า)

Instructions (Figure 27)

Squat down with knees bent and sit on the balls of the feet (toes) . Hold the left ankle with the left hand and stretch the right arm out fully with the palm of the hand bent at the wrist and palm facing forward. Pull at the ankle, inhale and move the right arm out to the side exhale and back to the front. Reverse sides. Repeat 3-5 times.

Explanation:

This exercise stretches the muscles of the foot. It gives the muscles resistance against stretching of the knees because of the weight when sitting on the balls of the feet. The hand is stretched forward from the wrist as in Thai dance and fingers pressed backwards. This posture stretches the arms, wrists and fingers.

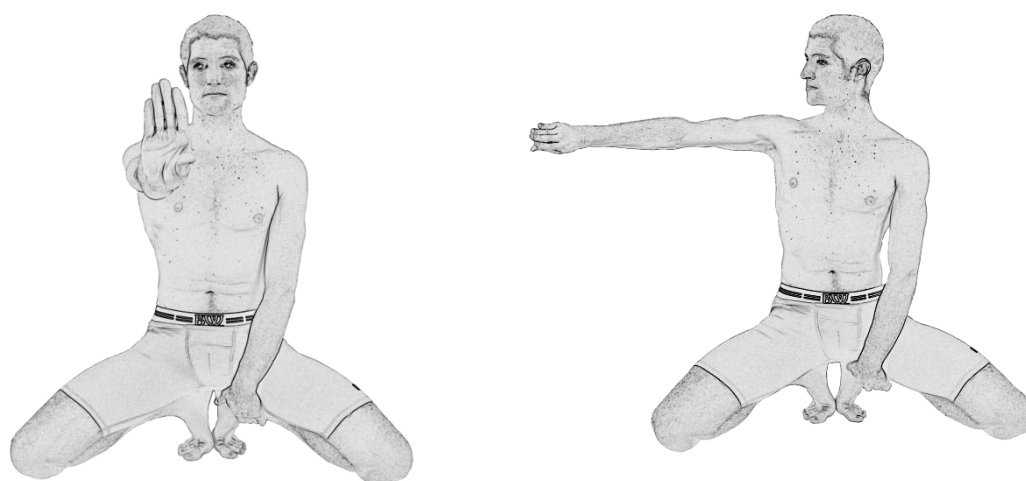


Figure 27 Hands and feet Trouble

Weakness

(แก้ลมอัมฤต)

Instructions (Figure 28)

Squat down with knees bent and sit on the balls of the feet (toes) Use the sides of the hands with fingers pointing upwards at the sides of the waist and press at the side of body. Inhale deeply. Stretch the body. Then move the hands to the center below the breastbone exhale while pressing in Repeat 3-4 times.

Explanation:

A patient suffering from paralysis, may be weak so sitting in this position may be difficult, but normal people will not have a problem. It affects the muscles, ankles, toes, knees, and hips. It will have a good result on wrists, elbows, shoulders and the waist. This position will benefit people with weak elbows.

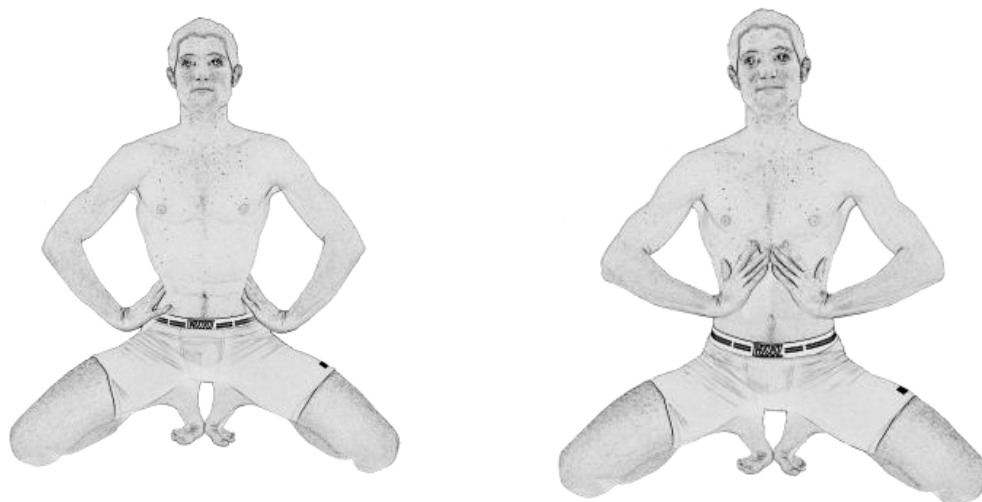


Figure 28 Weakness

Chronic muscular discomfort

(แก้กร่อนแก้ปวดมาต)

Instructions (Figure 29)

Squat down with knees bent and sit on the balls of the feet (toes). Place the hands on the knees, inhale stretch the neck backwards, exhale bring the neck back to normal position.

Explanation:

This exercise can reduce weakness in the muscles, tendons, and benefit chronic problems by increasing blood circulation throughout the system. This exercise may look like it will cause stress and it does while being performed. Then when it is completed there is strength or vitality. In order to gain vitality a person needs a certain level of stress. Vitality & stress work together to give strength. Keep in mind however, that an over amount of stress will be harmful.



Figure 29 Chronic muscular discomfort

Chronic disease with bleeding and congestion

(แก้ลมริดสีดวง)

Instructions (Figure 30)

Sit on the floor, the right knee is bent with folded leg bent backwards along the right side of hip (do not sit on heel), bend the left knee and cross the left leg over the right knee. The left arm is straight out palm facing up with pinky extended; the other fingers are folded down into fist with thumb holding them down. The right arm crosses in front of the body with the right hand holding the left arm at the biceps. Inhales deeply squeeze the buttocks, exhale release. Repeats 3-4 times reverse the position.

Explanation:

Since ancient times this exercise has been used to relieve problems of hemorrhoids. When the anal sphincter contracts the blood will flow through the vessels to the rectal area, help overall blood circulation and relieve symptoms.

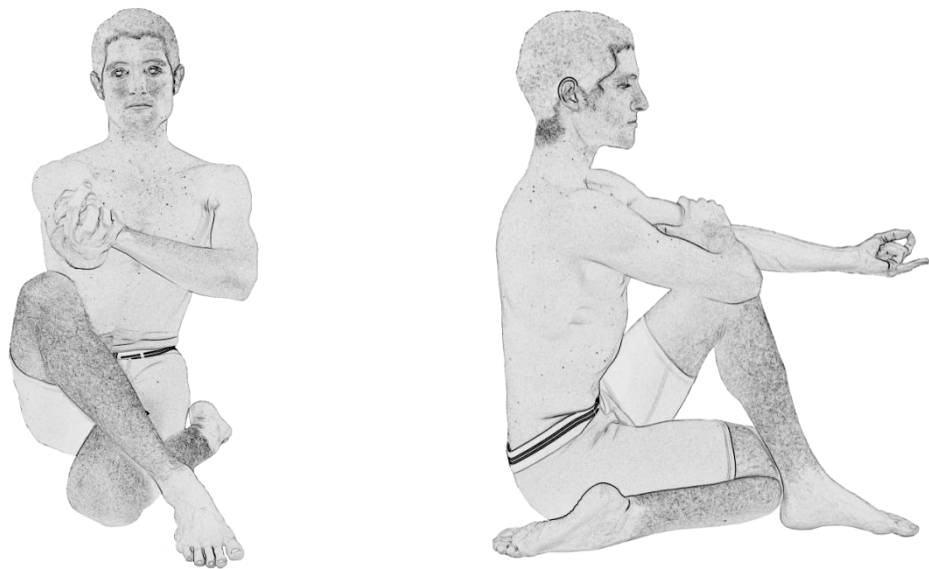


Figure 30 Chronic disease with bleeding and congestion

Low abdominal pain and scrotal distension

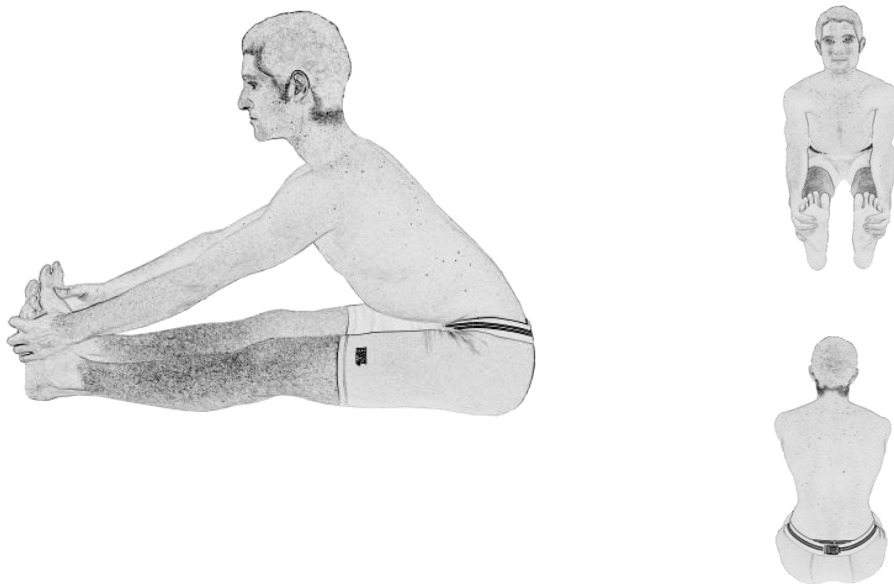
(แก้ก่อน)

Instructions (Figuer 31)

Sit with legs stretched out straight in front of body, inhale raise the arms straight up then bending from the hips, keeping the back straight, reach forward with the hands and grab the feet. Inhale bending down and exhale bring the body up – don't let go of the feet. To end, inhale slowly and release. Repeat 2-3 times.

Explanation:

The back leg muscles will stretch (Hamstring Muscle and Gastrosoleus Muscle); when reaching forward contract the abdominal muscles. This exercise will flex the back muscles, and the spine, which are usually stiff. This exercise relates to curing stomach tightness and some chronic diseases. It stimulates the intestines or helps with bowel movements, so it will lessen the air in the stomach



Figuer 31 Low abdominal pain and scrotal distension

Wrist trouble

(แก้ลมข้อมือ)

Instructions (Figure 32)

Sit, Thai style, with left foot at the perineum and the right leg bent back. Place the palms together in prayer pose at the sternum pressing the palms, fingers pointing straight up; inhale bend the hands at the wrist to the left, exhale bring the hands center, inhale bend the hands at the wrist to the right, exhale back to center. Reverse leg position and repeat 3-5 times each side.

Explanation:

The pressure of the hands pressing and the bending at the wrist will be beneficial to the muscles of the wrists and finger joints. The tendons, blood vessels and neuronal movements, which make up the circulatory system will benefit.

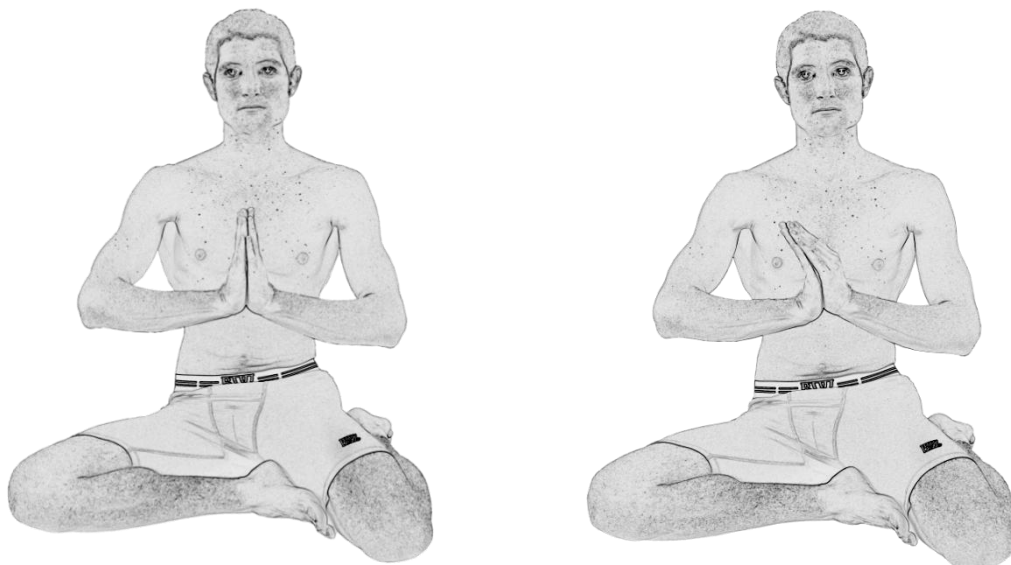


Figure 32 Wrist trouble

Leg discomfort

(แก้ลมขา)

Instructions (Figure 33)

Sit on the floor with legs bent at the knees and legs backwards along the side of the hips. Hands are placed at the center of upper chest with the outer side of palms against each other and the thumbs touching, press along the side of the palms into the chest bone and twist the torso to the left keeping the lower body straight forward. Inhale deeply and press chest bone, exhale release. Reverse posture. Repeat 3-5 times.

Explanation:

When the chin is supported, the muscles at front of neck (Platysma muscle) stretching, deep muscle layer and blood vessels and nerves at the neck will stretch up. If massage is made alternately, it will help neck bones and joints to move slightly. This is by-product indirectly because the purpose of the ancient people is to create the anchor in order to create pressure while massage of chest will be better.

Massage of chest, at the chest, there are chest bones and two main muscles spreading in the chest muscle (Pectoralis major) with the nerves and blood vessels that nourish the muscle and skin, from the back bones at joints 6,7 and 8. At the grooves of the ribs, at the side of bones in the middle of the bone, there is Blood group (Internal Thoracic Atery & vain) and the nerves, long and parallel to the limb. Branch surfaced area, (Anterior Perforating branch) to massage the area in terms of the muscle, breast, skin, tendons, stretching the ribs better. Section to the leg, foot, apart from the reasons mentioned above, but the traditional early. In terms of anatomy and physical word, it is unclear, other than pressing and chin support. The massage will have good result on blood vessels and heart, especially the curve down blood

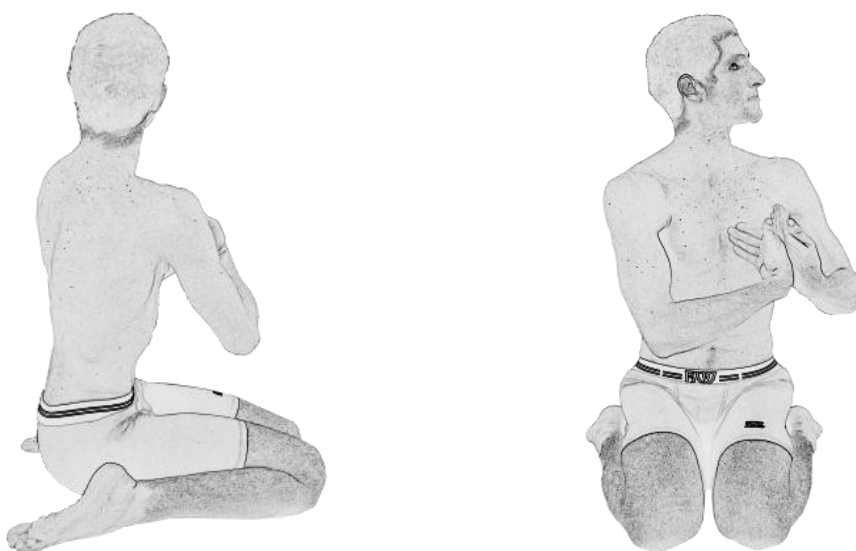
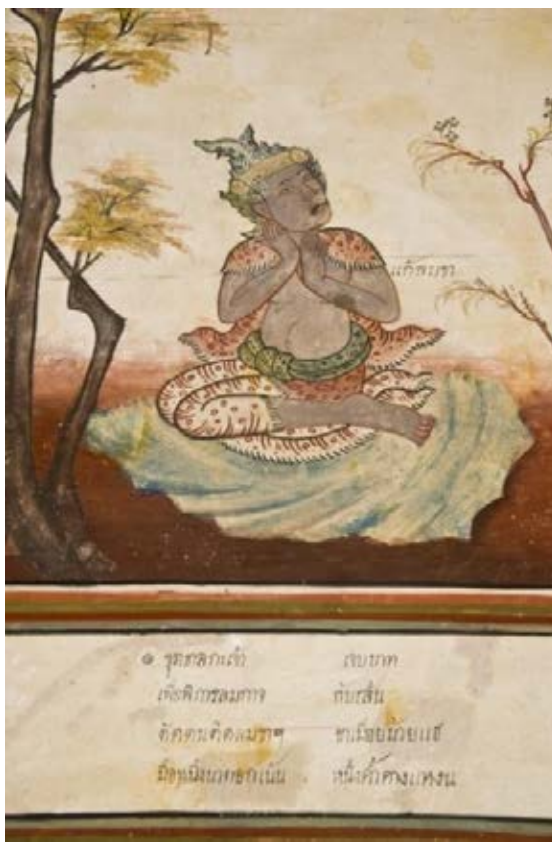


Figure 33 Leg discomfort

Problems of penis and scrotum

(แก้ลมลำไส้ลมอัมพาต)

Instructions (Figure 34)

Sit with crossed legs, place each hand at the side of the neck.. Raise the chin up, tightly clench teeth. Inhales hold the breath and exhale release pressure at the neck. This will produce a feeling at the genitals and buttocks. Repeat 3-4 times.

Explanation:

This exercise is used in physical therapy, but is difficult to do. The neck pressure from the hands will affect the testis and then scrotum. When doing this exercise keep the eyes opened. It will relieve tight abdominal muscles and thoracic diaphragm muscles that constrict the perinium area. Whether it has an effect on sexual organs or not will be studied further.

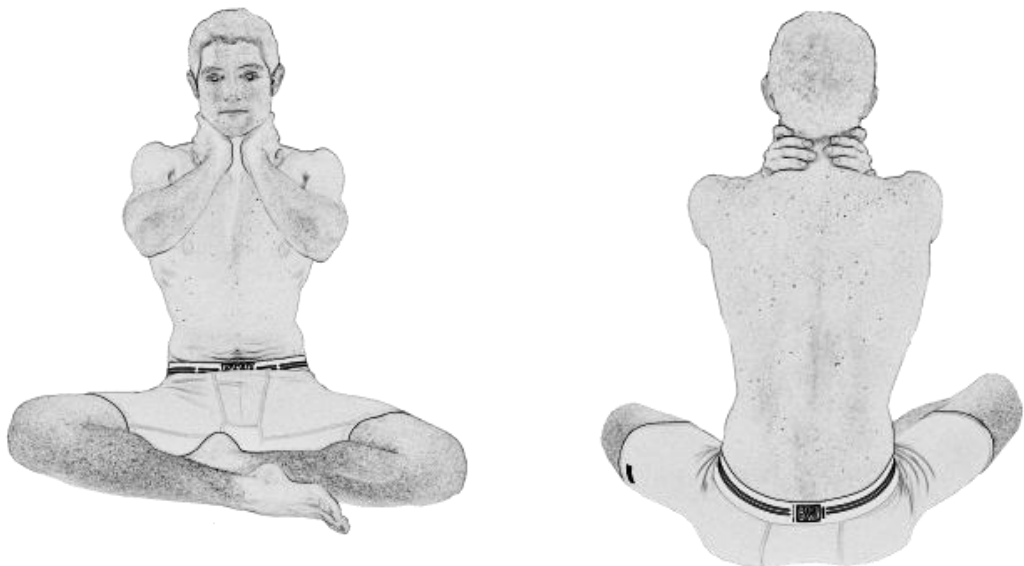


Figure 34 Problems of penis and scrotum

Arm Discomfort

(แก้แขนขัด)

Instructions (Figure 35)

Sitting on the floor, Thai style, with both legs to the right side with right leg folded back. Place the right hand on the left bicep muscle, twisting the upper body to the left on the inhale, while squeezing the left bicep. The left hand is placed on the floor pressing down. Then exhale and twist the torso forward releasing the pressure on the bicep when coming forward. Reverse the legs and repeat on the other side. Practice 3-5 times each side.

Explanation:

In this exercise the arms are massaged to cure foot pain and hand pain.

There is no ancient poem corresponding to this position, other than the painting in Wat Pho inscription. In the ancient book of hermit exercises, it says this exercise is good for curing stroke at the hips; details will be described further in a further study.

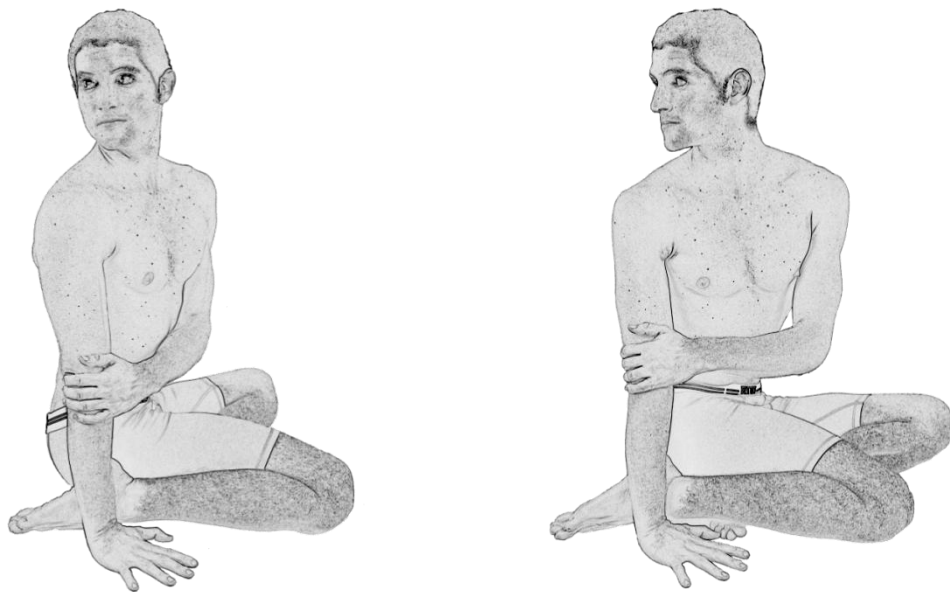


Figure 35 Arm discomfort

Throat's problem

(แก้ลมในคอ)

Instructions (Figure 36)

Sit with crossed legs, place hands along hips in back of the body with fingers pointing away from the body. Inhale bends the neck backwards and exhale brings the head forward with chin towards chest, inhale deeply twists head to the left, exhale twist head to the right. Repeat three rounds.

Explanation:

Describing properties is difficult because of the problem how pressing thighs affects gas penetrating in throat, is difficult to explain by using anatomy and physiology. there is specifying about the posture that: "Sit and stretch body, let your body to press on one shin and leg, tilt until almost fall down Press right hand on chest, tilt to stretch on left side of the body". Photos in other books are different from the picture, because nature of placing of knees on to the floor. In the textbook of inscriptions at Wat Pho. There is a picture, having subtitle:"Gas goes down to foot". Postures of bending are not the same in both pictures as mentioned above which is made with difficulty to be more difficult.

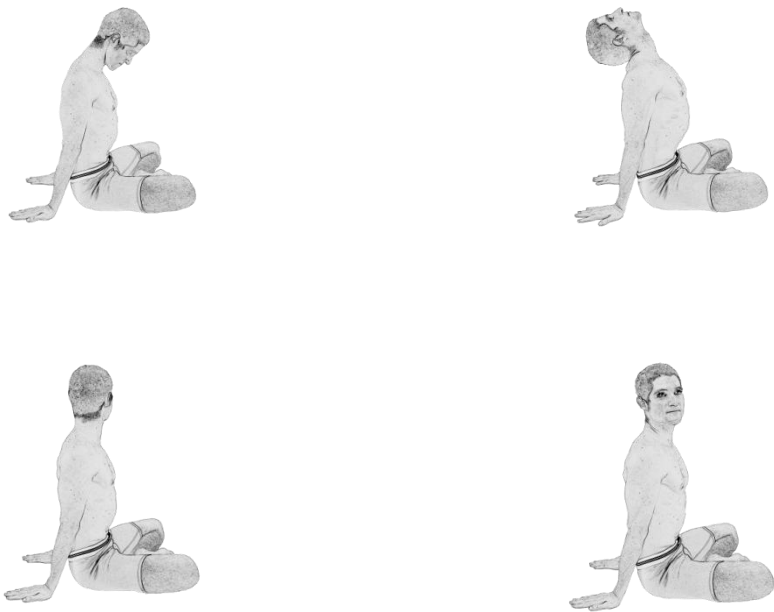


Figure 36 Throat's problem

Weakness and numbness of leg

(แก้ลมในเท้า)

Instructions (Figure 37)

Sit and fold the right leg in to perineum, the left leg is stretched out straight to the side. The left arm is stretched out to the side with the hand bent at the wrist with palm facing up and out to the side. The right arm is bent at the elbow and raised at the side with the forearm facing the left side and hand bent at wrist with palm up facing left. Inhale press right elbow back while pressing left leg forward then release. Reverse position and repeat 3-5 times.

Explanation:

This was done in ancient times to relieve gas at the legs. It will act like massage for the legs. It will massage the nerves from the thigh down. Muscles of the hips will stretch at the back, knee muscles will stretch. The waist muscles will stretch by stretching the arms. The other shoulder is raised to balance your body. By pushing knees down to the ground with the legs back will affect your waist.

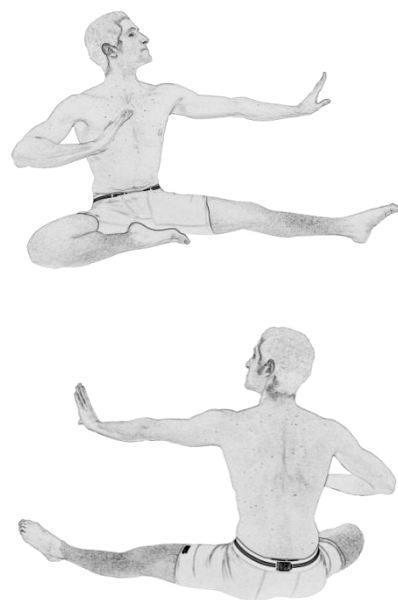


Figure 37 Weakness and numbness of leg

Stiffness of neck and shoulder

(แก้คอเคล็ดไหล่เคล็ด)

Instructions (Figure 38)

Standing with legs apart, make a fist with the hands, thumbs straight up, place the thumbs of each hand in each armpit, elbows out to each side, inhale and press, on the exhale bend the knees out to the side. Repeat with inhale pressing thumbs at armpit and legs straight. Repeat 3-4 times.

Explanation:

When the legs are straight, on the inhale lift the shoulders up, the back muscles will contract and on the exhale the muscles will release. This has a good result on the neck and shoulders, relieving stress. It will cause the blood vessels to expand.

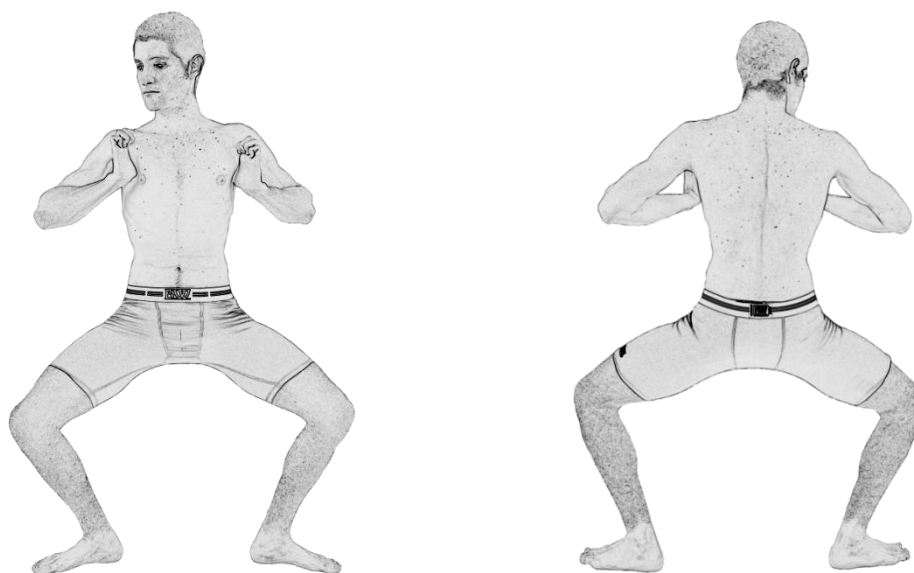


Figure 38 Stiffness of neck and shoulder

Shoulder and neck discomfort

(แก้คอแก้ไหล่)

Instructions (Figuer 39)

In standing position place the right leg straight out in front with the foot pointing straight ahead, the left leg is stretched back with the left foot pointing at a 60 degree angle. Bring the hands behind the back straight down and with the left hand grab the right wrist, the right hand grabs the left wrist, inhale expanding the chest right leg is straight, exhale bend the right knee forward. Reverse the posture to other side. Repeat 3-5 times.

Explanation:

This posture will affect the neck and shoulder muscles, relieving stress.



Figure 39 Shoulder and neck discomfort

For a state of drowsiness

(แก้เส้นมหาสนุกกระบัง)

Instructions (Figure 40)

In sitting posture stretch the left leg straight out, the right leg folded at the knee pressing the foot near the perineum. The right hand is at the top of the thigh. Grab the left leg with the left hand keeping the back straight while inhaling, exhale while still holding the foot bring the torso up, continue for 3-5 times...Reverse sides and repeat 3-5 times.

Explanation:

This exercise will awaken the body and prevent drowsiness; and stretches the leg muscles and calves; it is beneficial for the hamstring & gastronemeus muscles. It also works on the arm muscles.



Figure 40 For a state of drowsiness

CHAPTER V

DISCUSSION

Herbal medicine has a long history and a relationship with Thai people since pre historic era. The knowledge transfer has developed starting from telling within the family until explicating to population. There have been many records pass along generation to generation. The body of knowledge of traditional Thai medicine has been recorded since pre Sukhothai in the role of Arokayasala which means hospital. In Ayutthaya period, there has been a documentation of national medical textbook called "Tumra Phra Osod Pra Narai". Then in early Ratanakosin at the beginning of the Chakri dynasty, three temples as Wat Phra Chetuphon Vimolmangklararm Rajwaramahaviharn or Wat Pho, Wat Rajcha Orasaram Ratchaworawiharn and Wat Matchimawat Worawihan have been established as the center of knowledge in traditional Thai medicine. Furthermore, in the era of King Rama IV; it has been recorded about the recipe of drug documented at the pavilion in Maha Sawat canal in order to transfer the medicinal knowledge to nurture and care of diseases to travelling people. However, presently the pavilion is dismantled, there is the only title called "Salaya". The purpose of the recording was not different from the record in the three temples as mentioned above. It can be seen that such record is the beginning of the learning system and promotion of health in Thailand.

Traditional Thai medicine formulae inscriptions and Ruesee Dat Ton (hermit exercise) posture in the Sala Ruesee at Wat Matchimawat Woraviharn are like learning center for people in Songkhla province and neighboring provinces in the past. Although traditional drug recipe and hermit exercise posture at Sala Ruesee are less than Wat Pho, it can be called a learning center in the region. Sala Ruesee was truly the center of health promotion in those days because the drug and exercise were also important to use such methods in parallel to both prevention and treatment according to Thai traditional medical principles which are holistic treatment.

Most of the studies have focused on architecture and archaeology, especially in temple hall having beautiful mural and collection is made in mural painting books of Wat Matchimawat by Mueang Boran Publishing House [12]. Ruesee Dat Ton

pictures were published in a book to commemorate the funeral of Mrs. Khaisri Thongthew. Traditional drug formulae have not been studied or published.

The murals of drug recipe and Ruesee Dat Ton at Sala Ruesee were written with powder color so the characters and the paints of the murals partially faded. This study gathered the information from the murals inscription and also from the chronicles of mural records [12-16]. Ruesee Dat Ton postures and poems at Sala Ruesee were an excerpt of Wat Pho's inscription so the completion was performed by information from Wat Pho's inscription and its chronicles [8].

There are 31 formulae at Sala Ruesee. The contents are accomplished and written out for reference (Appendix A). Herbal ingredients are clarified and categorized. Two kinds of animal material, two kinds of mineral material and 145 plant materials are found in Wat Matchimawat's inscription. All 145 plant materials can be identified by scientific name. All plants in Wat Matchimawat formulae are listed in Wat Pho formulae [17]. However the formulae at Wat Matchimawat are not as same as Wat Pho's formulae. This identity represents the contextual knowledge of the southern region in traditional Thai medicine.

Among 31 formulae, Zingiberaceae is mostly found as ingredients (13 formulae). These herbal materials in Zingiberaceae are commonly used as spice in Thai cooking for example *Zingiber officinale*, *Curcuma longa* and *Boesenbergia rotunda*. *Pterocarpus santalinus* (red sandalwood) is plant species that mostly used (9 formulae). The heartwood of this plant is deep red and aroma and usually used as cardiogenic in traditional Thai medicine. This plant is valuable in Thai culture and Buddhism. Nowadays, it is an endangered plant in Thailand. Thai traditional practitioners use *Dracaena loureiri* instead of *Pterocarpus santalinus*. The details of all plant species in Wat Matchimawat formulae are described in Appendix C.

In addition to medication, Ruesee Dat Ton has been famous traditional Thai stretching exercise since early Rattanakosin period. Ruesee Dat Ton postures at Wat Matchimawat were excerpted from Wat Pho. There are 40 murals of Ruesee Dat Ton postures at Sala Ruesee, Wat Matchimawat compared to 80 postures at Wat Pho [8]. In traditional Thai medicine, there are four elements that control human body equilibrium: earth, water, wind and fire. The wind flows along the body and represents movement and energy flow. When the wind is obstructed, the symptoms or

diseases occur. Ruess Dat Ton postures are that stretch or adjust the body to relieve the obstruction [214].

On the other hand, each posture is slowly performing and stretching which accepted nowadays that this type of exercise can strengthen muscle and be appropriate to any ages of people. This study explains each posture according to the posture's poem and transforms to each position step for muscle stretching and breathing training. The instructions are described and illustrated step by step in the result part.

Moreover, some postures are found to be relevant to the others and can be grouped into set of postures to gain more benefits in muscle movement as follows:

Group 1:

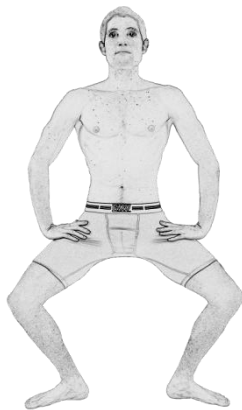


Figure 17 Lower back pain and hip discomfort



Figure 10. Hands and foot cramp



Figure 38 Stiffness of neck and shoulder

Group 2:

Figure 29 Chronic muscular discomfort



Figure 27 Hands and feet trouble



Figure 28 Weakness

Group 3:

Figure 20 Chest and Abdominal Discomfort



Figure 12 Knee, leg and Chest spasm



Figure 15 Chest pain

Benefits of the study:

1. This study provides the complete information of traditional Thai medicine formulae inscribed at the murals of Wat Matchimawat. The medicinal plants listed in the formulae are identified by its scientific name which can be authenticated before use.
2. This study provides the complete information of traditional Ruesee Dat Ton postures and the poems inscribed at the murals of Wat Matchimawat. The postures are illustrated in step by step with explanation for muscle strengthening and breathing training.

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APPENDICES

APPENDIX A

Traditional Thai Medicine formulae at Sala Ruesee Wat Matchimawasworawihan

ภาพจารึกสูตรยาในศาลาฤๅษีวัดมัชฌิมาวาสวรวิหาร

ภาพจารึกยาในศาลาถ้ำวัดมณีมาวาสวรวิหาร



Traditional formulae 1



Traditional formulae 2



Traditional formulae 3



Traditional formulae 4



Traditional formulae 5



Traditional formulae 6



Traditional formulae 7



Traditional formulae 8



Traditional formulae 9



Traditional formulae 10

๑๐ วันพฤหัสบดีเดือนหกขึ้นสิบสามค่ำบิฎญ เบญจศก จุลศักราช ๑๒๖๔ ได้จัดตำราจากฤกษ์ ๑๒๒๕
ไว้เป็นทาน แก่สรรพโรคต่างๆ แก่ภิกษุสามเณรอันมาแต่ชาติทั้งสี่ แลราษฎรทั้งปวงตาม
แต่ผู้จะปรารถนา แลสรรพยาทั้งนี้เคยได้พยายาม... มามากแล้วด้วย อำนาจจัดแจงตำรายาไว้
ให้ทานในพระบรรพตศาสดา ถ้าบังเกิดในภพเบื้องหน้ายังไม่สำเร็จแก่พระนิพพานทราบใด
อย่าให้โรคภัยบังเกิดมี ตราบเท่าถึงพระนิพพานนั้นเทิด ฯ :

สิทธิการิยะจักกล่าวถึงใช้พิศ ๗ จำพวกให้สะบัด ร้อน
หนาว } ให้ร้อนในอกในพิเศระดูยา ...เอกไว้

เอาดอกพิณ $\frac{\text{ } | \text{ } |}{\text{ } | \text{ } |}$ ดอกบุญนาก $\frac{\text{ } | \text{ } |}{\text{ } | \text{ } |}$ ดอกสาระพี ดอกมลิ $\frac{\text{ } | \text{ } |}{\text{ } | \text{ } |}$

ดอกจำปา $\frac{\text{ } | \text{ } |}{\text{ } | \text{ } |}$ หวานรอนทอง $\frac{\text{ } | \text{ } |}{\text{ } | \text{ } |}$ ต้นกลีบแรด $\frac{\text{ } | \text{ } |}{\text{ } | \text{ } |}$ _____ จัน _____

รากยานาง $\frac{\text{ } | \text{ } |}{\text{ } | \text{ } |}$ รากเท้ายายมอม $\frac{\text{ } | \text{ } |}{\text{ } | \text{ } |}$ ทำ ผง
เม็ด } ก็ได้แก่ร้อนนำดอกไม้ แกกระหาย

น้ำๆ ลูกม้อกเฝ้าไฟแซเป่นน้ำกระสาย แก่สะบัด ร้อน
หนาว } น้ำขาวข้าวสุก กิน
ไซลม } ก็ได้ ฯ :

ยาแก้ไข้ให้ลง เอ้าจันคณา $\frac{1}{1}$ จันแดง $\frac{1}{1}$ เทียรดำ $\frac{2}{2}$ ลูกเบญจกานี $\frac{1}{1}$

เปลือกลูกทับทิม $\frac{1}{1}$ แกนขรี $\frac{2}{2}$ ดอกพิณ $\frac{1}{1}$ ทำ $\left. \begin{array}{l} \text{ผง} \\ \text{เม็ด} \end{array} \right\}$ ก็ได้

ถ้าจะแก้ลงลายน้ำร้อนขมิ้นชันแขก ถ้าจแกทองขึ้นน้ำร้อนกะทือหมกไฟแขก แก้อาเจียนน้ำจากยอด

ขนานหนึ่ง แกจุกเสียดแน่นนำอ๊กให้เอาเทียนดำ $\frac{1}{2}$ ลูกผักชี $\frac{1}{2}$ จันทะ $\frac{1}{1}$

ขิงแห้ง $\frac{1}{1}$ ลูกส้าน $\frac{1}{2}$ ว่านน้ำ $\frac{1}{2}$ ดอกพิณ $\frac{1}{1}$

ดอกข่าร่ก $\frac{1}{1}$ ดอกมลิ $\frac{1}{2}$ ถ้าจุกเสียดน้ำร้อนเป็นก็สายเนื้อไม้แขก ถ้าแน่นหนาอ๊กก็

สายน้ำร้อนพิมแสนแขก ถ้าจุกน้ำร้อนเป็นก็สายไหลผ้าไฟแขก ทำผ้งทำเม็จก็ได้แสะ แกโรด

ดังกล่าวมานี้ หายลินแล ฯ :

๑ ขนานหนึ่งแก้ไขให้ชัก ทานให้เอาจันเทศ $\frac{1}{1}$ จันแดง $\frac{1}{1}$ จันขนาน $\frac{1}{1}$

ใบกิมเสน $\frac{1}{1}$ ใบเจียงพำหอม $\frac{1}{1}$ ใบเปราะหอม $\frac{2}{2}$ เทียนคำ $\frac{2}{2}$

ทำ $\left. \begin{array}{l} \text{ผง} \\ \text{เม็ด} \end{array} \right\}$ ก็ได้ แกะชักน้ำร้อนเนื้อไม้แชก แก่นั่นต่อน้ำร้อนกินเสนแชกทำ $\left. \begin{array}{l} \text{ผง} \\ \text{เม็ด} \end{array} \right\}$ ก็ได้

๑ ขนานหนึ่งยาแก้ปวดมวรรต $\left. \begin{array}{l} \text{มูก} \\ \text{เสียด} \end{array} \right\}$ ให้เอาจันเทศ $\frac{1}{1}$ จันแดง $\frac{1}{1}$

เทียนคำ $\frac{2}{2}$ ลูกผักชี $\frac{1}{1}$ รากเข้าพลู $\frac{2}{2}$ หัวหมู $\frac{2}{2}$

ลูกมะตูมออน $\frac{1}{1}$ ขมิ้นอ้อย $\frac{2}{2}$ บรเพช $\frac{1}{1}$ แก้ปวดมวรรตของน้ำร้อนก็ถือ

$\frac{1}{1}$ หมกไฟแชก แก่งขมิ้น ออยหมกไฟแชก ยาขนานนี้ถ้าจะตมก็ได้ทำ $\left. \begin{array}{l} \text{ผง} \\ \text{เม็ด} \end{array} \right\}$ ก็ได้

๑ ขนานหนึ่งยาเขียวแก้ไข้ด้านสังก็ได้ ให้เอาใบผักกะฉอม $\frac{๑}{|}$ ใบทองพารขัง $\frac{๑}{|}$

ผักนึ่งรวม $\frac{๑}{|}$ ใบกิมเสน $\frac{๑}{|}$ ใบหมากผู้ $\frac{๑}{|}$ ใบหมากเมีย $\frac{๑}{|}$

ใบตำลึงตัวผู้ $\frac{๑}{|}$ ขมิ้นออย $\frac{๑}{|}$ ใบสเนษ $\frac{๑}{|}$ ใบสนาด $\frac{๑}{|}$

ใบทองหลวงบมล $\frac{๑}{|}$ ทำผงก็ได้ทำเมตก็ได้แก้ร้อนน้ำดอกไม้ แก้ปวดศีรษะน้ำท้อราก

ยานนางแซกทั้ง $\left. \begin{array}{l} \text{ผง} \\ \text{เม็ด} \end{array} \right\}$ ก็ได้แก้ลงน้ำร้อนจันแซก แก้ผู้ใหญ่ก็ได้ ยาขนานนี้สำหรับแก้ไข้พิศแล

๑ ขนานหนึ่งยาม ๗ จำกวก ให้เอาใบคนที่๑ ๑ | ใบมตุม ๑ | พริกไท ๑ |

วานน้ำ ๒ | บรเพชร ๒ | รากชาพลู ๑ | หัวแห้วหมู ๑ | เทียรดำ

๑ | ลูกผักชี ๒ | เม็ดพลผักกาด ๑ | ชิง ๒ | ทำ ผง เม็ด } ก็ได้

แกจกเสียดแนนน้าอกน้าร้อนพิมเสนแซกแก้มวงเวียนสี่ละลายน้ำผึ้งกินเช้าเย็นจำเรญอาหาร

แกลงน้าร้อนกะทือหมกไฟแซกหายแล

๑ ขนารหนึ่งยาหอมแก้ลมให้เฮ่า เทียรคำ ๑ เทียนตักแตน ๑

เทียนยาวภาณี ๑ จันเทศ ๑ การพลู ๑ ลูกผักชี ๑

เมตพลผักกาด ๑ ดอกพิกุน ๑ ดอกจำปา ๑ เกสรบัวหลวง

๑ ทำ ผง
เม็ด) ก็ได้แก้ลมสะวงสะวายใจน้ำดอกไม้พิมพเสนแขกแก้แนร์น้ำออกน้ำร้อน

เนื้อไม้แขกแก้ หน้ามีด
มัวตา) น้ำร้อนซึ่งแขกตามแต่จะใช้เคียว

● ขนารหนึ่งยาแก้ลมชักให้เท่าเอียนมือเอียน ให้เอาพริกไท $\frac{1}{}$ ดิบลิ $\frac{2}{}$

หัวแห้วหมู $\frac{1}{}$ รากชาพลู $\frac{2}{}$ รากทองพันชั่ง $\frac{1}{}$ รากเขนียด $\frac{1}{}$

แกนขี้ $\frac{1}{}$ จันทศ $\frac{1}{}$ ดอกจัน $\frac{2}{}$ ลูกจัน $\frac{1}{}$ จันแดง $\frac{1}{}$

ทำผงก็ได้ทำเมสจก็ได้แกชกละลายน้ำร้อนเนื้อไม้แขกพิมเสน... เอียนมือเอียนลายน้ำ

ร้อนรากลำเจียกพิมเสนแขก

◎ ขนานหนึ่งยาแกลมพระไลกลอน เออฟริกไท $\frac{1}{1}$ ดีปลี $\frac{1}{2}$ ลูกมตูมออน $\frac{1}{2}$

เปละ $\frac{1}{1}$ ก็ชาย $\frac{1}{2}$ รากไม้จวง $\frac{1}{1}$ รากขนาด $\frac{1}{1}$ หัวหัวหมู $\frac{1}{1}$

สนเทศ $\frac{1}{1}$ จันเทศ $\frac{1}{1}$ ดอกพิบูล $\frac{1}{1}$ ทำผงแก้ ... คาดบัตะคาดสันตะคาฎ

น้ำกระสาย รากโคกะอม รากย้าคาต้มเป็นน้ำกระสายต้ม แก้อาเจียนนาจุกญ่อต้ม

แก้จุกสียด แ่น่นน้ำร้อนชิงแขกแกลมให้ $\left. \begin{array}{l} \text{หวา} \\ \text{เจ้อ} \end{array} \right\} \text{นำผิงรวงกินเขาเอيين จำเจิญอาหารแล}$

๑๑ ขนานหนึ่งยาบ้ำมรูงหาค ให้เอารากชาพลู $\frac{1}{1}$ หัวแห้วหมู $\frac{1}{1}$

ลูกม่มอออน $\frac{1}{1}$ เปลือกโมกมัน $\frac{1}{1}$ เจ็ดหมุนดอกแดง $\frac{1}{1}$ ลูกส้ค้าย

$\frac{1}{1}$ ชิ่ง $\frac{1}{1}$ ดีปลี $\frac{1}{1}$ พริกไท $\frac{1}{2}$ แก้วบวมวนลายนำร้อนก็ทือหมก

ไฟแขก แก้วแห่นทองขึ้นเทียนดำ $\frac{1}{1}$ การพุด $\frac{1}{1}$ ลูกผักชี $\frac{1}{1}$ ทำผงก็ได้ต้ม

ก็ได้แล

◎ ขนานหนึ่งแกลโลทิศ ๗ จำพวกให้พิการต่างๆ ให้เอา พริกไท $\frac{1}{1}$ ตีปัส $\frac{1}{2}$

ก็เทียบ $\frac{1}{2}$ ก็ทือ $\frac{1}{1}$ กะชาย $\frac{1}{1}$ เปราะ $\frac{1}{1}$ ขมิ้นออย $\frac{1}{2}$

โพล $\frac{1}{1}$ ใบขมเทศใหญ่ $\frac{1}{1}$ ลานล้ม $\frac{1}{2}$ ดอกคำฝอย $\frac{1}{1}$

จุก
แก้มเสียด
แม่หน้าอก

น้ำร้อนซึ่งแชกแก้ม

เมตตะ
เสนตะ
ปีตะ

ฆาฏนำกระสายเอาโคกะอมต้มกินทำผงก็ได้

ถ้าจะดองเอาสุราทนาน ๑ ตำแต่ถือข้มห่อผาขาวดอง ถ้าเกิดอยู่ในไฟกินได้หายแล

๑) สิทธิการียะกลาวตำรายาแก้ไข้พิษมแลไข้ สันนี้บาตรรายสาตแลไข้ทั้งปวง ฯ สิทธิการียะกาแล

ลมใช้ต้ม $\left. \begin{matrix} ๑ \\ ๒ \\ ๓ \end{matrix} \right\}$ ก็ดี ทานให้ต้มยาขนานนี้กินก่อน ทานให้เอารากยานนาง ๑ รากมเดื่อทรมกอน ๑

รากเท้ายายม่อม ๑ รากน้ำนอง ๑ ต้ม ๓ เอาหนึ่งกินไปจนได้ห้าวันแล้วฯ ยานี้ก็มีใสลงในหม้อยา
อีกแล้ว ทานให้เอาหัวคัล้า ๑ งวงตโหนด ๑ จันทัง ๒ ประเพชร ๑ ลูกกัศอม ๑ เกสรสารภี ๑

เกสรภักุณ ๑ เกสรอรุนนาก ๑ เกสรบัวหลวง ๑ หัยาเจ้าเบน ๗ ตวงกินไปกว่าจะหาย
เปนยาแก้ไข้ทั้งล้อมต้มดับพิษมด้วย กินหายแล

๑
๑) ยาแก้ไข้ปวดติศแลเหม็นอาหาร ทานให้เอาประเพชรรอบสี่ศะคนใช้ ลูก ออม ๑ ยาแพรง
กำมือ ๑ ใบมก่ากำมือ ขมิ้นออย ๗ แวน ตมด้วยมุตครั้งนำครึ่งกินหายแล

๒
๑) ขนานหนึ่งยามแก้ไข้ก็ดีแลใช้กลอนใสกรแล ใช้สันนี้บาตรใช้เกือตานทรงทั้งปวงเอาใบ
มะนาว ๑๐๘ กัารสเด้า ๓๓ กัาร ประเพชร ๗ ท่อน ๆ องคุลี ๑ ขมิ้นออย ๗ แวน ต้ม ๓ เอา ๑ กิน
หายแล

- ๑๑๑) ขนานหนึ่งยา ชื่อแก้วมรกตแก้ไข้ทั้งปวง เอายาแพรง ๑ ใบสมปอย ๑ ใบผักเบจ ๑ ใบม...
ลำตัน ๑ เอาเสมอภากย์ตำเป็นผงเอาน้ำชาเข้าเป็นกระสายบหมันแห้งไว้กินแก้ไข้ทั้งปวง

ดอกไม้
ละลายน้ำ
เขาเข้า } ก็ได้ทั้งกินทั้งจะโลมหายแล้ว

- ๑๑๒) ขนาน ๑ ยาหอมแก้ไข้ให้เชื่อมวัวกระหายน้ำ แกพิศม์ตานทรายทั้งปวงเอาจันแดง ๑ จันขาว
๑ เกสรสรภี ๑ เกสรพิทูน ๑ เกสรบุญนาก ๑ รากบัวหลวง ๑ ยาทั้งนี้เอาเสมอภากย์ตาก
แดดให้แห้งทำเป็นผงบหมันแห้งละลายด้วยน้ำดอกไม้กินหายแล

๕

- ๑๑๓) ขนานหนึ่งยาแก้กาลมุดมขึ้นในหัวใจ ให้ร้อนให้คั่งเป็นกำมั่ง ทานให้เอารากลำโพงกลัก
๑ รากนมแมวอ่อน ๑ รากยานาง ๑ ฝนกินด้วยน้ำชาเข้า แกลาสมุดหายแล

- ๑๑๔) ขนานหนึ่งยามหานิน ใช้ให้สลบให้ลิ้นกระด้างคางแข็ง ให้เอาลูกมกอกเผา ๑ เข้าสุกเผา ๑

เปลือกทองหลางใบมนเผา ๑ เอาเสมอภากบดแห้งไว้ละลายด้วยน้ำ
ดอกไม้
เขาเข้า } กินแล้ว

๑
ลิ้นกระด้างคางแข็งแก้สลบหายติค้าไว้ + ทองแล

๗

- ⊙ ขนานหนึ่งยาแก้กาลสิงคลีให้หนาเหลืองดินเหลืองมือเหลือง ให้เอารากย่านาง ๑ คันทรง ๑ รากท้ายยามอม ๑ รากก็ดอม ๑ ประเพช ๑ เปล้าใหญ่ ๑ รากคนทา ๑ ดีปลี ๑ ตมกิน หายแล

๘

- ⊙ ขนานหนึ่งถ้าแลใช้ตาเหลืองมุตเหลืองทุกสัตวันักตัวเหลืองเอาร่านกึบแรต ๑ รากโครเคือ ๑ เนรภูศรี ๑ ฝนด้วยน้ำกินหายแล

๙

- ⊙ ขนานหนึ่งยาแก้ปวดศีรษะให้เอาลูกสมอไท ๑ ลูกมกอก ๑ ฝนกับน้ำมนาวทาหายแล

๑๐

- ⊙ ขนานหนึ่งยาแก้ปวดศีรษะ เอาหวายตค้า ๑ รยอม ๑ พิศนาค ๑ ฝนด้วยน้ำขาวเข้าทา หายแล

๑๑

- ⊙ ขนานหนึ่งยากุงใช้ ให้เอารากยานาง ๑ หัวค้ำ ๑ หัวอย่าเข้าเอيين ๑ หัวตโคร ๑ ตม สามเอาหนึ่งกินแก้ไข้ให้เท้าเอيينรอนตลอดแล

๑๒

- ⊙ ขนานหนึ่งยาแก้ไข้เหมือนทังปวง ให้ร้อนผ่ามือ พิศให้ร้อนในอก โหเอาอยานี้ดับพิศ รากบาลมีรูโรยขาว ๑ หัวปุง ๑ หัวว้าว ๑ หัวบาลเอيين หัวเนระภูศรี ๑ ถากระหายนำนัก ไสเปลือกกมกอกกลงด้วย ต้มกินดับพิศมิใช่แล

๑๓

- ๑๓ ขนานหนึ่งยาแก้ไขเหนื่อ ให้ลงเพื่อโลหิตกิติ แลไขกลับให้ลงกิติ เอาจันทั้ง ๒ เปลือกมกอก ๑ ลูกเบญจกานี ๑ เนระภูสีร์ ๑ ตัง ๑ แทรกยาฝั้นบพเป็นแท่งก็ได้ ฝนด้วยน้ำกินก็ได้หายแล

๑๔

- ๑๔ ขนานหนึ่งยาตมแก้ไขสันนิบาตร ให้เอาซีเล็กทั้ง ๕ ผักราชพฤกษ์ ๓ ผักมีกรูดลูก ๑ ผาสาเทร็ก บรเพชยาวนิวมือ ๑๑๐๘ ขมิ้นอ้อย ๗ ชัน พริกไทย ๑๐๘ เมล็ด ไบมกา ๑ ตมสามเอาหนึ่งกิน ใช้สันนิบาตหายแล

๑๕

- ๑๕ ขนานหนึ่งแก้กลอนลงฝัก เอาหวักะชาย ๑ หัวชนกินาด ๑ แห้วหมู ๑ ลูกมตุมออน ๑ ยาทั้งนี้ตากให้แห้งตำผงเอาน้ำผึ้งรวงเชื่อมไฟเป็นยากลอนกินหายแล

- ๑ ขนานหนึ่งยาชิวาโยพินาต ให้เอาพริกไท $\frac{๑}{|}$ ชิง $\frac{๑}{|}$ ตีปลี $\frac{๑}{|}$ ไบขนาด $\frac{๑}{|}$

การบูน $\frac{๑}{|}$ กเทียม $\frac{๑}{|}$ ผิวมกรูด $\frac{๑}{|}$ ตำเป็นผงลายน้ำสุราน้ำร้อนนได้แก้ลมราก
แก้ลมทั้งปวง แก้ฝีเข้าทำเป็นยากละลายแก้เลือดคั่งขึ้น

◎ ขนานหนึ่งยาแก้กลอนแห่งจุกเสียดเป็นพันรติก บังเกิด เป็นลมกลอนอยู่ทอง ให้เจ็บทั้งสร พวงกายให้เจ็บบันเอว ให้มือตายตืนตายให้โภกให้ท้องตั้งลงไปสองข้างทวนเข้าให้ เจ็บศีศะ ให้บังเกิดเป็นลมพรรติก ให้บังเกิดเป็นลมอำพฤษ์ เป็นดังนี้บุรุษกระสตรีเหมือนกรรทาน ให้ทำยานี้กินหายแล ทานให้เอาสคาน ๑ ผักแฉวแดง ๑ หัวดองดึง ๑ หวานน้ำหนึ่งยาดา ๑ มหาหิง ๑ โภภิธอ ๑ โภภิพุงปลา ๑ โภภิจุล้าอำรก ๑ กัญชา ๑ หัวอุตพิศ ๑ ชะเอมเทศ ๑ แกน แสมท์เล็ก ยา ทั้งนี้เอาเท่ากัน เอาพริกไท เท้ายา ทั้งหลายตำเป็นผงลาย

น้ำผึ้งรวงกินหนัก  ทานติคาไว้  ทองแล

◎ ขนานหนึ่งแก้แกลมทั้งปวง ทานให้เอาโบลดมานิ่งให้สุก ๑ ยาไซ ๑ ไบรักข้าว ๑ โบลมอทเล็ก ๑ ยาทั้ง ๔ สิ่งนี้ให้หนึ่งสุกแล้วตากแดดไว้ให้แห้ง ต้มเป็นละลายน้ำผึ้งรวงกินแก สรบพลมทงปวงหายแล

๑ ขนานหนึ่งยาชื่อไฟทศกรรฐ ทานให้เอาแกนขี้เหล็ก $\frac{๑}{|}$ แกนสแห่มทะเล $\frac{๑}{|}$

รากส้มกุ้ง $\frac{๒}{|}$ พริกเทศ $\frac{๒}{|}$ ผิวมกรูด $\frac{๒}{|}$ พริกกล้อน $\frac{๒}{|}$

ขิงแห้ง $\frac{๒}{|}$ ดับลิ $\frac{๒}{|}$ ปูนขาว $\frac{๑}{|}$ ยาทั้งนี้ตำเป็นผงก็ได้ลายน้ำผึ้งถ้าจะ

บทปนแทงเอาน้ำผึ้งจริงเป็นกระสายปั้นแทงเท่าลูกฝ้ายลายน้ำผึ้งกินม้อละ $\frac{๑}{|}$ ก็ได้

ยานี้ชื่อว่า ไฟทศกรรฐถ้าจะแกสรมทั้งปวงจุกเสียดวงเวียนแกเจ็บท้องเจ็บหลังแกปวดมวนทองแก
ให้ไฟธาตุเสมอได้ทั้งแพแล

APPENDIX B

Traditional Thai Ruesee Dat Ton poems at Sala Ruesee WatMatchimawasworawihan

โคลงฤๅษีตัดตนในศาลาฤๅษีวัดมัชฌิมาวาสวรวิหาร

โคลงทำฤๅษีตัดตนที่ปรากฏบนศาลาฤๅษีวัดมัชฌิมาวาสวรวิหาร

๑. Severe muscular cramp (แก้ลมมหาบาทย์กัษ)

ดาบศบรเมศร์แก้ ลมหลัก

เรียกลมมหาบาทย์กัษ ยิ่งร้าย

นั่งสมาธิหัตถ์สองซีก จุดแต่ง ขาแฮ

อกแอ่นอืดย้าย โยกเยื้องอินทรีย์

๒. Foot's problem (แก้เท้าขัด) (ตำราวัดโพธิ์ว่า ล้มพลาดแคลงเคล็ด)

มีคาชินทร์มักไต่เต้า เตรี้ตรี๊ด

ล้มพลาดแฝงแคลงเคล็ด ขอดเส้น

ดัดแก้กอบกะละเม็ด นั่งเบะ บาทเฮย

เข้าหนึ่งชนมือแน่น นวดแข้งขยาคล้ำ

๓. Weakness of knee and leg (แก้เข้า ขาดาย)

ฤๅษีวชิรุ้ศาสตร์ สฤษฏิกาย กบแฮ

ชื่อเทพมณโฑชชาย มากชู้

แก้ลมเขาขาดาย ตึงเมื่อย มีนเอย

เท้าหัตถ์ชันเขาคู้ ท่าแม่ลม้ายสิงฆ์

๔. Low back pain, lumbar pain (แก้ลมในปัตนาฏในเอว)

(ตำราวัดโพธิ์ว่า แก้ลมปัตนาฏลมในเอว)

จุลพรหมสี่กัศตร์นี้ แผลงฤทธิ

ยกเข้าเหยียดแขนวิชิต เลือกเท้า (ตำราวัดโพธิ์ว่า ยกเข้าเหยียดแขนอิสิต)

แผนแพทย์พัคโหนดพิศ ดารบอก ไ่ว่นา

แก้ปัตนาฏชันเร้า ออกบั้นเอวหาย

๕. Generalized weakness (กล้ามเนื้อทั่วสสารพวงาค์)

สลกกรรมนามวิสุททิกกร ไตรภพ
 ออกแอ่นแขนงนพักตร์ชบ เขม่นฟ้า
 กลับแขนกลบขาทบ เน้นนั่งอยู่นาน
 ลมเสียดสสารพวงาค์กล้า ดับด้วยดีตนเอง

**๖. Shoulder, abdominal and chest problem (แก้ไหล่ ท้อง ออก)(ตำราวัดโพธิ์ว่า แก้ไหล่ แก้ท้อง
 แก้อก)**

นักสิทธิ์สมาบัติสร้าง สร้างเกลศ
 กาละกูร์ภระบือเดช เปรียกพร้อง
 กตผากกตท้ายเกศ บาทข้อคูกแฮ
 (ตำราวัดโพธิ์ว่า กตผากกตท้ายเกษ บาทขัดคูกแฮ)
 รั้งบโรคลมลมไหล่ท้อง อูระด้วยตั้งแผน

๗. Facial palsy, generalized weakness & numbness (กล้ามเนื้อชัก ลิ่นตาย มือเหน็บเท้าเหน็บ)

ผิวลมเขาค่อขัง เหน็บหนัก
 กายสิ้นพันชนิดชัก ปากเบี้ยว
 พระกาลสิทธิ์แถลงลักซ์ เลศท่า แก่นอ
 เหนียวไหล่หนวงเท้าเอี้ยว ออกอ้อนิจจ้ง

๘. Generalized weakness or not alert (แก้เกียจ)

สังกสีดีบุกเข้า รคนเจือ
 หล่อคณะนุ่งหนังสือ สถิตยไ้
 กามันตะเกีเขือ ไซ่ยหนุ่ม นกนอ
 เหยียดยี้ดหัดดัดได้ แต่แก้เกียจกาย
 (ตำราวัดโพธิ์ว่า เหยียดยี้ด หัดดัดไ้)

๙. Vertigo (แก้วิงเวียนศีรษะ) (ตำราวัดโพธิ์ว่า แก้วิงเวียน)

ฤาษีสุมะษนี้้ง ไม่ถนัด

กระหย่งเท้าเข้าขัด เหลี่ยมถ้ำ

เอี้ยวองค์อีกสองหัตถ์ ไหว้เหวี่ยง อยู่เฮย (ตำราวัดโพธิ์ว่า ไหว้เหวี่ยงอยู่แฮ)

แหงนภักตร์ที่เฟ่งฟ้า บอแก้ววิงเวียน

๑๐. Hands and foot cramp (แก้ตะคริวมือ เท้า)

อัคคีเนตรน้อค คีโชน เนตรฤา

ยื่นแยอย่างยักษโชน ออกเดิน

กางกรกดสองโคน ขานีดแน่นนอ

แก้ตะคริวรั้วเส้น แต่แคงตลอดแขน

๑๑. Migraine (แก้ลมปัก)

กาละชะภูิลัดดมล้าง ลมตุ

ไคลขมับจับหนู นวดเน้น

มีนเคียวมีดจักษุ เสี่ยมส่ง ไซ้แฮ

ไว้ฉบับบอกเส้น ประสิทธิ์แก้ลมปัก

๑๒. Knee leg and chest spasm (แก้ลมจันทาคาต) เข้า ขา หน้าอก

พระนารอทวายุเจ้า ทรวงรันทำนา

ขัดเข้าขาแลจันทา ฆาฏร้าย

ทวยเท้าทำยื่นหัน เหิรเยียง เหาะแฮ

มือหนึ่งคั้นเข้าซ้าย เสื่อมสิ้นสึดม

๑๓. Arm movement (แก้ลมในแขน)

เหยียดหัตถ์ดัดนิ้วนี้ ชันเพลลา
 แก้มือยขัดแขนเบา โทษได้
 ยาครอบนี้เอา ยาชื่อใส่เฮย
 ผสมสีนักษิตรีให้ ชื่ออังกูรอุทยา

๑๔. Knee discomfort (แก้ขาขัด)

ชะภูิลดาบสเบื้อง แบบฉบับ
 ยืนยกขาขวาทับ เข้าซ้าย
 พนมหัตถ์ดัดกายกลับ เป็อนบิด ตนแฮ
 ลมขัดคอเขาร้าย เร่งเร้าห่างสุน

๑๕. Chest pain (แก้เสียดอก)

ยืนเหนี่ยวคอเท้าเซอด หัตถ์เหน
 แก่เสียดทรงเส้นเอน ขอดได้
 นารอทเสกไม้แปน บลึงเกาะ กระบี่พ้อ
 ยัมเยาะวานรให้ เหือดร้ายรังแก

๑๖. Vertigo (แก้ลมเวียนศีรษะ)

สมาธิขัดหัตถ์ยุดทั้ง เพลลาเศียร
 ศระสร้างแสงลมเวียน ศิระเกล้า
 นามระพระผู้เพียร ผนวชเนิน นานแฮ
 ระอักษรควบเข้า เหอมให้นามกรุง

๑๗. Low back pain and hipdiscomfort (แก้โตภก สลักเพส) (ตำราวัดโพธิ์ว่า ดัดตนแก้ตะโพก สลักเพ็ชร)

สระรังค์ดาบศตั้ง ตนตรง
 ต่างบาททั้งสองทรง แย่แก้
 กำหนดดัดผจง กคคู่ ขานา
 ตระโภกสลักเพสแม่ เมื่อยล้าซาหาย

๑๘. Leg and neck pain (แก้ขัด คอ ขา)

คุกเข่าชนติดเข่า เขย่าขยาย
 มือประทับกับเพลาหมาย มุ่งฟ้า
 ขัดขาขัดคอหาย ห่างเมื่อยลงแฮ
 โรมะลิงคี่พิศักดีกล้า กล่าวนี้นามขนาน

๑๙. Abdominal discomfort and ankle's joint pain (แก้ปวดท้อง ปวดคอ)

(ตำราวัดโพธิ์ว่า แก้ปวดท้อง แก้ข้อเท้า)

ฤาษีสี่ชื่อให้ นามนคร รามเอย
 อัจนะคาวิอักษร อะตั้ง
 พับทรงเทิดถวัลถรสอง ไปล์หลังนา
 แก้ขัดข้อเท้าทั้ง ปวยท้องบรรเทา

๒๐. Chest and abdominal discomfort (แก้แน่นหน้าอก)

โคดมมหาธาณี หนวดยาว ยุ่งนา
 นกกระจาบทำรังราว กะวะไม้
 แหงนหน้าท่าเรือหวา ยืนดัด หลังเฮย
 แก้แน่นนาภิไต้ ออกด้วยดีเหลือ

๒๑. Scapular and shoulder discomfort (แก้สะบักหน้าจม)

หัตถ์หน่วงนิ้วเท้าพิบขงคี่ขีด เพลาเฮย
 แก้สลักไหลเพื่อพิศม์ ฝ่อนน้อย
 วตันตระระบะฤทธิ มฤครัก ท่านแฮ
 มีแม่โคห้ำร้อย หยาดน้ำนมถวาย

๒๒. Secretion in thorat (แก้เสมหะในลำคอ)

พระยุกุทธอักษรไว้ นามยุกุทธ
 สืบอักษรตราบสุด สีสัน
 นั่งสมาธิหัตถ์ดับประหยุค เคียรอิก แคงนา
 เสมหะปะทะต้นลิ้น ล่งล้าล้าสอ

๒๓. Knee trouble (แก้เข่าขัด)

นักสิทธิโสพากพร้อม พรหมจรรย์
 ซ้อมหาสุธรรม เลอดแท้
 เท้าเหยียดยึดหัตถ์ ขยำเช่า สองนา
 ขบขัดค่อเช่าแก้ เมื่อยล้าลมถอย

๒๔. Arm discomfort (แก้ขัดแขน)(ตำราวัดโพธิ์ว่า พระโสมนัสโศษธำว)

พระโสมนัสโศษธำว ดงครีม
 ภูตโสมนัสโศษครหิม กู้ก้อง
 ล้มไข้ขบเคียรขิม ยอกขัด แขนนา
 ยอดสอกขึ้นเช่าจ้อง จรดซ้ายเปลี่ยนขวา

๒๕. Low back pain (แก้ขัดเอว)

วัจนันเนาพนศห้วย หุบเหว
 นอนนบเพลองเปลลาเปลว คำเช่า
 อาพาธิ์ขบขัดเอว ใ้เทวษ นั่งเอย
 เก็งคอกกตตคากเช่า ศอกตู้ขมึงทึง

๒๖. Chest discomfort (แก้แน่นหน้าอก)

ภาชีสมมิตรแมน ครูหมอ นวดนา
 ยืนหยัดยกเท่างอ ไควไว้
 สองมือตัดคางคอ เขย่งยึด ตัวแฮ
 แก้แน่นหน้าอกได้ เสียดเส้นลมหาย

๒๗. Hand and foot Trouble (แก้มือแก้เท้า)

พระสุทัศนสถิต ถ้ำเถื่อนรหง
 ครอบเครื่องนักสิทธิ์ทรง ห่อเกล้า
 ลมคั้งค่อหัตถ์ซงค์ หัตถ์ช่วย ดัดแฮ
 นั่งกระหย่งยุตเท้า หัตถ์ซ้อยเซนรา

๒๘. Weakness (แก้ลมอัมฤต) (ตำราวัดโพธิ์ว่า แก้ลมอัมฤก)

โควินทร์ณะกให้ รามแผลง อสุรฤา
 สบาไปแก่นนทรีแรง ฤทธิเฝ้า
 อมศฤกพิบัติแสดง ดัดดับ คลายแฮ (ตำราวัดโพธิ์ ว่า ดัดดับ คลายนอ)
 ตั้งซ่นสองมือเข้า ประทับข้างซิ่นองค์

๒๙. Chronic muscular discomfort (แก้กร่อนแก้ปวดชา)

แยกขายืนเข้าตั้ง ตนตรง
 แขนแนบหนีบสเอวองค์ แน่นแพ้น
 คาวินทร์ดำรง กายดัด นี้ฤา
 แก้กล่อนปีศมาสแม่น แพทย์แก้มวดยมัน

๓๐. Chronic disease with bleeding and congestion (แก้ลมริดสีดวง)

อุคมนารอทู้ กลดัด กายแฮ
 ขาโควไฟลชงค์ซัด เข้าเข้า
 เหนียดกรออ่อนเอาหัตถ์ หนึ่งสง สอกนา
 ลมโรคริดสีดวงเร้า ซอบถ้าทำหาย

๓๑. Low abdominal pain and scrotal distension (แก้กล่อน)

ธาระณีพัฒน์งน้อม โน้นกาย
 เท้าเหยียดมือหียบปลาย แม่เท้า
 ลมก่อนเหือดห่างหาย เห็นประจักษ์
 อิกแน่นนาภีเร้า รังบ เส้นกร่อน กษัย

๓๒. Wrist trouble (แกำลมข้อมือ)

อนิทธิกันท์ท่านนีวหน้า ตาถลิ่ง (ตำราวัดโพธิ์ว่า อนิทธิกันท์ท่านนีวหน้า)
 ลมเสียดสองหัตถ์ตั้ง ปวดตัว
 พับเข่านั่งค้ำนั่ง นึกตัด ดั่งฤา
 กาชดชะระดัดนิ้ว นบถ้ำเทพนม

๓๓. Leg discomfort (แกำลมขา)

ชุกธาละกะเจ้า เจบบาท
 เพื่อพิการลมกาจ กับเส้น
 ดัดตนดัดลมขาฯ ขาเมื่อย ม้วยแฮ
 มือหนึ่งนิ้วตอกแน่น หนึ่งค้ำคางแขน

๓๔. Problem of penis and scrotum (แกำลมลำลึงลมอ้นชะ)

โยคีอังกดกล้า สมาบตี
 รู้ชาติเนาวรัตน์ชัต ชื่อนั้น
 แกำลมเสียดเสียวชัต ลำฝัก หายแฮ
 นั่งสมาธินิ้วตอกคั้น ขบเขี้ยวตาขมึง

๓๕. Arm discomfort (แกำแขนชัต)

รบือนามโคบุตรกำอง กุณท์สรวร สฤษฏ์เอย
 ถอดหัตถ์ไทยทศกัณฐ์ เก็บไว้ (ตำราวัดโพธิ์ว่า ถอดหทัยทศกัณฐ์)
 ทำดัดพับเพียบผัน ภักตร้น้อย ณ แฮ
 แขนใดชัตเท่าให้ หัตถ์บไซ้นวดแขน

๓๖. Throat's problem (แกำลมในคอ)

พระกาญจนลมเสียดเส้น สอเสียว
 เพื่อนดื่มนบเดอนเทียว เทียวจ้อ
 แก่ตอบิตตอเหลือว ลมเหือด หายแฮ
 คู้เข้าชาก้อมก้อ หัตถ์เคลื่อนไคลขา

๓๗. Weakness and numbness of leg (กล้ามเนื้อเท้า)

อึดทึสนั่งแอนเอี้ยว องค้เปิน

ทับแต่งขาหนึ่งเฉ ฉีดยดล้ม

กรขวากดอกเอ ฉีดยงเหยียด ซ้ายเออย

แก้เจ็บบาทบ่กั้ม ภักตริพลีว แพลงหงาย

๓๘. Stiffness of neck and shoulder (แก้คอเคล็ดไหล่เคล็ด)

นักพรตพัทตริเพศมามีแผน พม่านา

ชี้อัศวมูชีแขน คู่คู้

ทำอัดดัดเหลียวเบน แบะเช่า

คอเคล็ดแคลงไหล่หลู้ โฉลกแก้ตลอดกัน

๓๙. Shoulder and neck Discomfort (แก้คอแก้ไหล่)

อึดสิงค้ดาบสหน้า เปินมมนุษย์

เขางอกแงเค็ยรดูจ ดั่งเนื้อ

ยีนดัดหัดถ้สองยุค กันกดเอวนา

คอไหล่ใช้รั้งเรือ โครร้ายรั้งถอย

๔๐. For a state of Drowsiness (แก้เส้นมหาสนุกระงับ)

กามินทรมือยุดเท้า เหยียดหยัด

มือหนึ่งเท้าเข้าซัด สมารคู้

เข้าฉานช่วยแรงดัด ทุกค้ำคีนนา

รับรวดยากจะลู้ โครร้ายพายใน

APPENDIX C

Herbal description

ลักษณะของพืชสมุนไพร

Distribution of monocotyledons family

Cordyline fruticosa (L.) Gopp.

Synonyms: *Aletris chinensis* Lamarck; *Asparagus terminalis* Linnaeus, nom. illeg. (included *C. fruticosa*); *Cordyline terminalis* (Linnaeus) Kunth; *C. terminalis* var. *ferrea* (Linnaeus) Baker; *Dracaena ferrea* Linnaeus, nom. illeg. (included *C. fruticosa*); *D. terminalis* (Linnaeus) Linnaeus; *Taetsia ferrea* (Linnaeus) Medikus; *T. fruticosa* (Linnaeus) Merrill; *T. terminalis* (Linnaeus) W. Wight ex Safford.

Thai name: Mak phu

Family: AGAVACEAE



Cordyline fruticosa (L.) Gopp.

Description of the plant: Plants erect, shrubby. Stems simple or sometimes branched, 1-3 m × 1-3 cm. Leaves petiolate; petiole 10-30 cm, channeled adaxially, base dilated, clasping stem and other petiole bases; leaf blade green or variously colored, oblong-lanceolate, elliptic-lanceolate, or narrowly oblong,

25-50 × 5-10 cm, midvein distinct and raised abaxially, apex aristate. Panicle 30-60 cm; branches spreading, 6-13 cm, many flowered. Flowers subsessile or shortly pedicellate; pedicel (if distinct) to 4 mm, subtended by 3 bracteoles; bracteoles ovate, 2-3 mm, margin broadly membranous, apex cuspidate. Perianth reddish, yellowish, or bluish purple; tube 5-6 mm; lobes erect or recurved, nearly as long as tube. Stamens inserted in throat of perianth, scarcely exerted. Fruit reddish, several seeded. Fl. Nov-Mar.

Uses: *C. fruticosa* is used in the treatment of most cases of bleeding including, hemoptysis, bleeding per vaginum, menorrhagia, haematuria, bleeding haemorrhoids, bleeding wounds and epistaxis. It is the leaves that is being used in most cases.

Allium sativum Linn.

Synonyms: *Porrum sativum* (L.) Rchb.

Thai name: Kra thiam

Family: ALLIACEAE



Allium sativum Linn.

Description of the plant: Bulb solitary, globose to applanate-globose, usually consisting of several bulbels covered with a common tunic; tunic white to purple, membranous, entire. Leaves broadly linear to linear-lanceolate, shorter than scape, to 2.5 cm wide, apex acuminate. Scape 25-50 cm, terete, covered with leaf sheaths for ca. 1/2 its length. Spathe deciduous; beak 7-20 cm. Umbel with many bulblets and few flowers. Pedicels slender, longer than perianth; bracteoles ovate, rather large, membranous, apex acute. Perianth usually pale red; outer segments ovate-lanceolate, ca. 4 × 1.4 mm; inner ones ovate, ca. 3 × 1.4 mm. Filaments shorter than perianth segments, connate at base and adnate to perianth segments; outer ones subulate; inner ones broadened at base, 1-toothed on each side, teeth with apex filiform and longer than perianth segments. Ovary globose. Style not exerted. Fl. Jul.

Uses: Garlic could be used for gastrointestinal disorders, dog and snake bites, scorpion stings, asthma, madness, convulsions, tumours, consumption and multiple beneficial effects such as antimicrobial, antithrombotic, hypolipidemic, antiarthritic, hypoglycemic and antitumor activity.

***Acorus calamus* L.**

Synonyms: *Acorus americanus* (Rafinesque) Rafinesque; *A. angustatus* Rafinesque; *A. angustifolius* Schott; *A. asiaticus* Nakai; *A. calamus* var. *americanus* Rafinesque; *A. calamus* var. *angustus* Besser; *A. calamus* var. *angustifolius* (Schott) Engler; *A. calamus* var. *spurius* (Schott) Engler; *A. calamus* var. *verus* Linnaeus; *A. calamus* var. *vulgaris* Linnaeus; *A. cochinchinensis* (Loureiro) Schott; *A. griffithii* Schott; *A. spurius* Schott; *A. triqueter* Turczaninow; *Orontium cochinchinense* Loureiro.

Thai name: Wan nam

Family: ARACEAE



Acorus calamus L.

Description of the plant: Rhizome stout, 4-10(-20) × (0.8-)1-1.5(-3) cm, aromatic; roots at lower side of rhizome. Leaves several, mid-green, often reddish at base, ensiform, (60-) 70-100 (-150) × (0.7-)1-2(-2.5) cm (mostly 1-1.5 cm wide), apex acuminate; midrib conspicuous on both sides. Peduncle compressed triangular, (15-) 40-50 cm. Spathe mid-green, leaflike, 30-50 cm, acute. Spadix straight or slightly curved, erect, oblique, narrowly conic to subcylindric (tapering toward apex), 4.5-6.5(-8) × 0.6-1.2(-1.5) cm, densely flowered. Flowers yellowish green, 1.8-2 mm in diam. seen from above; tepals

oblong, $2.5-3 \times 1-1.2(-1.4)$ mm, keeled, membranous, apex triangular hooded; filaments oblong, flat, $2-2.5 \times 0.3-0.5$ mm, anthers cream-colored, 0.4-0.5 mm in diam.; pollen grains ca. 20 μm , exine shallowly and remotely foveolate; gynoecium obconic-cylindric, $2.5-3.5(-4) \times (0.8-)1-2.3$ mm, with conic, spongy apex and stigma very small. Inflorescence 1.5-2 cm in diam., straw-brown at maturity, berries densely arranged. Berry oblong-obovoid, 1- to few seeded, $(3.5-) 4-4.5 \times 2-3(-3.5)$ mm. Seed oblong-ellipsoid to ovoid, $2.5-3(-4) \times 1-1.2(-1.8)$ mm, without bristles; testa light brown, subsmooth and slightly foveolate. Fl. (Feb-) Apr-Sep.

Uses: *Acorus calamus* is generally used from the Ancient and Vedic periods due to its wonderful power of rejuvenation of brain, nervous system and normalizing the appetite. This herb has many wide varieties which were used in different studies possesses anti-inflammatory, anti-spasmodic, anti-protective and anti-hepatotoxic activities.

Typhonium trilobatum (L.) Schott

Synonyms: *Arum trilobatum* Linnaeus

Thai name: Ut ta phit

Family: ARACEAE



Typhonium trilobatum (L.) Schott

Description of the plant: Underground part a short, tuberous rhizome, subglobose or subcylindric, producing few annual offsets or splitting up. Petiole green or variously flushed with purple, 25-40 cm; leaf blade cordate-ovate in outline, usually deeply 3-lobed, rarely 5-lobed; central lobe ovate, 10-15 × 6-11 cm, acuminate, sometimes mucronate; lateral lobes 8-13 cm. Inflorescence appearing after leaves; peduncle 5-10 cm, elongating in fruit. Spathe convolute at base, outside green, inside green, to 30 cm, ovoid or ellipsoid, 2.5-3.5 × 1-1.5 cm, constricted at apex; limb spreading, outside green, inside dark purple to reddish purple, ovate-lanceolate, ca. 15 × 5-8 cm, apex acuminate. Spadix shorter than spathe;

female zone slightly conic, 7-10 mm; ovary yellowish green; stigma sessile, dark or mid-purple, disciform; sterile zone 2-3 cm, proximal half densely covered with staminodes, distal half naked; staminodes strongly curled but mostly directed downward and covering most of female zone, filiform, 7-12 mm; male zone 1.5-2 cm; stamens pink; appendix shortly stipitate, glossy purple or reddish, narrowly conic, 5-12 cm × 4-7 mm, base truncate, apex acute or subacute. Fruiting zone with spathe remaining; berries at first green with purple spots, white when mature, ellipsoid, 1- or 2-seeded. Fl. May-Jul.

Uses: Ayurveda, the rhizome is used with effect for treating vomiting, cough, asthma, excessive expectoration; pyogenic sore throat, headache, gastric ulcer, abscess and snake bite.

***Dischidia major* (Vahl) Merr.**

Synonyms: *Dischidia rafflesiana* Wall.

Thai name: Chuk rohini

Family: ASCLEPIADACEAE



Dischidia major (Vahl) Merr.

Description of the plant: Its latex-containing, opposite leaves have two forms of leaf blades. The smaller leaf blades are flat, rounded, and 2–3 by 1.5–2 cm, adpressed to the host tree or supporting structure. . The other form is oblong, pouch-like, yellowish-green outside, purple inside, and 6–12 by 2–4 cm. This is often inhabited by ants. Flowers: Its flowers are yellow-green, or striped yellow and green, have tubes 6–8 by 3–4 mm, and develop in clusters of 1–6 flowers. Fruits: Its yellow-green fruits are follicles that split open at one side when mature and about 5 by 0.5cm.

Uses: relieves abdominal pain for patients suffering from peptic ulcer.

Gloriosa superba Linn.

Synonyms: -

Thai name: Dong dueng

Family: COLCHICACEAE



Gloriosa superba Linn.

Description of the plant: Rhizome usually forked, ca. 1 cm in diam., fleshy. Stem scandent, 2-3 m or more, rather slender. Leaves alternate or occasionally also opposite, sessile or shortly petiolate, lanceolate to ovate-lanceolate, 7-13 cm, apex long caudate with a tendril. Flowers nodding; pedicel 10-15 cm. Tepals reflexed, bright red, proximally tinged with yellow, linear-oblongate, 4.5-5 cm × 7-9 mm, base slightly clawed, margin much crisped. Filaments 3-4 cm; anthers ca. 1 cm. Style 2.5-3.5 cm; stigma lobes 6-7 mm. Fl. Jul-Aug.

Uses: It is one of the seven upavishas in the Indian medicine, which cure many ailments but may prove fatal on misuse. The tuberous root stocks of glory lily, *G. superba* boiled with Sesamum oil is applied twice a day on the joints, affected with arthritis reduces pain. It is also used to treat intestinal worms, bruises, infertility, skin problem and impotence.

Cymbopogon citratus Stapf.

Synonyms: *Andropogon citratus* (Candolle)

Thai name: Ta khrai

Family: POACEAE/ GRAMINEAE



Cymbopogon citratus Stapf.

Description of the plant: Perennial, shortly rhizomatous. Culms tufted, robust, up to 2 m tall, ca. 4 mm in diam., farinose below nodes. Leaf sheaths glabrous, greenish inside; leaf blades glaucous, 30–90 × 0.5–2 cm, both surfaces scabrid, base gradually narrowed, apex long acuminate; ligule ca. 1 mm. Spathate compound panicle large, lax, up to 50 cm, drooping, branches slender; spatheoles reddish or yellowish brown, 1.5–2 cm; racemes 1.5–2 cm; rachis internodes and pedicels 2.5–4 mm, loosely villous on margins; pedicel of homogamous pair not swollen. Sessile spikelet linear-lanceolate, 5–6 × ca. 0.7 mm; lower glume flat or slightly concave toward base, sharply 2-keeled, keels wingless, scabrid, veinless between keels; upper lemma narrow, entire and awnless, or slightly 2-lobed with ca. 0.2 mm mucro. Pedicelled spikelet 4–5 mm. Fl. and fr. Summer.

Uses: The leaves are used in treating cough, fevers, depression, nervous disorders, certain skin conditions, and acts as antifungal, antibacterial and antiseptic. A poultice is administered for fungal infections and grass decoctions are taken for asthma, urinary tract infections, digestive complaints, headache, fevers, and to promote sweating.

Cynodon dactylon L.**Synonyms:** -**Thai name:** Ya praek**Family:** POACEAE/ GRAMINEAE*Cynodon dactylon* L.

Description of the plant: Perennial, stoloniferous, also with slender scaly rhizomes, sward forming. Culms slender, 10–40 cm tall. Leaf sheaths bearded at mouth, otherwise glabrous or thinly pilose; leaf blades linear, short and narrow, 1–12 cm, 1–4 mm wide, usually glabrous, apex subacute; ligule a line of hairs. Racemes digitate, (2–)3–6, 2–6 cm, straight or gently curved, rather stiff, spreading; spikelets overlapping by 1/2–2/3 their length. Spikelets 2–2.7 mm; rachilla extension ca. 1 mm, sometimes with minute rudimentary floret at apex; glumes linear-lanceolate, often purplish, usually more than half as long as floret, 1.5–2 mm, 1-veined, keel scabrous, thickened; lemma as long as spikelet, silky villous along keel, hairs straight, otherwise glabrous or lateral veins thinly villous, apex subacute; palea glabrous, keels scaberulous. Anthers more than 1 mm. Caryopsis subterete, scarcely laterally compressed. Fl. and fr. nearly all the year.

Uses: Medicinal plants are found useful in the treatment of variety of health problems such as bacterial infections, peptic ulcers, inflammation, arthritis.

Imperata cylindrica (L.) P.Beauv.

Synonyms: -

Thai name: Ya kha

Family: POACEAE/ GRAMINEAE

*Imperata cylindrica* (L.) P.Beauv.

Description of the plant: Perennial, basal sheaths becoming fibrous; rhizomes widely spreading, tough, scaly. Culms solitary or tufted, 25–120 cm tall, 1.5–3 mm in diam., 1–4-noded, nodes glabrous or bearded. Leaf sheaths glabrous or pilose at margin and mouth; leaf blades flat or rolled, stiffly erect, 20–100 × 0.8–2 cm, culm blades 1–3 cm, adaxial surface puberulous, margins scabrid, base straight or narrowed, apex long acuminate; ligule 1–2 mm. Panicle cylindrical, copiously hairy, 6–20 cm, lowermost branches sometimes loose. Spikelets 2.5–6 mm; callus with 12–16 mm silky hairs; glumes 5–9-veined, back with long silky hairs ca. 3 times glume length, apex slightly obtuse or acuminate; lower lemma ovate-lanceolate, 2/3 length of glumes, ciliate, acute or denticulate; upper lemma ovate, 1/2 length of glumes, denticulate, ciliate, palea equal to lemma. Anthers 2, 2–4 mm. Stigmas purplish black. Fl. and fr. Apr–Aug.

Uses: The flowers and the roots are antibacterial, diuretic, febrifuge, sialagogue, styptic and tonic. The flowers are used in the treatment of haemorrhages, wounds. They are decocted and used to treat urinary tract infections, fevers, thirst. The root is astringent, antifebrile, antivenous, diuretic, emollient, haemostatic, restorative and tonic. It is used in the treatment of nose bleeds, haematuria, haematemesis, oedema and jaundice. The root has antibacterial action against *Staphylococcus aureus*, *Bacillus dysenteriae*. A decoction of the root is used as an anthelmintic and also to treat digestive disorders such as indigestion, diarrhoea and dysentery. The root bark is febrifuge, restorative and tonic. Extracts of the plant have shown viricidal and anticancer activity.

Leersia hexandra Sw.

Synonyms: *Leersia australis* R. Brown; *L. parviflora* Desvaux.

Thai name: Ya sai

Family: POACEAE/ GRAMINEAE



Leersia hexandra Sw.

Description of the plant: Perennial with well-developed stolons and slender rhizomes. Culms decumbent, rooting at lower nodes, erect shoots up to 50 cm or more tall, nodes retrorsely pubescent. Leaf sheaths shorter than internodes, smooth or scabrid; leaf blades flat or sometimes rolled, 5–12 × 0.3–0.6 cm, abaxial surface scabrid on midrib, base contracted, apex sharply acute; ligule 1–3 mm, truncate. Panicle lanceolate-oblong in outline, 5–10 cm, exserted; branches inserted singly, ascending, 4–5 cm, unbranched, slenderly terete or triquetrous, densely clothed to near base with closely overlapping spikelets. Spikelets narrowly elliptic to elliptic-oblong, 3–4 mm, pale green or purple tinged; lemma conspicuously pectinate-hispid on keel, lateral veins and sometimes surface sparsely spinulose, margins shortly hispid, apex contracted into a short obtuse beak. Stamens 6, anthers 2–2.5 mm. Fl. and fr. May–Dec.

Uses: -

Oryza sativa L.

Synonyms: *Oryza formosana* Masamune & Suzuki; *O. sativa* var. *formosana* (Masamune & Suzuki) Yeh & Henderson.

Thai name: Khao

Family: POACEAE/ GRAMINEAE



Oryza sativa L.

Description of the plant: Annual, aquatic, tufted. Culms erect, rooting at lower submerged nodes, 0.5–1.5 m tall. Leaf sheaths slightly inflated below, upper sheaths tight, glabrous, auricles falcate, ciliate; leaf blades 25–60 × 0.5–2 cm, glabrous, smooth or scabrid on both sides, margins scabrid, apex acuminate; ligule 10–40 mm. Panicle loosely contracted, up to 30 cm, nodding at maturity; branches 1–3 at lowest node, longest 2–12 cm, axils bearded or glabrous. Spikelets oblong to oblong-lanceolate, 7–10 mm, length 2–3.5 times width, persistent; sterile lemmas lanceolate, 1.5–4 mm, apex acuminate; fertile lemma papillose, spinulose, apex acuminate; awn very variable, slender or stout, up to 60 mm or more, scaberulous, sometimes absent. Anthers 1–3 mm. Caryopsis ovate or elliptic to cylindrical, 5–7 mm, whitish yellow to brown or blackish.

Uses: The seeds are used in folk medicine for breast cancers, stomach indurations, other tumors, and warts. Reported to be antidotal, aperitif, astringent, demulcent, diuretic, excipient, larvicidal, refrigerant, stomachic, tonic, and vermifuge, rice is a folk remedy for abdominal ailments, beriberi, bowels, burns, diarrhea, dysentery, dyspepsia, epistaxis, fever, filariasis, flux, hematemesis, inflammations, jaundice, nausea, ophthalmia, paralysis, piles, psoriasis, skin ailments, sores, splenosis and stomach ailments. The flowers are dried as cosmetic and dentifrice in China, awns are used for jaundice in China. The stem is used for bilious conditions; ash for discharges and wounds, sapraemia in Malaya; infusion of straw for dysentery, gout, and rheumatism. The husk is used for dysentery and considered tonic in China. In China, rice cakes are fried in camel's fat for hemorrhoids; rice water is used for fluxes and ulcers and applied externally for gout with pepper in Malaya. Boiled rice is used for carbuncles in Malaya and poulticed onto purulent tumors in the East Indies. The root is considered astringent, anhidrotic, and is decocted for anuria. Sprouts are used for poor appetite, dyspepsia, fullness of abdomen and chest, and weak spleen and stomach in China. The lye of charred stems (merang, Indonesia) is used as a hair wash and used internally as an abortifacient. In the Philippine Islands, an extract (tikitiki), rich in antineuritic B1 vitamin, made of rice polishings, is used in treatment of infantile beriberi and for malnutrition in adults. In Java, the vitamins are extracted and supplied as lozenges.

Panicum repens L.

Synonyms: *Panicum convolutum* P. Beauv. ex Sprengel

Thai name: Ya chan kard

Family: POACEAE/GRAMINEAE



Panicum repens L.

Description of the plant: Perennial, rhizomatous. Culms tough, erect or decumbent, 30–125 cm tall. Leaves cauline; leaf sheaths glabrous, striate, puberulous to ciliate on margins, especially toward throat; leaf blades linear, flat or convolute, often stiff and pungent, markedly distichous, ascending close to the culm, 7–25 × 0.2–0.8 cm, apex acute or acuminate; ligule 0.5–1.5 mm, a ciliolate membrane. Panicle terminal, narrowly oblong in outline, 5–20 cm, sparsely to moderately branched; branches glabrous, scabrid, ascending. Spikelets ovate, 2.5–3 mm, acute; lower glume broadly ovate, 1/3 length of spikelet, hyaline, 1(–3)-veined, clasping at the base of the spikelet, obtuse or acute; upper glume ovate, as long as spikelet, membranous, 7–9-veined, acute; lower floret staminate, lemma similar to upper glume, palea well developed; upper floret almost as long as spikelet, pale yellow, shiny. Fl. and fr. Jun–Nov.

Uses: -

***Schumannianthus dichotomus* (Roxb.) Gagnep.**

Synonyms: *Clinogyne dichotoma* (Roxb.) Salisb., *Maranta dichotoma* (Roxb.) Wall., *Phrynium dichotomum* Roxb., *Thalia dealbata* Link, *Thalia dichotoma* (Roxb.) Roxb. ex Link

Thai name: Khla

Family: MARANTACEAE



Schumannianthus dichotomus (Roxb.) Gagnep.

Description of the plant: Perennial shrub. Leaves are petiolated, distichous and sheathing. Flowering occurs during May–June, with 9–18 panicles (inflorescence) in each culm. Anthesis begins around 3.30 h and continues up to 10.00 h. Ovary is villous and three-celled. Fruits are indehiscent, subglobose and take 25–35 days for maturity. Karyotypic study revealed that the species is diploid with $2n = 20$ (where $n = x = 10$). The total haploid genome length is 12.7 mm. The length of chromosome is found to vary from 0.8 to 2.2 mm, with predominance of metacentric (M) and submetacentric (SM) behaviour.

Uses: Flowers used as carminative.

***Areca catechu* L.**

Synonyms: *Areca faufel* Gaertner; *A. himalayana* Griffith ex H. Wendland; *A. hortensis* Loureiro; *A. nigra* Giseke ex H. Wendland; *Sublimia areca* Commerson ex Martius.

Thai name: Mak mia

Family: ARECACEAE/ PALMAE



Areca catechu L.

Description of the plant: Stems solitary, erect, to 20 m tall, 10–20 cm in diam., gray with conspicuous nodes. Leaf sheaths closed and forming green, slightly swollen crownshafts to 1 m; petioles no more than 5 cm; rachis recurved, to 2 m; pinnae 20–30 per side of rachis, regularly and closely arranged, stiffly erect; middle pinnae 30–60 cm, 3–7 cm wide at mid-point. Inflorescences infrafoliar, branched to 3 orders, erect; rachillae many, flexuose, yellowish green, to 25 cm; male flowers solitary, alternate and distichous on rachillae; stamens 6; female flowers at bases of rachillae only, larger than male flowers. Fruits yellow, orange, or red, ovoid, to 8 × 6 cm.

Uses: Nut – stimulant, astringent, taneifuge, powerful sialogogue, stimulates secretion of sweat, masticatory, dentifrice, vermifuge, expels tape worm and roundworms. Young shoots – abortifacient. Young leaves – lumbago, bronchitis. Bark – choleraic ailments, flatulent and dropsical conditions.

***Calamus caesius* Blume**

Synonyms: *Calamus glaucescens* Blume, *Palmijuncus caesius* (Blume) Kuntze, *Palmijuncus glaucescens* Kuntze, *Rotang caesius* (Blume) Baill.

Thai name: Wai ta khla thong

Family: ARECACEAE/ PALMAE



Calamus caesius Blume

Description of the plant: Clustering moderate-sized rattan climbing high into the canopy with stems ultimately reaching 100 m or more, the clump tending to be close and eventually with many aerial stems; stem without sheaths variable, 7-18 mm diam., with sheaths to 25 mm diam., internodes up to 50 cm (even longer in juveniles); cane surface highly polished, the outer surface snapping off in flakes when the cane is bent. Sheaths dull green, armed with sparse pale triangular spines to 15 x 5 mm and sparse grey indumentum, smaller spines sometimes also present; knee prominent; ocrea inconspicuous. Leaf cirrate to 1.5 m including the cirrus to 75 cm; petiole present in juvenile shoots, absent in mature climbing stems; leaflets c. 15 on each side of the rachis, irregularly arranged, usually in alternate pairs, occasionally in 3's, dark green on the upper surface, white beneath, somewhat plicate, often cucullate, the longest to 30 x 5 cm. Inflorescences to 2 m with 7 or more partial inflorescences to 75 cm, the whole inflorescence sometimes ending in a divaricate axis to 20 cm; bracts tubular with sparse brown indumentum; female rachillae c. 10 cm long. Ripe fruit ovoid, c. 15 x 10 mm, with a beak to 2 mm, and covered in 15 - 21 vertical rows of greenish white scales drying pale straw-coloured. Seed ovoid, c. 12

x 7 mm; endosperm deeply ruminant. Seedling leaf forked, the two lobes parallel, 1/4 the length of the whole lamina, dark green on the upper surface, white beneath.

Uses: Without doubt the best quality cane of its size class, ideal for all types of binding and weaving in the furniture industry and widely used locally in traditional weaving.

Borassus flabellifer* L.*Synonyms:** *Borassus flabelliformis* Roxb., *Borassus tunicatus*, *Borassus sundaicus***Thai name:** Tan tanot**Family:** ARECACEAE/ PALMAE*Borassus flabellifer* L.

Description of the plant: Solitary palm with rough and black stem, 20-25 (-30) m tall. Petiole 60-120 cm, semiterete, edges with hard irregular spines; leaf blade 60-120 cm long, segments 60-80, linear-lanceolate, induplicate. Male inflorescence 90-150 cm long, with c. 7 primary branches, secondary branches c. 30 cm long, c. 2 cm in diameter; sepals narrowly cuneate with truncate inflexed tips; petals shorter, obovate-spathulate; anthers subsessile, large; female inflorescence with flowering portion to 30 cm long, 2.5 cm in diameter, flowers 8-16, spirally arranged, c. 2.5 cm in diameter; sepals fleshy, reniform; petals smaller; ovary subtrigonal; stigmas sessile, recurved. Fruits broadly ovoid, 15-20 cm in diameter, mesocarp fibrous and fleshy. Pyrenes usually 3, obcordate, 6-7 mm broad, black.

Uses: There are innumerable medicinal uses for all parts of the palmyra palm. Briefly, the young plant is said to relieve biliousness, dysentery, and gonorrhoea. Young roots are diuretic and anthelmintic, and a decoction is given in certain respiratory diseases. The ash of the spadix is taken to relieve heartburn

and enlarged spleen and liver. The bark decoction, with salt, is used as a mouth wash, and charcoal made of the bark serves as a dentifrice. Sap from the flower stalk is prized as a tonic, diuretic, stimulant, laxative and anti phlegmatic and amebicide. Sugar made from this sap is said to counteract poisoning, and it is prescribed in liver disorders. Candied, it is a remedy for coughs and various pulmonary complaints. Fresh toddy, heated to promote fermentation, is bandaged onto all kinds of ulcers. The cabbage, leaf petioles, and dried male flower spikes all have diuretic activity. The pulp of the mature fruit relieves dermatitis.

Pandanus tectorius Blume**Synonyms:** *Pandanus fascicularis* Lam.**Thai name:** Lam chiak**Family:** PANDANACEAE*Pandanus tectorius* Blume

Description of the plant: Trunkly now and then a plant may be found with a single, pretty erect one, from ten to twelve feet in height, and a ramous round head; but this is seldom, for it is generally in form of a very large, ramous, spreading bush ; from the stems, or larger branches, long, fusiform, obtuse-pointed roots issue, descending till they come to the ground which they enter and then divide. The substance of the most solid wood is something like that of a cabbage stem, which by age acquires a woody hardness on the outside. Leaves confluent, stem-clasping, closely imbricated in three spiral rows, round the extremities of the branches, drooping, from three to five feet long, tapering to a very long, fine, triangular point, very smooth, and glossy, margins and back armed with very fine sharp spines, all those on the margins point forwards, those of the back point sometimes one way and sometimes the other. Mate inflorescence terminal, a large pendulous, compound, leafy panicle, the leaves thereof are white, linear-oblong, pointed and concave, in the axill of each there is a single thyrsi

composed of simple, small racemes of long, pointed, depending anthers, which are not sessile, but raised from the rachis of these partial racemes by tapering filaments, hence I call these parts of the thyrses racemes and not spikelets. Female flowers on a different plant, terminal, and solitary, having no other calyx, or corolla than the termination of the three rows of leaves forming three imbricated fascicles of white floral leaves or involucres, like those of the male racemes, only here they stand at equal distances round the base of the young fruit. Germs numerous, collected into firm, wedge-shaped, angular bundles, of from six to ten; these form the compound germs of the future fruit, and are closely impacted round the receptacle. Style none. Stigmas single, on each undivided germ, oval, grooved lengthways, yellow, affixed to the outside of a two-lipped umbilicus, on the apex of the germ. Pericarp; fruit compound, oval, from six to eight inches in diameter, and from six to ten long, weighing from four to eight pounds, rough, of a rich orange colour, composed of numerous, wedge-shaped, angular drupes, when ripe their large or exterior ends are detached from one another, and covered with a firm, deeper or orange-coloured skin; apices flat, consisting of as many angular, somewhat convex tubercles as there are cells in the drupe, each crowned with the withered stigma, internally the exterior half of these drupes next the apex, consists of dry spongy cavities, their lower part next the core or common receptacle is yellow, consisting of a rich-looking, yellow pulp intermixed with strong fibres; here the nut is lodged. Nut of each drupe compound, turbinate, exceedingly hard, angular, containing as many cells as there are divisions in the apex of the drupe, each cell is perforated above and below. Seeds single, oblong, smooth, adhering lengthways to a small fascicle of strong white fibres, which pass through the perforations of the cell. By far the greatest number of the cells are barren.

Uses: Plant pacifies vitiated kapha, pitta, urinary retention, skin diseases, headache, ear ache, wounds, flatulence, colic, arthritis, cervical spondylosis, fever, diabetes, infertility, habitual abortion and general debility.

Smilax micro-china* Roxb.*Synonyms:** *Smilax glabra* Roxb.**Thai name:** Hua yaa khaao yen**Family:** SMILACACEAE*Smilax micro-china* Roxb.

Description of the plant: Unarmed climbing plant, 4-5m. long. Tuberos roots nodose. Leaves alternate, oval, apex pointed, 3-nerved; tendrils present on the petiole. Inflorescence in axillary single umbel; flowers small, greenish-yellow; flower-stalk longer than the umbel-stalk. Berry globose, nearly trigonal, black when ripe.

Uses: The root is demulcent, antiallergic, diuretic, diaphoretic and depurative. It is used in treating impetigo, furunculosis, phlegmon, psoriasis, dyshidrosis, mercurialism, rheumatism and osteodynia. The daily dose is 15 to 30g in the form of a decoction, liquid extract, powder or pills.

***Boesenbergia rotunda* (L.) Mansf.**

Synonyms: *Curcuma rotunda* Linnaeus, *Boesenbergia pandurata* (Roxburgh) Schlechter, *Kaempferia pandurata* Roxburgh

Thai name: Kra chai

Family: ZINGIBERACEAE



Boesenbergia rotunda (L.) Mansf.

Description of the plant: Plants to 50 cm. Rhizomes bright yellow, ovoid-globose, strongly aromatic; roots robust. Leaves 3 or 4; leaf sheath red; ligule 2-cleft, ca. 5 mm; petiole 7–16 cm, channeled; leaf blade green on both surfaces, ovate-oblong or elliptic-lanceolate, 25–50 × 7–12 cm, glabrous except for sparsely hairy midvein abaxially, base rounded to cuneate, apex apiculate. Inflorescences terminal on pseudostems, appearing from within apical leaf sheaths, subsessile, 3–7 cm; bracts lanceolate, 4–5 cm. Flowers aromatic. Calyx 1.5–2 cm, apex 2-cleft. Corolla pink; corolla tube 4.5–5.5 cm; lobes oblong, 1.5–2 cm. Lateral staminodes light pink, obovate, ca. 1.5 cm. Labellum white or pink with purple stripe, fiddle-shaped, 2.5–3.5 cm, concave, margin slightly crisped, apex entire. Filament short; connective appendage reflexed, 2-cleft, 1–3 mm. Fl. Jul–Aug.

Uses: This herbal plant is also used as a traditional medicine to treat illnesses such as rheumatism, muscle pain, febrifuge, gout, gastrointestinal disorders, flatulence, carminative, stomach ache, dyspepsia, and peptic ulcer. In Indonesia, *B. rotunda* is typically used to prepare “jamu,” a popular traditional tonic for women after childbirth as well as a beauty aid for teenage girls and to prevent leukorrhea. The fresh rhizomes are used to treat inflammatory diseases, such as dental caries, dermatitis, dry cough and cold, tooth and gum diseases, swelling, wounds, diarrhoea, and dysentery, and as a diuretic.

Globba malaccensis Ridl.

Synonyms: -

Thai name: Wan ron thong

Family: ZINGIBERACEAE



Globba malaccensis Ridl.

Description of the plant: Rhizomes creeping, slender. Pseudostems erect, usually to 1 m, leafy. Leaves sessile or very shortly petiolate; ligule entire; leaf blade oblong, elliptic, or lanceolate. Inflorescence terminal, a thyrses or raceme, often lax; bracts each subtending a cincinnus of flowers, or flowers replaced by bulblets; bracteoles free to base. Calyx campanulate or turbinate, apex obtusely 3-lobed. Corolla tube slender; lobes ovate or oblong, subequal, concave. Lateral staminodes petaloid. Labellum reflexed, adnate to filament to form a slender tube above lateral staminodes and corolla lobes. Filament long, curved; anther with or without appendages on each side. Ovary 1-loculed. Capsule globose or ellipsoid, apex irregularly dehiscent. Seeds small; aril white, lacerate.

Uses: Carminative

Curcuma longa L.

Synonyms: *Curcuma domestica* Valetton.

Thai name: Khamin chan

Family: ZINGIBERACEAE



Curcuma longa L.

Description of the plant: Plants ca. 1 m tall. Rhizomes many branched, orange or bright yellow, cylindrical, aromatic; roots tuberous at tip. Petiole 20–45 cm; leaf blade green, oblong or elliptic, 30–45(–90) × 15–18 cm, glabrous, base attenuate, apex shortly acuminate. Inflorescences terminal on pseudostems; peduncle 12–20 cm; spike cylindrical, 12–18 × 4–9 cm; fertile bracts pale green, ovate or oblong, 3–5 cm, apex obtuse; coma bracts spreading, white and green, sometimes tinged reddish purple, apex acute. Calyx white, 0.8–1.2 cm, puberulent, apex unequally 3-toothed. Corolla pale yellow; tube to 3 cm; lobes deltoid, 1–1.5 cm, central one larger, apex mucronate. Lateral staminodes shorter than labellum. Labellum yellowish with central, yellow band, obovate, 1.2–2 cm. Anther spurred at base. Ovary sparsely hairy. Fl. Aug.

Uses: It has been used in Asia as a traditional medicine for several diseases: stomach ailments and to stimulate bile secretion, blood purifier, liver ailments, and skin diseases. It is a good promoted for use as pain relievers. It relieves the pain caused by arthritis, muscle sprains, swelling, and pain caused by injury or surgical incisions.

Curcuma zedoaria* (Berg) Roscoe*Synonyms:** *Amomun zedoaria***Thai name:** Khamin oi**Family:** ZINGIBERACEAE*Curcuma zedoaria* (Berg) Roscoe

Description of the plant: *Curcuma zedoaria*, also known as Zedoary, is an herb that grows up to 1.2 m in height. This plant has both vertical aerial stems (pseudostems) and horizontal underground stems known as rhizomes, which allow the plant to spread so this species often grows in large clumps. The swollen underground stems are yellow or orange colored inside and are aromatic when crushed. The leaves of Zedoary are oblong and can be up to 81 cm long and 18 cm wide. This species can be recognized by the presence of a purplish hue along the midvein of the leafblades. The clusters of flowers are produced in a dense aggregation on an above ground stalk that grows from a leafless underground stem. Green or red tinted bracts at the base of the inflorescence enclose the flowers. The

pink, white, or red, upper bracts in the inflorescence contain no flowers but may serve to attract pollinators. The white flower petals are 4.8 cm long and enclose the stamens (pollen producing structures) and ovary (ovule producing structures). Six stamens are present in these flowers although five of these are sterile. The five sterile stamens are fused to form a lip-like structure that is colored and resembles a petal. The ovary of Zedoary is a three-parted capsule and breaks open at maturity to release the seeds. Many seeds are produced in each fruit, each of which is surrounded by a fleshy covering.

Uses: The rhizome of Zedoary is used extensively as a medicine largely for its bitter properties. This species was included in the American National Formulary IV under the name Zedoaria. This publication provided instructions for the preparation of bitter tinctures, antiperiodic pills, and antiperiodic tincture. The rhizome is considered to aid digestion, to purify the blood, to provide relief for colic, and for the treatment of colds and infections. The essential oil is an active ingredient in antibacterial preparations. In India the rhizome is chewed to alter a sticky taste in the mouth, and in both Java and India a decoction of the root is used to treat weakness resulting from childbirth.

Kaempferia galanga L.

Synonyms: -

Thai name: Proh horm

Family: ZINGIBERACEAE

*Kaempferia galanga* L.

Description of the plant: Rhizomes pale green or greenish white inside, tuberous, fragrant. Leaves usually 2, spreading flat on ground, subsessile; leaf sheath 2–3 cm; leaf blade green, orbicular, 7–20 × 3–17 cm, glabrous on both surfaces or villous abaxially, margin usually white, apex mucronate or acute. Inflorescences terminal on pseudostems, enclosed by imbricate leaf sheaths, sessile, few to many flowered; bracts lanceolate, ca. 2.5 cm. Calyx equaling bracts. Corolla tube 2–2.5 cm; lobes white, linear, ca. 1.2 cm. Lateral staminodes obovate-cuneate, ca. 1.2 cm. Labellum ca. 2.5 × 2 cm, apex slightly 2-lobed or deeply 2-cleft; lobes white with purple markings at base. Anther sessile; connective appendage strongly reflexed, rectangular, 2-lobed. Fl. Aug–Sep.

Uses: *Kaempferia galanga*, Linn., To treat stomach inflammation, inflammation of the ears of children, influenza in infants; Cold, Headache, cough, blood Eliminate dirty; Diarrhea, Streamlining menstruation, Pegal eyes, sprains, fatigue.

Kaempferia roscoeana* Wall.*Synonyms:** *Kaempferia pulchra* Ridl.**Thai name:** Proh pa**Family:** ZINGIBERACEAE**Figure 1** *Kaempferia roscoeana* Wall.

Description of the plant: Rhizomes fleshy, tuberous; roots often bearing small tubers. Pseudostem short or obsolete. Leaves 1 to few; ligule usually small or absent; petiole short; leaf blade suborbicular to filiform, sometimes variegated or abaxially purple. Inflorescences terminal on pseudostems or on separate shoots arising from rhizomes (when appearing before pseudostems), capitate, spirally few to many flowered; bracts 1-flowered; bracteoles small, apically 2-lobed or sometimes 2-cleft to base. Calyx tubular, split on 1 side, apex unequally 2- or 3-toothed. Corolla tube equaling or much longer than calyx; lobes spreading or reflexed, lanceolate, subequal. Lateral staminodes petaloid. Labellum usually white or lilac, sometimes marked with different color near base, showy, apically 2-lobed to 2-cleft to base. Filament very short or absent; connective extended into crest exerted from throat of flower, entire or 2-cleft. Ovary 3-loculed. Capsule globose or ellipsoid; pericarp thin. Seeds subglobose to ellipsoid; aril lacerate.

Uses: Carminative

Zingiber officinale* Roscoe*Synonyms:** *Amomum zingiber* Linnaeus, *Zingiber sichuanense***Thai name:** Khing**Family:** ZINGIBERACEAE*Zingiber officinale* Roscoe

Description of the plant: Rhizomes branched, yellowish inside, thickened, fleshy, strongly aromatic. Pseudostems 50–100 cm. Leaves sessile; ligule slightly 2-lobed, 2–4 mm, membranous; leaf blade lanceolate or linear-lanceolate, 15–30 × 2–2.5 cm, glabrescent. Inflorescences arising from rhizomes, ovoid, 4–5 × ca. 1.5 cm; peduncle to 25 cm; bracts pale green, sometimes yellowish at margin, ovate, ca. 2.5 cm, apex mucronate; bracteoles equaling bracts. Calyx ca. 1 cm. Corolla yellowish green; tube 2–2.5 cm; lobes lanceolate, ca. 1.8 cm. Central lobe of labellum with purple stripe and cream blotches, oblong-obovate, shorter than corolla lobes; lateral lobes ovate, ca. 6 mm, free nearly to base. Stamen dark purple; anther ca. 9 mm; connective appendage curved, ca. 7 mm. Fl. Oct.

Uses: The Chinese have used ginger for at least 2500 years as a digestive aid and antinausea remedy and to treat bleeding disorders and rheumatism; it was also used to treat baldness, toothache, snakebite, and respiratory conditions¹. In Traditional Chinese Medicine (TCM), ginger is considered a pungent, dry, warming, yang herb to be used for ailments triggered by cold, damp weather.

***Zingiber cassumunar* Roxb.**

Synonyms: *Z. montanum* (Koenig) Link ex Dietr.

Thai name: Plai

Family: ZINGIBERACEAE



Description of the plant: Rootstock perennial, bright yellow inside. Leafy stem 1.2-1.8 m. Leaves oblong-lanceolate pubescent beneath, 30-45 by 5-8 cm. Spike oblong, 10-15 cm, 3.5-5 cm dia; peduncle 7.5-30 cm; bracts ovate reddish or greenish-red, 2.5-4 cm and nearly as broad. Corolla-tube as long as the bract; segments whitish, 2.5 cm, upper broader and more concave. Lip with an orbicular unspotted midlobe 2 cm, long and broad, stamen yellowish-white, shorter than the lip. Capsule small, globose.

Uses: Antiasthmatic, emmenagogue, antidyentery, astringent and laxative.

Zingiber zerumbet* (L.) Sm.*Synonyms:** *Amomum zerumbet* Linnaeus**Thai name:** Kra thue**Family:** ZINGIBERACEAE*Zingiber zerumbet* (L.) Sm.

Description of the plant: Rhizomes yellowish inside, tuberous. Pseudostems 0.6–2 m. Leaves sessile or shortly petiolate; ligule entire, 1.5–2 cm; leaf blade lanceolate or oblong-lanceolate, 15–40 × 3–8 cm, glabrescent or abaxially somewhat pilose, base narrowed, apex acuminate. Inflorescences arising from rhizomes, conical or ovoid-oblong, 6–15 × 3.5–5 cm, apex obtuse; peduncle 10–30 cm, scalelike sheaths 5–7; bracts closely imbricate, green when young, red when old, slightly hairy, slimy adaxially, margin membranous; bracteoles ca. 1.5 cm. Calyx 1.2–2 cm, membranous, split on 1 side, apex 3-toothed. Corolla tube 2–3 cm, slender; lobes pale yellow, lanceolate, central one 1.5–2.5 cm. Labellum pale yellow, ca. 1.5 × 2.5 cm; central lobe suborbicular or subobovate, 1.5–2 × ca. 1.5 cm, apex emarginate; lateral lobes obovate, ca. 1 cm, free nearly to base. Stamen ca. 1 cm; connective

appendage beaklike, ca. 8 mm. Ovary ca. 4 mm, glabrous. Capsule ellipsoid, 0.8–1.2 cm. Seeds black. Fl. Jul–Sep, fr. Oct.

Uses: Rhizome traditional usages as botanical medicine include the treatment of inflammation, fever, toothache, indigestion, constipation, diarrhea, severe sprains, and to relieve pain, as well as antispasmodic, antirheumatic, and diuretic agents.

Distribution of dicotyledons family

Justicia adhatoda L.

Synonyms: *Adhatoda vasica* Nees.

Thai name: Sa niat

Family: ACANTHACEAE



Justicia adhatoda L.

Description of the plant: Shrubs to 4 m tall. Branches thickened, \pm 4-angled, lenticellate, pubescent when young but soon glabrescent. Petiole 0.8–3 cm, puberulent; leaf blade ovate to elliptic-ovate, 7–18 \times 2–7 cm, abaxially puberulent, adaxially densely tomentose when young but glabrescent except tomentose along veins, secondary veins 9–12 on each side of midvein and meeting near margin, base broadly cuneate, margin entire, apex acuminate and sometimes slightly falcate. Spikes terminal or axillary, ovoid to broadly ovoid, 3–7 cm; peduncle 3–7 cm; bracts imbricate, ovate-oblong, 1–2 \times 0.5–1.5 cm, puberulent, 3–7-veined, margin ciliate, apex acute; bracteoles linear-lanceolate, 1–1.4 \times ca. 0.4 cm, puberulent, 3–5-veined, margin ciliate, apex acute. Calyx 5-lobed; lobes linear-oblong, ca. 10 \times 3

mm, margin narrowly scarious and ciliate. Corolla white or pink with purplish or pinkish stripes outside, broadly tubular, 2.5–3 cm, outside pilose; tube basally cylindric and ca. 5 mm wide for ca. 5 mm and then slightly inflated and bent upward; upper lip ovate-oblong, ca. 1.8 cm, erect, shallowly 2-lobed; lower lip oblong-circular, spreading, 3-lobed, middle lobe subcircular and ca. 9×5 mm, lateral lobes ovate and ca. 8×4.5 mm. Stamens exerted; filaments ca. 1.5 cm, declinate, glabrous except basally sericeous; anther thecae ellipsoid, ca. 3.5 mm, equal, superposed, lower one spurred at base. Ovary pubescent especially at tip; style ca. 2.5 cm, recurved, basal part pubescent; stigma simple. Capsule obovoid, $2.5\text{--}4 \times$ ca. 0.5 cm. Seeds circular in outline. Fl. Jan–Mar, fr. Jun–Jul.

Uses: It is a highly valuable Ayurvedic medicinal plant used to treat cold, cough, asthma and tuberculosis.

Rhinacanthus nasutus* (L.) Kurz*Synonyms:** *Justicia nasuta* Linnaeus, *Rhinacanthus communis* Nees.**Thai name:** Thong pan chang**Family:** ACANTHACEAE*Rhinacanthus nasutus* (L.) Kurz

Description of the plant: Subshrubs or perennial herbs, to 1.5 m tall. Stems stout, \pm 4-angled, faintly striate, densely pubescent when young then glabrescent. Petiole 0.5–1.5 cm; leaf blade elliptic, ovate-elliptic, or rarely lanceolate, 2–7(–11) \times 0.8–3 cm, abaxially densely pubescent, adaxially sparsely pubescent to subglabrous, secondary veins 5 or 6 on each side of midvein, base cuneate, margin entire or slightly undulate, apex shortly acuminate to acute. Panicles terminal or axillary, to 50 cm; rachis densely pubescent; bracts lanceolate, to 2 \times 0.5 mm; bracteoles ca. 1 mm. Flowers sessile to subsessile. Calyx ca. 5 mm, both surfaces pubescent; lobes lanceolate, ca. 4 \times 0.7 mm. Corolla greenish white, 2.1–2.7 cm, outside pubescent with gland-tipped and non-glandular trichomes; tube 1.5–1.8 cm; lower lip 0.75–1.2 cm, lobes 2–4 mm and subequal; upper lip linear-lanceolate, 6–7.5 mm, erect. Staminal filaments glabrous. Style sparsely pubescent. Capsule ca. 2 \times 0.3 cm, pubescent with gland-tipped trichomes. Seeds ca. 2.5 \times 2.2 mm, papillose. Fl. Oct–Dec.

Uses: This plant in traditional system of medicine is used to treat condition like vata, kapha, eczema, septic-ulcer, cancer, herpes, dhobi's itch, leprosy, helminthiasis, prickly heat, ring worm, scurvy and inflammation.

Alternanthera sessilis (L) DC.

Synonyms: *Gomphrena sessilis* Linnaeus, *Alternanthera denticulata* R. Brown, *A. nodiflora* R. Brown, *Illecebrum sessile* (Linnaeus) Linnaeus.

Thai name: Pak pet Thai

Family: AMARANTHACEAE



Alternanthera sessilis (L) DC.

Description of the plant: Herbs perennial, 10.45 cm tall. Stem ascending or creeping, green or somewhat tinged purple, striped, hairy, across nodes with a transverse row of hairs. Petiole 1.4 mm, glabrous or pilose; leaf blade linear-lanceolate, oblong-obovate, or ovateoblong, $1.8 \times 0.2.2$ cm, glabrous or pilose, base attenuate, margin entire or slightly serrate, apex acute or obtuse. Heads 1.4, axillary, sessile, at first globose, later cylindric, 3.6 mm in diam. Flowers dense; rachis densely white hairy. Bracts and bracteoles white, glabrous, apex acuminate; bracts ovate-lanceolate, ca. 1 mm; bracteoles subulate, 1.1.5 mm. Tepals white, ovate, 2.3 mm, glabrous, with a vein, apex acuminate or acute. Stamens 3; filaments ca. 0.7 mm, connate into a cup at base; anthers oblong; pseudostaminodes subulate, shorter than stamens, margin entire, apex acuminate. Style very short; stigma shortly parted. Utricles enclosed in perianth, dark brown, obovoid, 2.2.5 mm. Seeds ovoid. Fl. May-Jul, fr. Jul-Sep

Uses: The leaves were used in eye diseases, cuts, wounds and antidote to snake bite; skin diseases.

Iresine herbstii Hook.

Synonyms: -

Thai name: Pak paeo daeng

Family: AMARANTHACEAE

*Iresine herbstii* Hook.

Description of the plant: Herbs perennial, 1.2 m tall. Stem often tinged red, stout, branched. Petiole 2.3 cm, annexed hairy or nearly glabrous; leaf blade purple with lighter bands along main veins, broadly ovate to suborbicular, 2.6 cm in diam., annexed hairy, base truncate, margin entire, apex retuse or 2-lobed. Complex thyrsoid structures terminal or axillary, composed of many spikes. Bracts and bracteoles persistent, greenish white or yellowish white, ovate, 1.1.5 mm, glabrous. Flowers small, unisexual on different plants. Tepals greenish white or yellowish white, oblong, ca. 1 mm. Ovary globose, compressed; style very short.

Uses: Leaves, wound healing, low antioxidant activity, activity on central nervous system, having affinity on several cerebral receptors.

Semecarpus cochinchinensis Engl.

Synonyms: *Semecarpus thorelii* Pierre

Thai name: Rak

Family: ANACARDIACEAE



Semecarpus cochinchinensis Engl.

Description of the plant: Inflorescence paniculate, terminal or axillary. Stamen filaments linear; anthers ovate-cordate, versatile. Disk cup-shaped. Ovary superior to semi-inferior, 1-locular and 1-ovulate; styles 3, free or united basally. Drupe ovate-globose, inserted on an inflated hypocarp formed by fused calyx and floral receptacle. Seed testa not fused with endocarp.

Uses: Latex - Purgative

***Spondias pinnata* (Linnaeus f.) Kurz**

Synonyms: *Mangifera pinnata* Linnaeus f., *Poupartia pinnata* (Linnaeus f.) Blanco, *Spondias acuminata* Roxburgh, *S. bivenomarginalis* K. M. Feng & P. Y. Mao, *S. mangifera* Willdenow, *Tetrastigma megalocarpum* W. T. Wang.

Thai name: Ma kok

Family: ANACARDIACEAE



Spondias pinnata (Linnaeus f.) Kurz

Description of the plant: Deciduous trees, 10–15 m tall; branchlets yellowish brown, glabrous. Petiole 10–15 cm, petiole and rachis glabrous; leaf blade 30–40 cm, imparipinnately compound with 5–11 opposite leaflets; leaflet petiolule 3–5 mm; leaflet blade ovateoblong to elliptic-oblong, 7–12 × 4–5 cm, papery, glabrous on both sides, base cuneate to rounded, often oblique, margin serrate or entire, apex acuminate, lateral veins 12–25 pairs, slightly impressed adaxially, prominent abaxially, joined with submarginal collecting vein. Inflorescence paniculate, terminal, 25–35 cm, glabrous, basal first order branches 10–15 cm. Flower sessile or subsessile, white, glabrous. Calyx lobes triangular, ca. 0.5 mm.

Petals ovate-oblong, ca. 2.5×1.5 mm, apically acute. Stamens ca. 1.5 mm. Ovary subglobose, ca. 1 mm; styles 4 or 5, free, ca. 0.5 mm. Drupe ellipsoid to ellipticovoid, yellowish orange at maturity, $3.5-5 \times 2.5-3.5$ cm; inner part of endocarp woody and grooved, outer part fibrous; mature fruit usually with 2 or 3 seeds. Fl. Apr–Jun, fr. Aug–Sep.

Uses: Fruits useful in dysentery, diarrhea, stomach ache, rheumatism, swollen joints and is also given to prevent vomiting. A paste of it is used as an embrocation for both articular and muscular rheumatism. A decoction of the bark is stated to be given in gonorrhoea. The root is considered to be useful in regulating menstruation.

***Cyathostemma micranthum* (A.DC.) J. Sinclair**

Synonyms: *Guatteria micrantha* A.DC., *Uvaria micrantha* Hk. f. et Th., *Uvaria sumatrana* Kurz, *Anaxagorea sumatrana* Miq, *Cyathostemma sumatrana* Boerl, *Polyalthia fruticans* A. DC, *Popowia nitida* King

Thai name: Nom maeo

Family: ANNONACEAE



Cyathostemma micranthum (A.DC.) J. Sinclair

Description of the plant: The roots have a very pleasant ginger-like fragrance. The stems are fissured and dark colored. The leaves are simple, oblonglanceolate. The fruits are 1-cm-in diameter ripe carpels with irregular bulges owing to the seeds.

Uses: A decoction of the leaves or roots is drunk as a protective remedy after childbirth, and the plant is used to stimulate sexual desire and to invigorate. It is also used to promote sweating and to treat cough.

***Rauvolfia serpentina* (L.) Benth. ex Kurz**

Synonyms: *Ophioxylon serpentinum* Linnaeus, *O. majus* Hasskarl.

Thai name: Ra yom

Family: APOCYNACEAE



Rauvolfia serpentina (L.) Benth. ex Kurz

Description of the plant: Shrubs to 1 m tall, erect, glabrous. Stems usually unbranched, slender, straw colored. Leaves grouped near stem apex, in whorls of 3-5; petiole 1-1.5 cm; leaf blade narrowly elliptic or obovate, membranous, 7-17 X 2-9 cm, base cuneate, apex acuminate or rarely obtuse; lateral veins 7-15 pairs. Cymes congested; peduncle 5-13 cm, red or reddish. Pedicel and calyx red or reddish. Corolla white, tube cylindric, 1-1.8 cm, inflated at middle and pilose inside distal half; lobes obliquely suborbicular, 1.5-3.5 mm. Stamens inserted at middle of corolla tube. Ovaries connate in basal half. Drupes ellipsoid, ca. 8 mm, connate for half their length. Fl. Feb-Oct, fr. May-Dec.

Uses: These include insanity, epilepsy, insomnia, hysteria, eclampsia and hypertension.

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

Synonyms: *Aloe perfoliata* Linnaeus var. *vera* Linnaeus, *A. barbadensis* Miller var. *chinensis* Haworth, *A. chinensis* (Haworth) Baker, *A. vera* var. *chinensis* (Haworth) A. Berger.

Thai name: Wan hang chora khe

Family: ASPHODELACEAE



Aloe vera (L.) Burm.f.

Description of the plant: Herbs succulent. Stems short, suckering freely to form dense clumps. Leaves sub-basal, slightly distichous in seedlings and new shoots, erect, pale green, sometimes with pale spots in very young plants, linear-lanceolate, 15--35(--50) × 4--5(--7) cm, margin sparsely spiny-dentate, apex 2- or 3-dentate-pointed. Inflorescence erect, 60--90 cm; peduncle to 2 cm thick; raceme 30--40 × 5--6 cm, sometimes with 1 or 2 ascending branches, numerous flowered; bracts whitish, broadly lanceolate, ca. 10 × 5--6 mm, veins 5--7, apex acute. Flowers reflexed; pedicel ca. 1/2 as long as bract. Perianth pale yellow mottled with red, slightly ventricose, 2.5(--3) cm, outer lobes free for ca. 1.8 cm, slightly recurved at apex. Stamens exerted by 4--5 mm. Style conspicuously exerted.

Uses: Aloe was used mostly as a cathartic medicine, little thought was given to its other uses. Previously reported applications of Aloe vera, which are not well substantiated, include seborrheic dermatitis, thermal burns and sunburn, cystic acne, peptic ulcers, amputation stump ulcers, lacerations,^ colds, tuberculosis, gonorrhea, asthma, dysentery, and headaches. It has also been used as an insect repellent and as a laxative.

***Avicennia marina* Forssk.**

Synonyms: *Avicennia intermedia* Griff., *Avicennia marina* var. *acutissima* Stapf & Moldenke, *Avicennia marina* var. *anomala* Moldenke, *Avicennia marina* var. *australiasica* (Walp.) J.Everett, *Avicennia marina* var. *intermedia* (Griff.) Bakh., *Avicennia marina* var. *marina*, (Bakh.), *Avicennia marina* var. *resinifera* (Forst.) Bakh., *Avicennia marina* var. *rumphiana* (Hall. f.) Bakh., *Avicennia marina* var. *typica* Bakhuisen, *Avicennia mindanaense* Elmer, *Avicennia officinalis* L., *Sceura marina* (Forssk.)

Thai name: Samae thale

Family: AVICENNIACEAE



Avicennia marina Forssk.

Description of the plant: Evergreen shrub or small tree 10 m high, trunk to 40 cm in diameter. Numerous upright pneumatophores 10-15 cm high and 6 mm in diameter. Trunk often with masses of small air roots but no prop or stilt roots. Bark whitish to grayish or yellow-green, smooth, often powdery with raised dots, scaly, exposing greenish inner bark. Leaves opposite, ovate, lanceolate to

elliptical, 3.5-12 cm long, 1.5-5 cm wide, mostly acute at both ends, entire, thick leathery, shiny green and hairless upper surface, pale whitish-gray and finely hairy underneath. Petiole 5-10 mm long, hairy. Heads or cymes ball-like, upright on long stalks at ends and sides of twigs. Flowers few to many, sessile, 4 mm long, 5 mm across. Calyx 5-lobed, green, hairy, persistent; corolla tubular, white turning yellow or orange with 4 nearly equal, short lobes.

Uses: Root and bark are used as aphrodisiac, the wood for snakebite, the aqueous extract of the seed for sores. Unripe fruits are poulticed onto wounds and leaves onto skin ailments.

Brassica alba* (L.) Rabenh.*Synonyms:** *Brassica hirta* Moench, *Sinapis alba* L.**Thai name:** Med pan pak kad**Family:** BRASSICACEAE*Brassica alba* (L.) Rabenh.

Description of the plant: Erect, sparsely-hairy branching winter annual herb, developed from a taproot; stems up to 1.5 m tall, usually with stiff de-flexed hairs, but sometimes glabrous; leaves petiolate, alternate, ovate or obovate, to 8 cm long and 4 cm wide, pinnately dissected into 3–5 rounded segments, usually hispid but not scabrid; flowers yellow, in elongated racemes, hairy, patent, the beak broad, flattened, 10–30 mm long, attenuate; seeds 4–8 per pod, globular, yellowish to light brown, 2 mm in diameter, the inner seed coat containing mucilage, cotyledons containing oil with pungent taste but no odor. $2n = 24$. Fl. spring and summer; fr. summer and fall.

Uses: The seed or its oil is taken both internally or externally, for cancers, growths of the abdomen, spleen, stomach, throat, uterus or wrist indurations. Medicinally, seeds are considered diaphoretic, diuretic, emetic, expectorant, irritant, and stimulant, and are used in poultices for acute local pain, pneumonia, bronchitis, and other diseases of the respiratory organs.

Cannabis sativa L.

Synonyms: *Cannabis indica* Lam.

Thai name: Kan cha

Family: CANNABACEAE



Cannabis indica Lam.

Description of the plant: Shrubs to 1 m tall, erect, glabrous. Stems usually unbranched, slender, straw colored. Leaves grouped near stem apex, in whorls of 3-5; petiole 1-1.5 cm; leaf blade narrowly elliptic or obovate, membranous, 7-17 X 2-9 cm, base cuneate, apex acuminate or rarely obtuse; lateral veins 7-15 pairs. Cymes congested; peduncle 5-13 cm, red or reddish. Pedicel and calyx red or reddish. Corolla white, tube cylindrical, 1-1.8 cm, inflated at middle and pilose inside distal half; lobes obliquely suborbicular, 1.5-3.5 mm. Stamens inserted at middle of corolla tube. Ovaries connate in basal half. Drupes ellipsoid, ca. 8 mm, connate for half their length. Fl. Feb-Oct, fr. May-Dec.

Uses: Medicinally, plants are tonic, intoxicant, stomachic, antispasmodic, analgesic, narcotic, sedative and anodyne. Seeds and leaves are used to treat old cancer and scirrhus tumors. The seed, either as a paste or as an unguent, is said to be a folk remedy for tumors and cancerous ulcers. The decoction of

the root is said help remedy hard tumors and knots in the joints. The leaf, prepared in various manners, is said to alleviate cancerous sores, scirrhus tumors, cold tumors, and white tumors. The plant is also used for mammary tumors and corns. Europeans are said to use the dregs from Cannabis pipes in "cancer cures". Few plants have a greater array of folk medicine uses: alcohol withdrawal, anthrax, asthma, blood poisoning, bronchitis, burns, catarrh, childbirth, convulsions, coughs, cystitis, delirium, depression, diarrhea, dysentery, dysmenorrhea, epilepsy, fever, gonorrhea, gout, inflammation, insomnia, jaundice, lockjaw, malaria, mania, menorrhagia, migraine, morphine withdrawal, neuralgia, palsy, rheumatism, scalds, snakebite, swellings, tetany, toothache, uteral prolapse, and whooping cough. Seeds ground and mixed with porridge given to weaning children.

***Capparis micracantha* DC.**

Synonyms: *C. odorata* Blanco, *C. myrioneura* Hallier f.

Thai name: Ching Chee

Family: CAPPARACEAE



Capparis micracantha DC.

Description of the plant: A half-erect shrub or small tree with drooping branches, 1-6 m tall, rarely a vine 2-4 m tall, young branches zigzag, glabrous; leaves oval to oblong-lanceolate, 9.5-20 cm x 3-11 cm, base rounded, apex variable, rarely acuminate, coriaceous, shining, petiole 0.7-1.5 cm long, thorns patent, straight or slightly curved, 2-7 mm long, on flowering branches often absent; flowers 2-6 in a row, pedicel about 1 cm long; sepals ovate, 5.5-13 mm long, petals oblong or elliptical, 10-26 mm long, thin, white with yellow base, later turning dark red, stamens 20-45, filaments 2.5-3 cm long, white, gynophore 15-35 mm long, ovary and gynophore sometimes abortive; berry globular or ellipsoid, 2-6 cm in diameter, with 4 longitudinal sutures, yellow, orange or red and strongly smelling when ripe; seeds numerous, in whitish, slimy, sweet pulp.

Uses: Antipyretic, antiflatulent

Terminalia chebula Retz. var *chebula*

Synonyms: -

Thai name: Samo thai

Family: COMBRETACEAE

*Terminalia chebula* Retz. var *chebula*

Description of the plant: Trees to 30 m tall; trunk to 1 m d.b.h. Bark grayish black to gray, coarsely split and thick. Branchlets conspicuously white or yellowish long lenticellate, glabrous, or tomentose or appressed villous at least when young, hairs tawny, rarely silvery. Leaves alternate or subopposite, spaced along branchlets; petiole 1-3 cm, moderately stout, with 2(-4) glands 1-5 mm below apex; leaf blade elliptic, 7-18 × 4.5-10 cm, both surfaces glabrous, or appressed (and rarely silvery) villous at least when young, base obtuse-rounded or cuneate, oblique, apex mucronate; lateral veins in 6-12 pairs. Inflorescences axillary or terminal, simple spikes, 5-10 cm, numerous flowered, sometimes grouped at branchlet apex and forming a panicle; axis glabrous or sparsely hairy, with denser hairs near base of flowers. Flowers slightly fragrant, bisexual. Calyx tube distally cupular, 2.5-3.5 mm, abaxially glabrous, adaxially tawny tomentose; lobes 5, apex mucronate to aristate. Stamens 10, exserted, 3-4 mm. Fruit not stipitate, blackish brown when ripe, ovoid or broadly so, ellipsoid, or cylindric-ovoid,

obtusely 5-ridged, 2-4.5 × 1.2-2.5 cm, rigid, becoming deeply wrinkled when dry, glabrous. Fl. May-Jun, Sep, fr. Jul-Dec.

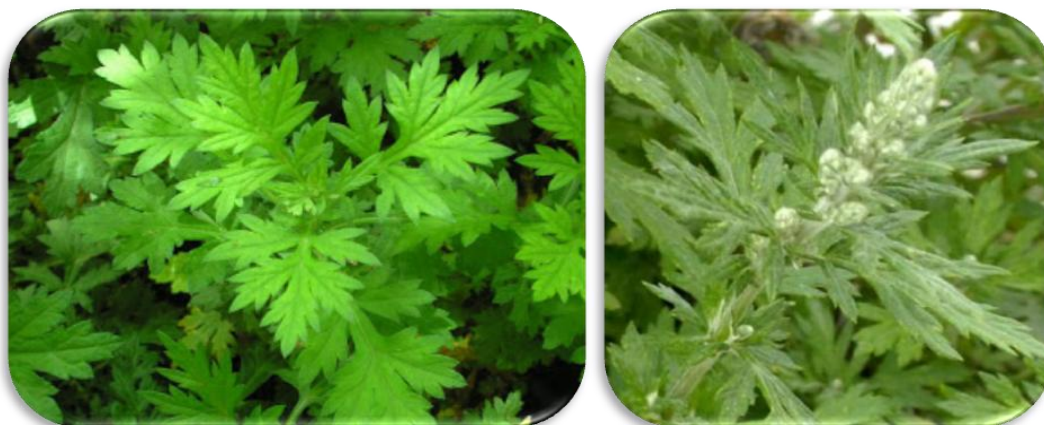
Uses: Digestive diseases, urinary diseases, diabetes, skin diseases, heart diseases, irregular fevers, constipation, ulcers, vomiting, colic pain, haemorrhoids.

Artemisia vulgaris L.

Synonyms: -

Thai name: Kot chu la lum pa

Family: COMPOSITAE



Artemisia vulgaris L.

Description of the plant: Commonly known as mugwort, *Artemisia vulgaris* is a perennial herb that can reach 60-160 cm high, with many thin lateral roots. The branched, purplish-brown stems are parallel grooved, with ascending twigs covered with short hairs. Leaves are papery, pubescent, dark green on the upper surface, and have various shapes depending on their position on the plant. The leaves near the base are elliptic and oblong, bipinnate (divided two times) deeply even nearly to midrib. The leaves in the middle are elliptic to ovate, 3-10 cm long and 1.5-6 cm wide, pinnate or bipinnate, with four to five lobes that are elliptic lanceolate or linear lanceolate, 3-5 cm long and 1-1.5 cm wide, with more than one tooth on the tip. The leaves near the top are small, also pinnate and lanceolate-lobed, not significantly toothed or even entire. Head inflorescences are oblong, 2.5-3 mm in diameter, borne densely in a spike on the branched twigs as well as spreading panicles on the stems. There are seven to ten purple female flowers, with narrow tube-shaped corollas. Bisexual flowers number 8-20, with tube or goblet shaped corollas, and long densely ciliate hairs at the top of the style. Fruits, appearing from August to October together with flowers, are obovate or ovate achenes.

Uses: Leaves have been used to treat a wide variety of skin ailments, foul ulcers, wounds, stomachic, antispasmodic. The expressed juice is applied to the head of young children for the prevention of convulsion.

Carthamus tinctorius L.

Synonyms: -

Thai name: Dok kum Foy

Family: COMPOSITAE



Carthamus tinctorius L.

Description of the plant: Annual thistle-like herb, coarse, branching above with a strong central stem to 1.5 m tall; leaves spiny, oblong or ovate-lanceolate, waxy, the upper ones clasping, minutely spinose-toothed; flowers in 1-5 heads per plant, 2.5-3.7 cm across, each head developing 15-50 seeds; corollas yellow, orange, white or red, surrounded by a cluster of leafy spiny bracts, which pass over gradually into the bracts of the involucre; achenes (fruits or seeds) white, 6-7 mm long, shining, the hull accounting for 1/3-1/2 total weight of seed. Fl. summer. Sturdy taproot penetrating to 2.5 m.

Uses: Seeds used for tumors, especially inflammatory tumors of the liver. Flowers considered diaphoretic, emmenagogue, laxative, sedative, stimulant, in large doses laxative; used as a substitute or adulterant for saffron in treating measles, scarlatina, and other exanthematous diseases. Charred safflower oil used for rheumatism and sores; seeds, diuretic and tonic. In China, prescribed as uterine astringent in dysmenorrhea. In Iran, the oil is used as a salve for sprains and rheumatism.

***Gymnopetalum chinense* (Loureiro) Merrill**

Synonyms: *Euonymus chinensis* Loureiro, *Bryonia cochinchinensis* Loureiro, *Gymnopetalum cochinchinense* (Loureiro) Kurz, *G. heterophyllum* Kurz, *G. quinquelobatum* Merrill, *G. quinquelobum* Miquel, *Melothria touchanensis* H. Léveillé, *Momordica tubiflora* Roxburgh, *Scotanthus tubiflorus* (Roxburgh) Naudin, nom. superfl., *Tripodanthera cochinchinensis* (Loureiro) M. Roemer.

Thai name: Kra dom

Family: CUCURBITACEAE



Gymnopetalum chinense (Loureiro) Merrill

Description of the plant: Plants perennial. Stem and branches slender, hispid or villous, glabrescent. Petiole 2–4 cm; leaf blade ovate-cordate, 4–8 × 4–8 cm, membranous, 5-angular or 3–5-lobed; middle lobe larger, triangular, both surfaces scabrous, base cordate, apex acuminate. Plants monoecious. Male flowers solitary, or 3–8 in a raceme; peduncle slender, 10–15 cm; bracts leaflike, 1–2.5 cm, yellow-brown villous, 3-lobed; calyx tube tubular, elongate, ca. 2 cm; segments linear, ca. 7 mm; corolla white; segments oblong-ovate, 15–20 × 10–12 mm, ± villous; filaments ca. 0.5 mm; anthers ca. 7 mm. Female flowers solitary; pedicels 1–4 cm; ovary oblong, 10–12 × ca. 5 mm, yellowbrown villous, acute at both ends; style 5–8 mm; stigmas 3. Fruit orange, oblong-ovoid, 4–5 cm, smooth, 10-ribbed, acute at both ends. Seeds oblong, ca. 7 × 3–3.5 mm, both ends obtuse. Fl. Jul–Sep, fr. Sep–Dec.

Uses: Juice of leaves is given in ophthalmia. The fruit is said to be poisonous. The decoction of the root is taken as an antidote to poisoning by ripe fruits and against tetanus after a miscarriage. The whole plant is given to women in labour as composition of special drug. Juice of root is used in body ache and atrophy of limb.

***Solena amplexicaulis* (Lam.) Gandhi**

Synonyms: *Bryonia amplexicaulis* Lam., *Melothria amplexicaulis* (Lam.) Cogn., *Solena heterophylla* (Lour.) Cogn. and *Zehneria umbellata* Thw.

Thai name: Tam lueng tua poo

Family: CUCURBITACEAE



Solena amplexicaulis (Lam.) Gandhi

Description of the plant: Roots fusiform, 1.5–2 cm in diam. Stem and branches glabrous. Petiole slender, 4–10 mm, puberulent at first, glabrescent; leaf blade very variable, ovate, oblong, ovate-triangular, or hastate, undivided or 3–5-lobed, leathery; lobes oblong-lanceolate, lanceolate, or triangular, 8–12 × 1–5 cm, abaxially densely setose or almost glabrous, adaxially densely setose or scabrous, base cordate, margin entire or dentate, apex obtuse or acuminate. Tendrils slender. Male flowers umbellate or subumbellate; peduncle very short, apically 10–20-flowered; pedicels 2–8 mm; calyx tube 3–5 mm, ca. 3 mm in diam.; segments subulate, 0.2–0.4 mm; corolla yellow or yellow-white; segments triangular, 1–1.5 mm, apex obtuse or acute; filaments filiform, ca. 3 mm; anther cells curved or conduplicate, puberulent. Female flowers usually solitary; pedicel 2–10 mm, puberulent; calyx and corolla as in male flowers; ovary ovoid, 2.5–3.5 × 2–3 mm; stigmas 3. Fruit red brown,

broadly ovoid, oblong, or subglobose, 2–6 × 2–5 cm. Seeds gray-white or gray-brown, suborbicular or obovate, 5–7 × 5–6.5 mm, smooth or slightly tuberculate. Fl. May–Aug, fr. Jun–Nov.

Uses: Root is stimulant and purgative. Leaf has anti-inflammatory properties as regards rashes. It helps maintain a healthy skin and is an important ingredient of skin conditioning lotions.

Cyperus rotundus L.

Synonyms: *Cyperus rotundus* var. *quimoyensis* L. K. Dai.

Thai name: Haew moo

Family: CYPERACEAE



Cyperus rotundus L.

Description of the plant: Perennials. Stolons slender, with ellipsoidal tubers. Culms solitary, rarely 2 laxly tufted, 15–90 cm tall, slightly slender, triquetrous, smooth, base swollen into a tuber, leaved at basal part. Leaves equaling or shorter than culm; sheath brown, usually disintegrating into fibers; leaf blade bluish green, 2–5 mm wide, ± flat. Involucral bracts 2 or 3(–5), longer to sometimes shorter than inflorescence. Inflorescence a simple or compound anthela; rays (2 or)3–10, mostly to 12 cm, unequal in length, spreading. Spikes obdeltoid, with 3–10 slightly laxly arranged spikelets. Spikelets obliquely spreading, linear, 1–3 cm × 1.5–2 mm, 8–28-flowered; rachilla wings white, slightly broad, hyaline. Glumes blood-red to purplish brown on both surfaces but middle green, subdensely imbricate, ovate to oblong-ovate, ca. 3 mm, 5–7-veined (fading some distance before margin), apex acute to obtuse and

muticous. Stamens 3; anthers linear; connective prominent beyond anthers. Style long; stigmas 3, longer than style, exserted from glume. Nutlet obovoid-oblong, $1/3$ – $2/5$ as long as subtending glume, 3-sided, puncticulate. Fl. and fr. May–Nov.

Uses: *C. rotundus* is used to pacify vitiated kapha, pitta, diarrhea, indigestion, anorexia, fever, urinary retention and well as for CNS disorders.

Dryobalananops aromatic Gaenrth. F.

Synonyms: Borneo Camphor, Camphor Tree, Malay Camphor, or Sumatran Camphor

Thai name: Pim sen

Family: DIPTEROCARPACEAE



Dryobalananops aromatic Gaenrth. F.

Description of the plant: is a species of plant in the Dipterocarpaceae family. The species name *aromatica* is derived from Latin (*aromaticus* = spice-like) and refers to the smell of the dammar (resin). This species was one of the main sources of camphor and attracted early Arab traders to Borneo, at that time being worth more than gold, and used for incense and perfumes. It is found in Sumatra, Peninsular Malaysia and Borneo. It is a large emergent tree, up to 65 m^[2] or even 75 m^[3] tall, found in mixed dipterocarp forests on deep humic yellow sandy soils. It is a heavy hardwood sold under the trade names of **Kapur**. It is recorded from at least two protected areas (Lambir and Gunung Mulu National Parks).

Uses:

Diospyros decandra Lour.

Synonyms: -

Thai name: Chan

Family: EBENACEAE



Diospyros decandra Lour.

Description of the plant: Tree, up to 20 m high; young twig villous. Leaf simple, alternate, oblong or elliptic, 2.5-3 cm wide, 7-10 cm long. Flowers unisexual, monoecious. Male flowers cymose; corolla urceolate, whitish. Female flower solitary; corolla as in male flowers but larger. Fruit berry, globose or strongly com-pressed at both ends, turned yellow and fragrant when ripe; calyx persistent.

Uses: Wood an ingredient in the antipyretic for-mula.

***Bridelia ovata* Decne.**

Synonyms: -

Thai name: Ma kaa

Family: EUPHORBIACEAE



Bridelia ovata Decne.

Description of the plant: Commonly known as mugwort, *Artemisia vulgaris* is a perennial herb that can reach 60-160 cm high, with many thin lateral roots. The branched, purplish-brown stems are parallel grooved, with ascending twigs covered with short hairs. Leaves are papery, pubescent, dark green on the upper surface, and have various shapes depending on their position on the plant. The leaves near the base are elliptic and oblong, bipinnate (divided two times) deeply even nearly to midrib. The leaves in the middle are elliptic to ovate, 3-10 cm long and 1.5-6 cm wide, pinnate or bipinnate, with four to five lobes that are elliptic lanceolate or linear lanceolate, 3-5 cm long and 1-1.5 cm wide, with more than one tooth on the tip. The leaves near the top are small, also pinnate and lanceolate-lobed, not significantly toothed or even entire. Head inflorescences are oblong, 2.5-3 mm in diameter, borne densely in a spike on the branched twigs as well as spreading panicles on the stems. There are seven to ten purple female flowers, with narrow tube-shaped corollas. Bisexual flowers number 8-20, with tube or goblet shaped corollas, and long densely ciliate hairs at the top of the style. Fruits, appearing from August to October together with flowers, are obovate or ovate achenes.

Uses: Leaves have been used to treat a wide variety of skin ailments, foul ulcers, wounds, stomachic, antispasmodic. The expressed juice is applied to the head of young children for the prevention of convulsion.

Croton roxburghii Balak.

Synonyms: -

Thai name: Paol yai

Family: EUPHORBIACEAE



Croton roxburghii Balak.

Description of the plant: The plant is a medium sized deciduous tree. Leaves are greenish in color, crenate or serrate, bark is hard and grayish brown in color.

Uses: Its stem bark is claimed to be useful in snake bite, pain and inflammation, rheumatic pain, jaundice, indigestion, stomach trouble, liver disorders; as anticancer, antipoisonous, cardio tonic and purgative.

Croton tiglium L.

Synonyms: *Alchornea vaniotii* H. Léveillé, *Croton birmanicus* Müller Argoviensis, *C. himalaicus* D. G. Long, *C. xiaopadou* H. S. Kiu.

Thai name: Sa lord

Family: EUPHORBIACEAE



Croton tiglium L.

Description of the plant: Treelets up to 7 m tall; indumentum of stellate hairs; young branches green, sparsely stellate-hairy, glabrous at maturity. Stipules subulate, 1.5–4 mm, caducous; petiole 2.5–6 cm, subglabrous; leaf blade ovate, ovate-elliptic, or ovate-lanceolate, 5–15 × 2–7 cm, papery, glabrous or glabrescent, yellowish to brownish when dry, base cuneate or broadly so, rounded, rarely slightly cordate, with discoid glands, margins serrulate or subentire, apex acute or acuminate, sometimes long acuminate or caudate-acuminate; basal veins 3(–5), lateral veins 3 or 4. Racemes terminal, 8–20 cm; bracts subulate, ca. 2 mm. Male flowers: bud subglobose, sparsely stellate-hairy or glabrescent. Female flowers: sepals oblong-lanceolate, ca. 2.5 mm, glabrescent; ovary densely stellate-hairy; styles bipartite. Capsules ellipsoidal, oblong-ovoid, or subglobose, 1–2 × 1–2 cm, sparsely stellate-hairy or glabrescent. Seeds elliptic or oblong-ovate, 8–12 × 6–7 mm, gray-brown. Fl. Jan–Jul, fr. May–Sep.

Uses: Seed oil and bark are used in folk remedies for cancerous sores and tumors. Reported to be cathartic, diaphoretic, ecbolic, emetic, emmenagogue, purgative, rubefacient, and vesicant, purging croton is a folk remedy for apoplexy, cancer, carbuncles, colds, dysentery, fever, flux, paralysis, ranula, scabies, schistosomiasis, skin, snakebite, sore, throat, and toothache.

***Sapium indicum* Willd.**

Synonyms: *Shirakiopsis indica* (Willdenow) Esser, *Excoecaria indica* (Willdenow) Müller Argoviensis, *S. bingyricum* Roxburgh ex Baillon, *Shirakia indica* (Willdenow) Hurusawa, *Stillingia diversifolia* Miquel.

Thai name: Samo thale

Family: EUPHORBIACEAE



Sapium indicum Willd.

Description of the plant: Trees up to 30 m tall, to 40 cm d.b.h., bole twisting, with spines at base. Stipules 1–2 mm; petiole 1–1.5 cm, sparsely pilose to glabrous, eglandular at apex; leaf blade oblong to elliptic or slightly ovate, 7–14 × 3–4 cm, leathery, abaxially with 2–4 glands per side, base obtuse, margins conspicuously serrate, apex subacuminate to acuminate; lateral veins 18–24 pairs, at 60°–66° to midrib. Inflorescence solitary, racemelike, to 10 cm, axis pilose. Male flowers: bracts broad, ciliate, bases with 2 glands; pedicels 1–2 mm; calyx 0.6–0.8 mm, ciliate; stamen filaments 0.5–0.6 mm at anthesis, nearly absent in bud; anthers 0.4–0.5 mm. Female flowers: pedicel ca. 5 mm; calyx 1.25–1.75 mm, pilose; ovary ovate, ca. 2.5 mm; styles ca. 1.5 mm; stigmas 4–6 mm. Fruiting pedicel 8–22 mm;

capsules subglobose, 18–30 × 20–32 mm, rounded at both ends or slightly attenuate at base, obscurely 3-lobed, walls of cocci very thick and hard. Seeds often less than 3 per fruit, ellipsoid, 11–13 × 7–8.5 mm, keeled on back, medium to pale brown, not spotted, without caruncle. Fl. Jun–Jul.

Uses: bark, fruit

Mesua ferrea L.

Synonyms: *Calophyllum nagassarium* N. L. Burman; *Mesua nagassarium* (N. L. Burman) Kostermans

Thai name: Bun nak

Family: CLUSIACEAE/ GUTTIFRAE



Mesua ferrea L.

Description of the plant: Trees evergreen, 20-30 m tall. Trunk upright, buttressed at base; crown conic. Bark dark gray-brown, thin, fissured, lamellate, exuding aromatic white resin when wounded. Leaves always pendulous; petiole 5-8 mm; leaf blade reddish yellow when young, becoming dark green, abaxially usually glaucous, adaxially dark green and somewhat lucid, lanceolate or narrowly ovate-lanceolate to linear-lanceolate, (4-)6-10(-12) × (1-)2-4 cm, leathery; secondary veins numerous, obliquely parallel, slender and indistinct; tertiary veins and veinlets reticulate, ± visible under hand lens, base cuneate, apex acuminate or long acuminate to caudate. Pedicel 3-5 mm. Flowers bisexual, solitary, axillary, 5-8.5 cm in diam. Sepals (outer 2 slightly larger than inner 2) orbicular, convex, margin membranous and sometimes white ciliate. Petals white, obovate-cuneate, 3-3.5 cm. Stamens

with filaments filiform, 1.5-2 cm; anthers golden-yellow, oblong. Ovary conic, ca. 1.5 cm; style 1-1.5 cm; stigma oblique. Fruit broadly ovoid or laterally depressed globose, ca. 3 × 2.5 cm, dry, longitudinally rugose, with stoutly pointed style at apex, usually dehiscent by 2 valves, with accrescent woody sepals and many persistent filaments at base; stalk robust, 0.8-1.2 cm. Seeds 1-4, ± irregular in shape; coat brown, fragile. Fl. Mar-May, fr. Aug-Oct.

Uses: *Mesua ferrea* is hot, dry, digestive, good for fever, sweats, foul breath, scabies, skin eruption, itching, small tumors, headache, blood and heart troubles, sore throat, cough, hiccough, vomiting, thirst, dysentery and bleeding piles. The leaves and flowers in combination with other drugs are recommended for the treatment of snakebite and scorpion sting.

Mammea siamensis Kosterm.

Synonyms: *Ochrocarpus siamensis* T.Anders

Thai name: Saraphi

Family: CLUSIACEAE/ GUTTIFRAE



Mammea siamensis Kosterm.

Description of the plant: Is a perennial, high about 10-15 meters. Its leaves are simple leaves, arranging opposite, with an obovate and oblong shape, wide about 4-5 centimeters and long about 10-15 centimeters. Their matter is rather glutinous and thick. Its flowers are simple or lobes, growing as a tuft through a branch. Petals are white, fragrant and fallen easily, with many yellow stamens. Its fruits are freshy fruits, with a bobbin shape.

Uses: A dries flower is used to make the traditional Thai herbal medicine for dizziness (as powder) for being cardiotoxic and tonic.

***Clerodendrum petasites* (Lour.) S. Moore.**

Synonyms: *Clerodendrum petasites* (Lour.) A. Meeuse, *Clerodendrum robinsonii* Dop, *Clerodendrum subpandurifolium* Kuntze, *Volkameria petasites* Lour.

Thai name: Thao yai mom

Family: VERBENACEAE



Figure 1 *Clerodendrum petasites* (Lour.) S. Moore.

Description of the plant: *C. petasites* is vines, shrubs or small tree, usually unarmed, glabrous or pubescent. Leaves are opposite of whorled, simple, sometimes lobed, Flowers are zygomorphic, bisexual, usually large, showy, mostly white.

Uses: In Thai folklore medicine, its leaves and roots are traditionally used for the treatment of fever, inflammation and skin diseases as well as asthma. In India, a mixture of the fruits of *C. petasites* is used to produce sterility, whereas Chinese use it (part not specified) for the treatment of fever and malaria.

Vitex trifolia L.**Synonyms:-****Thai name:** Khon thi so**Family:** VERBENACEAE*Vitex trifolia* L.

Description of the plant: Shrubs or small trees, 1.5–5 m tall, erect. Branchlets densely pubescent. Leaves 1–3(–5)-foliolate; petiole 1–3 cm; leaflets sessile, oblong, lanceolate, or obovate, abaxially densely gray tomentose, adaxially green and glabrous or subglabrous, base cuneate, margin entire, apex obtuse, veins ca. 8 pairs and slightly prominent on both surfaces; central or single leaflet 2.5–9 × 1.7–3 cm. Panicles 3–15 cm; peduncle densely gray tomentose. Calyx slightly 5-dentate, outside gray pubescent, inside glabrous. Corolla purplish to bluish purple, 6–10 mm, outside scaly white, pubescent at filament bases and on inside of lower lobe. Stamens exerted. Ovary glabrous, with or without glands. Style glabrous. Fruit black, subglobose, ca. 5 mm in diam. Fl. Apr-Aug, fr. Aug-Nov.

Uses: Leaves are used medicinally, for rheumatic pain, inflammation, analgesic anticonvulsant and sedative, hypnotic. The roots are antiemetic, expectorant, tonic and beneficial in thirst. Fruits are nervine, cephalic and emmenagogue.

***Cinnamomum camphora* (L.) J. Presl.**

Synonyms: *Laurus camphora* Linnaeus, *Camphora officinarum* Nees, *C. officinarum* var. *glaucescens* A. Braun, *Cinnamomum camphora* var. *glaucescens* (A. Braun) Meisner, *C. camphora* var. *nominale* Hayata, *C. camphoroides* Hayata, *C. nominale* (Hayata) Hayata, *C. simondii* Lecomte, *C. taquetii* H. Léveillé, *Persea camphora* (Linnaeus) Sprengel.

Thai name: Karaboon

Family: LAURACEAE



Cinnamomum camphora (L.) J. Presl.

Description of the plant: Evergreen large trees, up to 30 m tall, to 3 m d.b.h.; corona broadly ovate; whole plant strongly camphor-scented. Bark yellow-brown, irregularly and longitudinally fissured. Branchlets brownish, terete, glabrous. Terminal buds broadly ovoid; bud scales broadly ovate or suborbicular, sparsely sericeous outside. Leaves alternate; petiole slender, 2-3 cm, concave-convex, glabrous; leaf blade yellow-green or gray-green and glaucous abaxially, green or yellow-green and shiny adaxially, ovate-elliptic, 6-12 × 2.5-5.5 cm, subleathery, glabrous on both surfaces or sparsely puberulent abaxially only when young, triplinerved or sometimes inconspicuously 5-nerved, midrib

conspicuous on both surfaces, lateral veins 1-5(-7) pairs, basal veins with a few additional veins outside, axils of lateral veins and veins conspicuously dome-shaped and always villous abaxially, conspicuously bullate adaxially, base broadly cuneate or subrounded, margin cartilaginous, entire or sometimes undulate, apex acute. Panicle axillary, 3.5-7 cm; peduncle 2.5-4.5 cm, peduncle and rachis glabrous or gray- to yellow-brown puberulent especially on node. Pedicels 1-2 mm, glabrous. Flowers green-white or yellowish, ca. 3 mm. Perianth glabrous or puberulent outside, densely pubescent inside; perianth tube obconical, ca. 1 mm; perianth lobes elliptic, ca. 2 mm. Fertile stamens 9, ca. 2 mm; filaments pubescent. Ovary ovoid, ca. 1 mm, glabrous; style ca. 1 mm. Fruit purple-black, ovoid or subglobose, 6-8 mm in diam.; perianth cup in fruit cupuliform, ca. 5 mm, longitudinally sulcate, base ca. 1 mm wide, apex truncate and up to 4 mm wide. Fl. Apr-May, fr. Aug-Nov.

Uses: Bark is anti-bacterial, anti-fungal, analgesic, analeptic, anthelmintic, antispasmodic, aromatic, aphrodisiac, carminative, diaphoretic, sedative, stimulant, narcotic and tonic. It is used as nervine depressant in case of hysteria, epilepsy, chorea and convulsions. It acts as stimulant for cardiac, circulation and respiration. It is useful in measles, typhoid, whooping cough, asthma, and hiccup. It is recommended in case of cough, cold, toothache and liver disorders. Camphor oil is antihelmintic, antirheumatic, antispasmodic, cardiogenic and sedative. It is used for treating joints and muscle pains, cold sores and skin diseases. Camphor oil is best used for sedating nervy types particularly when associated with depression. Also used an aromatherapy diffuser or vaporizer.

Cinnamomum porrectum (Roxb.) Kosterm.

Synonyms: -

Thai name: Thep tha ro

Family: LAURACEAE



Cinnamomum porrectum (Roxb.) Kosterm.

Description of the plant: Mid-canopy tree up to 37 m tall and 92 cm dbh. Stipules absent. Leaves alternate, simple, penni- to tripli-veined, glabrous. Flowers ca. 4 mm diameter, white-yellow, placed in panicles. Fruits ca. 10 mm diameter, green-grey, fleshy drupe placed on slightly swollen flower base.

Uses: Juice of leaf for food poisoning and root decoction given after childbirth and given to girls attaining maturity.

***Caesalpinia bonduc* (L.) Roxb.**

Synonyms: *Guilandina bonduc* Linnaeus, *G. bonducella* Linnaeus, *Caesalpinia bonducella* (Linnaeus) Fleming.

Thai name: Sa wat

Family: LEGUMINOSAE-CAESALPINIACEAE



Caesalpinia bonduc (L.) Roxb.

Description of the plant: Climbers, prickly, yellowish pubescent throughout. Prickles straight or somewhat recurved. Leaves 30-45 cm; ra-chis with recurved prickles; pinnae 6-9 pairs, opposite; stipules deciduous, large, leaflike, usually lobed, lobes to 2 cm; leaflets 6-12 pairs, oblong, 1.5-4 × 1.2-2 cm, membranous, both sur-faces pubescent, base oblique, apex rounded to acute, mucro-nate. Racemes axillary, long pedunculate, densely flowered in upper part and sparsely so in lower part; bracts caducous at anthesis, reflexed, subulate, 6-8 mm, pubescent. Pedicels 3-5 mm. Sepals 5, ca. 8 mm, both sides ferruginous hairy. Petals yellowish; standard tinged with red spots, oblanceolate, clawed. Filaments short, hairy in basal part. Ovary hairy. Legume ob-long, 5-7 × 4-5 cm, leathery, apex

rounded and with beak, swollen, with dense, slender spines 5-10 mm. Seeds 2 or 3, grayish, shiny, ovoid to globose. Fl. Feb, Jul-Oct, fr. Oct-May.

Uses: In Africa its leaves, bark and roots are used to cure fever, headache and chest pain and as an anthelmintic. In West Africa it is used as a rubefacient and as a tonic in the treatment of jaundice, diarrhoea and skin eruptions. At the Kenyan coast the seed and decoctions of the leaves and roots are taken to treat asthma and complications during menstruation, to avoid miscarriage, and as eye-drops to treat internal blood clots in the eye. In Tanzania the powdered kernel of the seed is taken with water to treat diabetes mellitus. In Somalia the oil from the seeds is used to treat rheumatism. A bitter extract from the seeds is known as „poor man’s quinine“ and is used against malaria e.g. in India, but its use in Africa as a malaria cure has not been documented.

Cassia fistula L.

Synonyms: -

Thai name: Ratchphruek

Family: LEGUMINOSAE-CAESALPINIACEAE

*Cassia fistula* L.

Description of the plant: Trees, deciduous, to 15 m tall. Leaves 30–40 cm, with 3 or 4 pairs of leaflets; leaflets adaxially shiny, broadly ovate or ovate-oblong, $8-13 \times 4-8$ cm, leathery, both surfaces puberulent when young, glabrous when mature, base broadly cuneate, apex acute. Racemes axillary, 20–40(–60) cm, lax, pendent, many flowered; flowers 3.5–4 cm in diam. Pedicels 3–5 cm, slender. Sepals narrowly ovate, 1–1.5 cm, reflexed at anthesis. Petals golden yellow, broadly ovate, subequal, 2.5–3.5 cm, shortly clawed. Stamens 10, 3 long with curved filaments 3–4 cm, anthers ca. 5 mm, exceeding petals, 4 short with straight filaments 6–10 mm, reduced stamens with minute anthers. Ovary stalked, strigulose; stigma small. Legume pendulous, blackish brown, terete, sausage-shaped, indehiscent, 30–60 cm, 2–2.5 cm in diam. Seeds numerous, separated by papery septa, glossy brown, elliptic, flattened.

Uses: The root is used in cardiac disorders biliousness, rheumatic condition, haemorrhages, wounds, ulcers and boils and various skin diseases. The stem bark is used against amenorrhoea, chest pain and swellings. The leaves are used in jaundice, piles, rheumatism ulcers and also externally skin eruptions, ring worms, eczema. Flowers and pods are used as purgative, febrifugal, biliousness and astringent. Fruits are used in the treatment of diabetes , antipyretic, abortifacient, demulcent, lessens inflammation and heat of the body; useful in chest complaints, throat troubles, liver complaints, diseases of eye and gripping. The seeds are slightly sweet and possess laxative, carminative, cooling, improves the appetite and antipyretic activity.

Senna alata* (L.) Roxb.*Synonyms:** *Cassia alata* L.**Thai name:** Chum hed ted**Family:** LEGUMINOSAE-CAESALPINIACEAE*Senna alata* (L.) Roxb.

Description of the plant: Shrubs, 1.5–3(–5) m tall. Branches greenish, thick, pubescent. Leaves 30–60 cm; stipules persistent, triangular, 6–10(–15) mm; petiole and rachis with 2 longitudinal ribs and narrow wings; petiolar glands absent; petiolules very short or leaflets sessile; leaflets 6–12(–20) pairs, oblong or obovateoblong, 6–15 × 3.5–7.5 cm, thinly leathery, glabrous, base obliquely truncate, apex obtusely rounded and cuspidate. Racemes axillary, dense, many flowered, or sometimes several racemes forming a terminal panicle, 10–50 cm; peduncles 7–14 cm; bracts caducous, strobilaceous, oblong to broadly ovate, 2–3 × 1–2 cm, at first enveloping flowers. Flowers ca. 2.5 cm in diam. Sepals orange-yellow, oblong, unequal. Petals bright yellow, tinged with conspicuous purple veins, ovate-

orbicular, 16–24 × 10–15 mm, shortly clawed. Stamens 10, fertile stamens 7, opening with apical pores, lower 2 with stout filaments ca. 4 mm and larger anthers, 4 with filaments ca. 2 mm and smaller anthers, reduced stamens 3 or 4. Ovary puberulent, sessile; ovules many. Legume winged, sharply tetragonal, 10–20 × 1.5–2 cm, glabrous, with a broad, membranous wing down middle of each valve; wings 4–8 mm wide, papery, crenulate. Seeds 50–60, compressed, deltoid.

Uses: *S. alata* L. is locally used in Nigeria in the treatment of several infections, which include ringworm, parasitic skin diseases. The leaves are reported to be useful in treating convulsion, veneral diseases (syphilis and gonorrhoea), heart failure, abdominal pains, oedema, stomach problems, fever, asthma, snake bite and is also used as a purgative.

Senna siamea (Lam.) H. S. Irwin & Barneby

Synonyms: *Cassia siamea* Lam.

Thai name: Khee hlak

Family: LEGUMINOSAE-CAESALPINIACEAE



Senna siamea (Lam.) H. S. Irwin & Barneby

Description of the plant: Trees, 10–15 m tall. Bark gray, subsmooth; young branches ribbed, sparsely puberulent. Leaves 20–30 cm; stipules caducous, linear, tiny; rachis and petiole without glands, puberulent; leaflets 6–10(–15) pairs, oblong or ovate-oblong, 3–7 × 1.5–2.5 cm, leathery, abaxially finely pubescent, adaxially smooth and glabrous, base rounded, apex obtusely rounded, often emarginate, mucronate. Racemes in axils of apical leaves, often several forming a large terminal panicle on a robust peduncle 5–7 cm; bracts linear, 5–6 mm. Sepals suborbicular, unequal in size, outer smaller, inner larger, ca. 9 mm, outside hairy. Petals yellow, broadly obovate, 1.2–1.5 cm, shortly clawed. Stamens 10, among them 7 fertile, anthers opening by apical pores, 2 with filaments ca. 10 mm and anthers 6–7 mm, 4 or 5 with filaments 2–3 mm and anthers 5–6 mm, staminodes ca. 3 mm. Ovary

sessile, densely white pubescent. Legume flattened, $15-30 \times 1-1.5$ cm, suture thick, riblike, pubescent, purplish brown when mature. Seeds 10-30, light brown, ovoid, $2-2.5 \times 5-6$ mm.

Uses: *Senna siamea* Lam. to be used for the treatment of typhoid fever, jaundice, abdominal pain, menstrual pain, and is also used to reduce sugar level in the blood.

***Dalbergia Candenatensis* (Dennst.) Prain**

Synonyms: *Cassia candenatensis* Dennstedt, *Schlüssel Hortus* Malab., *Dalbergia monosperma* Dalzell.

Thai name: Sak kee

Family: LEGUMINOSAE-PAPILIONACEAE



Dalbergia Candenatensis (Dennst.) Prain

Description of the plant: Woody climbers. Branches blackish when dry, glabrous, apex often twisting and spirally hooked. Leaves 6-7.5 cm; leaflets (3-)5-7; petiolules ca. 1.5 mm, slightly puberulent or subglabrous; blade abaxially glaucous, adaxially dark green, obovate-oblong, 1.5-3 × 1-2 cm, abaxially very sparsely appressed puberulent, adaxially glabrous, base cuneate, some-times subrounded, apex rounded or obtuse, sometimes emarginate. Panicles axillary, 2.5-5 cm, subsessile or with very short peduncles; branches slightly puberulent; bracts ovate-lanceolate; bracteoles larger than bracts, broadly ovate, embracing lower 1/3 of calyx tube. Calyx broadly campanulate, subglabrous; teeth subequal, broadly triangular to ovate, obtuse, upper pair of teeth subconnate. Corolla white; petals long clawed; standard reflexed, oblong; wings obovate-oblong, sagittate on upper side; keel oblong, united above,

auriculate on upper side below. Stamens 9(or 10), monadelphous. Ovary stipitate, ob-long, glabrous, 1(or 2)-ovuled; style subulate, slender; stigma small. Legume shortly stipitate, half-moon-shaped, compressed, 2-2.4 cm when 1-seeded, 3.5-4 cm when 2-seeded, 1-1.2 cm wide, firmly leathery, ventral suture straight, dorsal suture arcuate, faintly reticulate throughout, not prominent opposite seeds. Seeds reniform, compressed, ca. 6 × 3 mm. Fl. May-Aug, fr. Jun-Nov.

Uses: In traditional system of medicines all over the world in the treatment of various ailments like diarrhea, leucoderma, dyspepsia, dysentery, syphilis, gonorrhoea, stomach ache, leprosy, eye diseases, scabies, pain, and ringworm.

Erythrina fusca* Lour.*Synonyms:** *Erythrina glauca* Willd.**Thai name:** Thong hlang bai mon**Family:** LEGUMINOSAE-PAPILIONACEAE*Erythrina fusca* Lour.

Description of the plant: Deciduous armed tree, 10–20 m tall; to 1 m dbh; outer bark grayish, coarse, branches glabrous, sparsely armed with short prickles. Leaves trifoliolate; stipules caducous; petioles 8–18 cm long; rachis 4–8 cm long; petiole and rachis with 2 apical glands; leaflets \pm ovate, \pm rounded or acute at apex, glabrous above, with white appressed trichomes below; terminal leaflet 8–14 cm long, 7–12 cm wide; lateral leaflets smaller. Flowers thick, mostly 3 per node, in large, terminal, somewhat pendent racemes; pedicels stout, turned away from apex, ca 2 cm long; flowers showy, pale orange; stamens diadelphous, green, gradually arched, about halfway exerted. Legumes 15–20 cm long, 2 cm wide, densely brown-tomentose, pointed at apex, weakly ribbed on margins; seeds several, ellipsoid, dark brown, ca 12 mm long.

Uses: Seeds are used in folk remedies for cancer in Annam. Reported to have the same medicinal attributes as *Erythrina indica*, whose bark is used for fever, hepatitis, malaria, rheumatism, toothache, also for boils and fractures. The bark is used for poulticing fresh wounds in Malasia. Boiled roots are taken internally or externally for beri-beri. Grated wood used for hematuria. The root is used for rheumatism. Bark and leaves serve as a vermifuge.

***Glycyrrhiza glabra* L.**

Synonyms: *Glycyrrhiza alalensis* X. Y. Li, *G. brachycarpa* Boissier, *G. glabra* var. *caduca* X. Y. Li, *G. glabra* subsp. *glandulifera* (Waldstein & Kitaibel) Ponert; *G. glabra* var. *glandulifera* (Waldstein & Kitaibel) Regel & Herder, *G. glabra* var. *glandulosa* X. Y. Li, *G. glabra* var. *laxifoliolata* X. Y. Li, *G. glabra* var. *violacea* (Boissier & Noe) Boissier, *G. glandulifera* Waldstein & Kitaibel, *G. pallida* Boissier, *G. violacea* Boissier & Noe, *Liquiritia officinarum* Medikus, nom. illeg. superfl.

Thai name: Cha-am

Family: LEGUMINOSAE-PAPILIONACEAE



Glycyrrhiza glabra L.

Description of the plant: Herbs, perennial. Stem 50–150 cm tall, woody at base, densely scaly glandular punctate, white hairy. Leaves 5–14 cm, 11–17-foliolate; stipules caducous, linear, 1–2 mm; petiole densely yellow-brown glandular hairy and villous; leaflets ovate-oblong, oblong-lanceolate, or elliptic, 1.7–4 × 0.8–2 cm, abaxially densely yellow scaly glandular punctate and pubescent on veins, adaxially glabrescent or pilose, base rounded, apex rounded or retuse and with mucro. Racemes much and densely flowered; rachis densely brown scaly glandular punctate, white villous and tomentose; bracts lanceolate, ca. 2 mm, membranous. Calyx campanulate, 5–7 mm, sparsely yellow glandular punctate and pubescent, 5-toothed; upper 2 teeth mostly joined. Corolla purple or light purple, 9–12 mm; standard ovate or oblong, 1–1.1 cm, base clawed, apex retuse; wings 8–9 mm; keel straight, 7–8

mm. Ovary glabrous. Legume oblong, flat, 17–35 × 4.5–7 mm, rarely constricted between seeds, glabrous or sparsely hairy, rarely glandular hairy. Seeds 2–8, dark green, ca. 2 mm in diam., smooth. Fl. May–Jun, fr. Jul–Sep.

Uses: In traditional Siddha system of medicine, liquorice is used as a demulcent, expectorant, anti-tussive, laxative and sweetener. It is used with success for acute respiratory problems, gastric ulcers, gastritis, inflammatory conditions in general and adrenal exhaustion. Components of licorice root have both estrogenic and anti-estrogenic activity. It is thus an important herb for treating hormone-related female problems.

Pterocarpus santalinus L. f.

Synonyms: -

Thai name: Rattana chan deang

Family: LEGUMINOSAE-PAPILIONACEAE



Pterocarpus santalinus L. f.

Description of the plant: A small to medium sized deciduous tree, with an extremely hard, dark purple heart-wood with a bitter flavor. Bark is blackish brown, 1-1.5 cm thick and deeply cleft into rectangular plates by deep vertical and horizontal cracks. Blaze is pale yellow with numerous pink streaks exuding copious red sticky thick gum. Branchlets are drooping and hairless. Leaves are 3 foliated, 10-18 cm long and rachis swollen at base. Generally, there are 3 leaflets (rarely more than 3), broadly egg-shaped or orbicular. Base is round or slightly heart-shaped. Apex is also rounded or deeply notched. Margin is entire, leathery, shiny, hairless, and distinctly stalked. Flowers are bisexual, stalked in auxiliary simple or sparingly branched racemes, yellow, about 2 cm long, fragrant. Pods are unequally orbicular, flat about 5×4.5 cm including the wing, and gradually narrow into a short tip about 1-cm long. Seeds 1 or rarely 2, more or less kidney shaped, 1-1.5 cm long, smooth, reddish brown.

Uses: The heartwood is rubbed with water, honey, ghee, and oil, applied as collyrium to alleviate defects of vision. It is also used for treating skin diseases, bone fracture, leprosy, spider poisoning, scorpionsting, hiccough, ulcers, general debility, and metal aberrations. Wood paste is applied on boils and other skin eruptions, infections, inflammation, and on forehead to relieve headache. Fruits is used to cure chronic dysentery, and by Kani tribes to check dermatological conditions including psoriasis.

***Sophora exigua* Craib**

Synonyms: *S. violacea* Thw. var. *pilosa* Gagnep., *S. violacea* Thw. ssp. *pilosa* (Gagnep.) Yakovlev

Thai name: Phit sa nat

Family: LEGUMINOSAE-PAPILIONACEAE



Artemisia indica Willd.

Description of the plant: Perennial herbs or subshrubs, 80-150 cm tall, sparsely puberulous or glabrescent. Leaves short petiolate or subsessile, upper surface of blade gray or yellowish tomentose or glabrescent; lower surface densely gray arachnoid tomentose, lowermost blades ovate or oblong-ovate, (1-)2-pinnately parted, distal lobes larger, segments 3-4 pairs, winged along midrib; middle cauline leaves ovate or oblong-ovate or elliptic, 5-8×3-5 cm, (1-)2 -pinnately parted, segments 3 (or 4) pairs, distal lobes larger, lobes elliptic-lanceolate, linear-lanceolate or linear, 10-20×3-5 mm, ultimate lobes deeply serrate, apex acute or acuminate; uppermost pinnately parted; leafy bracts 3-lobed or undivided. Inflorescences paniculate. Heads ovoid, oblong-ovoid or broadly ovoid, 1.5-2.5(-3) mm in diam., involucre bracts puberulous or glabrescent. Outer florets 4-8. Central florets 8-12. Achenes oblong or obovoid. Fl. and fr. Aug-Oct.

Uses: *A. indica* has been used for general malaise and fevers.

***Acacia concinna* (Willd.) DC.**

Synonyms: *Mimosa concinna* Willdenow, *Acacia sinuata* (Loureiro) Merrill, *M. sinuata* Loureiro.

Thai name: Som poi

Family: FABACEAE/ LEGUMINOSAE-MIMOSOIDEAE



Acacia concinna (Willd.) DC.

Description of the plant: Climbers, scandent shrubs, or small trees. Branchlets and leaf rachises gray tomentose; prickles abundant, minute, hooked. Stipules deciduous, ovate-cordate, 3–8 × 1.5–6 mm; leaf 10–20 cm; pinnae 6–18 pairs, 8–12 cm; glands near base of petiole and one between uppermost pinnae; leaflets 15–25 pairs, glaucous abaxially, greenish adaxially, linear-oblong, 8–12 × 2–3 mm, membranous, with a wrinkled appearance when dry, both surfaces hirsute or glabrescent, margin ciliate, midvein near upper margin. Heads globose, 9–12 mm in diam., arranged in a panicle; branches tomentose. Flowers white or yellowish, fragrant. Calyx funnel-shaped, ca. 2 mm. Corolla slightly exerted. Ovary glabrous or sericeous, stipitate. Legume brown, strap-shaped, 8–15 × 2–3 cm, fleshy, with wrinkled surfaces, sutures straight or slightly sinuate, seeming to break into segments. Seeds 6–10. Fl. Apr–Jun, fr. Jul–Dec.

Uses: *Acacia concinna* is a medicinal plant that grows in tropical rainforests of southern Asia and the fruits of this plant are used for washing hair, for promoting hair growth, as an expectorant, emetic and purgative.

Michelia champaca L.

Synonyms: -

Thai name: Cham pa

Family: MAGNOLIACEAE

*Michelia champaca* L.

Description of the plant: Trees, to 50 m or taller, to 1.9 m d.b.h. Buds, young twigs, young petioles, and young leaf blades pale yellow appressed pubescent. Twigs ascending and forming a narrow umbelliform crown. Stipular scar 0.3–1 × as long as petiole. Petiole 2–4 cm; leaf blade elliptic or ovate, 10–20(–30) × 4.5–10 cm, abaxially slightly puberulous, base broadly cuneate, cuneate, or rounded, apex long acuminate to subcaudate. Flowers fragrant. Tepals 15–20, yellow, oblanceolate, 2–4 × 0.4–0.5 cm. Staminal connective exserted and forming a long tip. Gynophore ca. 3 mm; gynoecium with trichomes. Fruit 7–15 cm; mature carpels obovoid-ellipsoid, 1–1.5 cm, tuberculate. Seeds 2–4 per carpel, rugose. Fl. Jun–Jul, fr. Sep–Oct.

Uses: Traditionally it is used for its astringent, disinfectant, diuretic and cooling properties and in parasitic infections, dysuria and diseases due to vitiated blood.

***Azadirachta indica* var. *siamensis* Valetton**

Synonyms: *Azadirachta indica* A.Juss, *Antelaea azadirachta* (L.) Adelb., *Melia azadirachta* L., *Melia indica* (A. Juss.) Brandis

Thai name: Sa dao

Family: MELIACEAE



Azadirachta indica var. *siamensis* Valetton

Description of the plant: A small to medium-sized tree, usually evergreen, up to 15 (30 max.) m tall, with a round, large crown up to 10 (20 max.) m in diameter; branches spreading; bole branchless for up to 7.5 m, up to 90 cm in diameter, sometimes fluted at base; bark moderately thick, with small, scattered tubercles, deeply fissured and flaking in old trees, dark grey outside and reddish inside, with colourless, sticky foetid sap. Leaves alternate, crowded near the end of branches, simply pinnate, 20-40 cm long, exstipulate, light green, with 2 pairs of glands at the base, otherwise glabrous; petiole 2-7 cm long, subglabrous; rachis channeled above; leaflets 8-19, very short petioluled, alternate proximally and more or less opposite distally, ovate to lanceolate, sometimes falcate (min. 2) 3.5-10 x 1.2-4 cm, glossy, serrate; apex acuminate; base unequal. Inflorescence an axillary, many-flowered thyrus, up to 30 cm long; bracts minute and caducous; flowers bisexual or male on same tree, actinomorphic, small,

pentamerous, white or pale yellow, slightly sweet scented; calyx lobes imbricate, broadly ovate and thin, puberulous inside; petals free, imbricate, spatulate, spreading, ciliolate inside. Fruit 1 (max. 2)-seeded drupe, ellipsoidal, 1-2 cm long, greenish, greenishyellow to yellow or purple when ripe; exocarp thin, mesocarp pulpy, endocarp cartilaginous; seed ovoid or spherical; apex pointed; testa thin, composed of a shell and a kernel (sometimes 2 or 3 kernels), each about half of the seed's weight.

Uses: Traditionally use of *A. indica* preparations by populations of different cultures, in India, in other Asian countries and in Africa. Leaves, seeds, roots, bark and the flowers of the plant are used to cure different ailments, such as jaundice and stomach ulcers and to combat a variety of infectious and parasitic diseases, ranging from leprosy, to chicken pox, to malaria.

Tiliacora triandra (Colebr.) Diels

Synonyms: -

Thai name: Ya nang

Family: MENISPERMACEAE



Tiliacora triandra (Colebr.) Diels

Description of the plant: It is a vine. Its leaves are simple leaves, arranging alternately, wide about 2-4 centimetres and long about 5-12 centimetres. Its flowers and bunches grow out of a vine and a nook of a leaf, separating a sexuality on each tree, without petals. Its fruits are multiple fruits, with oval-shaped small fruits.

Uses: According to the Thai traditional medical textbook, a root is used to boil in water for drinking for being antipyretic. In Thailand, a leaf is usually used to pound and take a leaf-water for food (especially bamboo shoot curry).

***Tinospora crispa* L**

Synonyms: *Tinospora crispa* (L.) J. D. Hooker & Thomson, *Tinospora gibbericaulis* Handel-Mazzetti, *T. mastersii* Diels, *T. rumphii* Boerlage, *T. thorelii* Gagnepain.

Thai name: Bora phet

Family: MENISPERMACEAE

***Tinospora crispa* L**

Description of the plant: Deciduous vines, glabrous, often producing very long aerial roots. Old stems fleshy, with very prominent blunt tubercles. Younger stems slightly fleshy, epidermis thin, membranous, brownish, glabrous; lenticels large and prominently raised. Petiole 5–15(–30) cm, glabrous; leaf blade broadly ovate to orbicular, 6–13 × 6–13 cm, slightly fleshy, very thinly papery when dried, both surfaces glabrous, base deeply to shallowly cordate, lobes rounded, margin entire, apex acuminate, palmately 5(–7)-veined, abaxial basal vein axils with shallow glabrous pockets. Inflorescences racemose, unbranched or occasionally shortly branched, appearing before leaves, flowers 2- or 3-fascicled. Male inflorescences very slender, 5–10 cm or longer. Male flowers: sepals 6 in 2 whorls, green, glabrous, outer 3 ovate, ca. 1 mm, inner 3 obovate, 2.5–3 mm; petals 3–6, yellow,

obovate-spatulate, 1.6–2.5 mm; stamens 6, as long as petals. Female inflorescences 2–6 cm, flowers mostly 1 per node. Female flowers: sepals and petals as in male; staminodes 6, to 1 mm; carpels 3, ca. 2 mm, stigma lobes very short. Fruiting peduncle 15–20 mm; carpophores 2–3 mm. Drupes orange, subglobose, to 2 cm when fresh; endocarp semiovoid, 11–13 × 7–9 mm, with conspicuous ridge abaxially, surface finely rugulose to almost smooth, adaxial aperture elliptic, small. Fl. spring, fr. summer.

Uses: It is widely used in the traditional medicinal practice of peoples living in Malaysia, Indonesia, and Thailand to treat ailments like fever, jaundice, hyperglycemia, wounds, intestinal worms and skin infections.

Ficus racemosa L.

Synonyms: *Ficus glomerata* Roxb.

Thai name: Ma duea utum pho

Family: MOREAE



Ficus racemosa L.

Description of the plant: Trees, 25-30 m tall, d.b.h. 60-90 cm; monoecious. Bark grayish brown, smooth. Branchlets, young leaf blades, and figs with bent hairs or densely covered with white soft pubescence. Branchlets brown. Stipules ovate-lanceolate, 1.5-2 cm, membranous, pubescent. Leaves alternate; petiole 2-3 cm; leaf blade elliptic-obovate, elliptic, or narrowly elliptic, 10-14 × 3-4.5(-7) cm, ± leathery, abaxially pale green, pubescent when young, glabrescent, and ± scabrous, adaxially dark green and glabrous, base cuneate to obtuse, margin entire, apex acuminate to obtuse; basal lateral veins 2, secondary veins 4-8 on each side of midvein. Figs in a tumorlike aggregate on short branchlets of old stem, occasionally axillary on leafy shoot or on older leafless branchlets, paired, reddish orange when mature, pear-shaped, 2-2.5 cm in diam., basally attenuated into a stalk, apical pore navel-like, flat; peduncle ca. 1 cm; involucre bracts triangular-ovate. Male, gall, and female flowers within same fig.

Male flowers: near apical pore, sessile; calyx lobes 3 or 4; stamens 2. Gall and female flowers: pedicellate; calyx lobes linear, apex 3- or 4-toothed; style lateral; stigma clavate. Fl. May-Jul.

Uses: *Ficus racemosa* Linn. is a popular medicinal plant in India, which has long been used in Ayurveda, the ancient system of Indian medicine, for various diseases/disorders including diabetes, liver disorders, diarrhea, inflammatory conditions, hemorrhoids, respiratory, and urinary diseases.

***Maclura cochinchinensis* (Lour.) Corner**

Synonyms: *Vanieria cochinchinensis* Loureiro, *Cudrania cochinchinensis* (Loureiro) Kudô & Masamune, *C. integra* F. T. Wang & T. Tang, *C. javanensis* Trécul, *C. obovata* Trécul; *C. rectispina* Hance, *Maclura gerontogea* Siebold & Zuccarini, *Trophis spinosa* Roxburgh ex Willdenow, *Vanieria cochinchinensis* var. *gerontogea* (Siebold & Zuccarini) Nakai.

Thai name: Kae lae

Family: MOREAE



Maclura cochinchinensis (Lour.) Corner

Description of the plant: Shrubs, erect or scandent. Branches glabrous; spines curved or straight, to ca. 2 cm, sometimes very inconspicuous. Petiole ca. 1 cm; leaf blade elliptic-lanceolate to oblong, 3-8 × 2-2.5 cm, papery to leathery, glabrous, base cuneate, margin entire, apex rounded to shortly acuminate; secondary veins 7-10 on each side of midvein, tertiary veins reticulate. Male inflorescences a capitulum, 6-10 mm in diam., pedunculate. Female inflorescences pubescent; peduncle to 1 cm. Male flowers: calyx lobes 4, unequal; anthers short; pistillode pyramidal or shield-shaped. Female flowers: calyx lobes free or basally connate, apex thick. Fruiting syncarp reddish orange when mature, 2-5 cm in diam., pubescent. Drupes brown when mature, ovoid, smooth. Fl. Apr-May, fr. Jun-Jul.

Uses: Wood is also reported against fever, the roots are used to alleviate coughing.

Embelia ribes* Burm. F.*Synonyms:** -**Thai name:** Som kung**Family:** BEGONIACEAE, MYRSINACEAE**Figure 1** *Embelia ribes* Burm F.

Description of the plant: A large scandant Straggling shrub with a long slender brittle stem, It is a Climbing-111 creeper shrub, flxible, and terete branches; bark studded with lenticels. Leaves simple, coriaceous, alternate, elliptic - ovate -lanceolate, smooth leaves gland dotted, short and obtusely acuminate, broad, entire perfectly glabrous,, . It is about 3 inch long and 1 ½ inches broad, shiny above. And nodulated. Petiole; 1.0cm to 0.8cm margined, Midrib; prominent. Flowers; small, greenish yellow to whitishpink colored. In racemes at end of branches. Small, globular.Fruits about the size of white pepper, reddishbrown to blackish. It is found in bunches. The outer covering of the fruit is fragile and inside the seed is spotted. With a small beak at the apex. The single seed is horny with a mildewlike appearance due to minute, crystalline powder, depressed at base. Stem; whitish grey, studded with lenticels with a mature girth of 45-72 cms. Root; brownish grey. Rootlets; hairy reddish. Fruit: The fruits are brownish-black on ageing, globular to sub-globular, 2-4 mm in diameter, and style at apex. In a few fruits, the pedicel along with persistent calyx is present. Surface is warty, pericarp brittle, enclosing a single seed, speckled with yellowish brown or white spots. Most of the seeds are striate.

Transverse section of fruit shows epicarp consisting of single row of tabular cells of epidermis, generally not distinct due to deposition of colouring matter.

Uses: It is an endangered medicinal plant valued for its digestive, carminative, anthelmintic and laxative property since time immemorial. It is also used in diabetes, heart related problems, nerval disorders, cancerous tumors and liver disorders. The seeds are also used for wound healing antioxidant, anti-inflammatory, analgesic and contraceptive activity.

Myristica fragrans* Houtt.*Synonyms:** -**Thai name:** Chan thet**Family:** MYRISTICACEAE*Myristica fragrans* Houtt.

Description of the plant: *M. fragrans* is a spreading, medium to large sized, aromatic evergreen tree usually growing to around 5-13 m high, occasionally 20 m. Leaves alternate, pointed, dark green 5-15 cm × 2-7 cm arranged along the branches and are borne on leaf stems about 1 cm long, shiny on the upper surface. Flowers dioecious, pale yellow, waxy, fleshy and bell-shaped. Male flowers 5-7 mm long and in groups of 1-10; female flowers up to 1 cm long and in groups of 1-3 occasionally both sexes are found on the same tree. Fruit oval or pyriform, drooping, yellow, smooth, 6-9 cm long with a longitudinal ridge and a fleshy husk. When ripe, husk splits into 2 halves revealing a purplish-brown, shiny seed surrounded by a leathery red or crimson network of tissue. The shiny, brown seed inside, and the kernel of the seed is the Nutmeg. The brown seed has a red cover that makes another spice called Mace. Bark contains watery pink or red sap.

Uses: It is widely used as a traditional medicine in the Middle East and Asia. In Western medicine nutmeg is used as a stomachic, stimulant, carminative as well as for intestinal catarrh and colic, headaches, diarrhea, vomiting, nausea, fever, bad breath, to stimulate appetites and to control flatulence. It is also valuable for its aphrodisiac and anti-inflammatory properties.

***Syzygium aromaticum* (L.) Merr.& L.M.Perry**

Synonyms: *Caryophyllus aromatica* L., *Eugenia aromatica* (L.) Baill, *E.Caryophylla* (Spreng.) Bullock et Harrison, *E.caryophyllata* Thunb.

Thai name: Kan plou

Family: MYRTACEAE



Syzygium aromaticum (L.) Merr.& L.M.Perry

Description of the plant: *Syzygium aromaticum* is a small-medium sized evergreen tree, 8-30 m tall. Canopy medium sized, crown base low. Branches semi-erect and numerous. Leaves glabrous, with numerous oil glands on lower surface. Flowers small, in terminal cymose clusters, each peduncle bears 3-4 stalked flowers at the end. Sepals minute triangular projections. Fruit olive-shaped, 1-seeded, popularly referred to as „mother of clove“. Most of the plant’s parts are aromatic (leaves, flowers and bark). The brown, dried, unopened flower buds are called cloves, a name coming from the French "clou" meaning nail. Cloves are from a genus of 400-500 species of evergreen trees and shrubs. The generic name is derived from the Greek syzygios (paired), on account of the leaves and twigs that in several species grow at the same point. The specific epithet means aromatic.

Uses: The traditional use indicates that Clove has several therapeutic properties, such as an aphrodisiac, stomachic, carminative, nervous stimulant and tonic.

Nelumbo nucifera Gaertn.

Synonyms: *Nelumbium speciosum* Willd., *Nymphaea nelumbo*

Thai name: Bua Luang

Family: NELUMBONACEAE



Nelumbo nucifera Gaertn.

Description of the plant: The plant has its roots firmly in the mud and sends out long stems to which their leaves are attached. The leaves are sometimes, and flowers always, raised above the water surface. The beautiful and fragrant flower opens in the morning and petals fall in the afternoon. The fruits are a conical pod with seeds contained in holes in the pod. Nucifera means "having hard fruit". When the seeds are ripe, they become loose in the pod. The pod then tips down towards the water, releasing the seeds.

Uses: The rhizomes or leaves are used with other herbs to treat sunstroke, fever, diarrhoea, dysentery, dizziness, vomiting of blood, haemorrhoids. The whole plant is used as an antidote to mushroom poisoning. Seeds: The embryonic seeds for high fever, cholera (Chinese), nervous disorders and insomnia; the seeds to stop vomiting, relieve indigestion and diarrhoea or just as a tonic. Flowers: pounded petals for syphilis; for cosmetic unguents (Java); the flower stalk with other herbs to treat bleeding from the uterus. Fruit: the pods contain alkaloids that stop bleeding.

***Mirabilis jalapa* L.**

Synonyms: *Mirabilis jalapa* L. ssp. *lindheimeri* Standl., *Mirabilis lindheimeri* (Standl.) Shinnars

Thai name: Ban Yen

Family: NYCTAGINACEAE



Mirabilis jalapa L.

Description of the plant: *Mirabilis Jalapa* .L. is the herbaceous plant are erect and spreading, 2-3ft (0.6-0.9m) tall and just as Wide. They have numerous branches and opposite, pointed leaves, coriaceous obovoid fruits and prominent tuberous roots, planted as an ornamental plant. The leaves are opposite measuring 3.5-7.5 cm wide, 2-4 in (5-10 cm) long , unequal, ovate to sub cordate. Flowers are tubular, cluster, funnel-shaped, simple or double, fragrant, white, yellow, pink or purple. Flowers in group of three flowers with five green bracteoles, surrounding the perianth, usually yellow crimson, white or variegated and opening in the evening.

Perianth lobes five, gamophyllus, stamens five with unequal filaments. Carpel one, unilocular, superior ovary with a single ovule, a nectariferous disc surrounds the ovary. Fruit achene surrounded by a leathery, ribbed , persistant perianth . The selfcompatible, perfect flowers each have 5-6 stamens and a single-ovulate ovary. An individual flower opens for one night in the early evening, the exact time

depending on temperature and relative humidity, and closely the next morning. An individual plant produces between 25 and 75 flowers in one flowering season. The seeds are olive, brown or black in color. The root system of *Mirabilis Jalapa* L. consists of a fairly thickened and tuberous up to 1 mm high, stem swollen at nodes.

Uses: In ayurveda this plant is used for boils, inflammations, constipation, diabetes, urinary disorders. Dried flowers are used as a snuff for headaches, fungal infection and root decoction to wash wounds, treat skin afflictions as leprosy (3, 5, 10). It is also used as a remedy for kidney stones and gall bladder, chyluria.

Jasminum sambac* (L.) Aiton*Synonyms:** *Nyctanthes sambac* Linnaeus**Thai name:** Mali /Malila**Family:** OLEACEAE*Jasminum sambac* (L.) Aiton

Description of the plant: Shrubs erect or scandent, to 3 m. Branchlets terete or slightly compressed, sometimes hollow, sparsely pubescent. Leaves opposite, simple; petiole 2-6 mm, articulate, pubescent; leaf blade orbicular to elliptic or obovate, 4-12.5 × 2-7.5 cm, papery, glabrous except for tufted hairs at vein axils abaxially, both ends blunt, sometimes base subcordate; primary veins 4-6 on each side of midrib. Cymes terminal, (1 or)3(or 5)-flowered; bracts subulate, 4-8 mm. Flowers very fragrant. Pedicel 0.3-2 cm. Calyx glabrous or sparsely pubescent; lobes 8-9, linear, 5-7 mm. Corolla white; tube 0.7-1.5 cm; lobes oblong to suborbicular, 5-9 mm broad. Berry purple-black, globose, ca. 1 cm in diam. Fl. May-Aug, fr. Jul-Sep.

Uses: Asian and Indian folk medicine recommend jasmine for liver complaint, dysentery, various types of pain including menstruation pain, and skin diseases such as leprosy. Proponents also say that inhaling jasmine scent increases beta waves in the brain, which are associated with increased state of alertness.

Urobotrya siamensis Hiepko

Synonyms: -

Thai name: Phak wan mao

Family: OPILIACEAE

*Urobotrya siamensis* Hiepko

Description of the plant: Shrub or small tree up to 5 m; twigs mostly glabrous. Leaves with petiole 2–3 mm long; lamina glabrous, narrowly ovate to elliptic (6–) 8–12 (–18) cm long, 2.5–4 (–6) cm wide; base attenuate or obtuse; apex mostly acuminate; lateral veins 8–10 per side. Racemes on young and older branches in the axils of present or fallen leaves, usually solitary, sometimes in two's; rachis 2.5–4 cm long (in fruiting state up to 7 cm), glabrous; bracts broadly ovate to triangular, apex obtuse or apiculate, base subcordate, 4 mm long, 5 mm wide. Flowers without bracteoles; pedicels 1.5–2 mm long; tepals 4, greenish yellow to whitish, c. 2 mm long; stamens white, filaments c. 2 mm; disc green, annular; ovary conical, c.1 mm long. Drupe bright red, apiculate, 8–10 mm long, 6.5–8 mm wide; pedicel 2–4 (–7) mm long.

Uses: Leaves and/or fruits locally used for a medicine against intestinal parasites, in large amounts a deadly poison.

Piper interruptum* Opiz*Synonyms:** *Piper ribesioides* Wall., *Piper sumatranum* C.DC**Thai name:** Sa khan**Family:** PIPERACEAE*Piper interruptum* Opiz

Description of the plant: Climbers dioecious. Stems 2–4.5 mm thick, ridged, glabrous. Petiole 1–2.5(–4) cm, glabrous, sheathed at base only; leaf blade ovate to long ovate, 6–13 × 4–7 cm, ± membranous or papery, without evident glands, both surfaces glabrous, base rounded or shortly tapered, ± symmetric, apex acute or shortly acuminate; veins 5(–7), all basal; reticulate veins abaxially prominent, lax. Spikes leaf-opposed. Male spikes 11–27 cm × 1.5–3 mm; peduncle ca. as long as petioles, glabrous; bracts oblong, 3–4 × ca. 1 mm, adnate to rachis, margin free, apex ± rounded. Stamens 2(or 3). Female spikes 7–17 cm, flowers unevenly developed, sparse or interrupted in fruit; peduncle nearly as long as opposite leaves, glabrous; rachis and bracts as in male spikes. Ovary distinct, ovoid, apex acute; stigmas 4 or 5. Drupe ovoid or ovoid-globose, 3–6 × 2–4 mm, smooth. Fl. May–Jun.

Uses: The stem has long been used as carminative, antifatulent, and tonic element.

Piper nigrum L.

Synonyms: -

Thai name: Prik thai

Family: PIPERACEAE

*Piper nigrum* L.

Description of the plant: Climbers woody. Nodes clearly enlarged and rooting, glabrous. Petiole 1–2 cm, glabrous; leaf blade ovate to ovate-oblong, rarely suborbicular, 10–15 × 5–9 cm, thick, ± leathery, glabrous, base rounded, usually slightly oblique, apex acute; veins 5–7(–9), apical pair arising 1.5–3.5 cm above base, alternate, others basal; reticulate veins prominent. Flowers polygamous, usually monoecious. Spikes leaf-opposed, to as long as leaves; peduncle nearly as long as petioles, glabrous; bracts spatulate-oblong, 3–3.5 × ca. 0.8 mm, adaxially adnate to rachis, only margin and broad, rounded apex free, shallowly cupular. Stamens 2, 1 on each side of ovary; filaments thick, short; anthers reniform. Ovary globose; stigmas 3 or 4, rarely 5. Drupe red when ripe, drying black when unripe, globose, 3–4 mm in diam., sessile. Fl. Jun–Oct.

Uses: Black pepper has many medicinal properties like it is used to treat vertigo, asthma, chronic indigestion, colon toxins, arthritic disorders and also advised in diarrhea and cholera.

***Piper retrofractum* Vahl**

Synonyms: *Chavica officinarum* Miquel; *Piper chaba* Hunter; *P. officinarum* (Miquel) C. de Candolle.

Thai name: Dee plee

Family: PIPERACEAE



Piper retrofractum Vahl

Description of the plant: Climbers glabrous except for rachis and stigmas, dioecious. Stems brownish when dry, ca. 2 mm thick, terete, striated. Petiole 5-11 mm, sheathed at base only; leaf blade narrowly elliptic, ovate-oblong, or elliptic, 8.5-16 × 3.2-7.5 cm, papery, glaucous when dry, densely glandular, base with both sides rounded or 1 side slightly tapered and short, tapered and short side sometimes concave to semicordate, ± symmetric to oblique, bilateral difference 0-5 mm, apex shortly acuminate to acute; veins 9-11, rarely more, pinnate, usually 4 or 5 on each side of midvein. Spikes leaf-opposed. Male spikes 5-6.5 cm; peduncle slightly longer than petioles; bracts orbicular, 1-1.2 mm wide, peltate, sessile. Stamens 2 or 3; filaments nearly absent; anthers broadly ellipsoid. Female spikes 3-4 cm × ca. 7 mm; peduncle and bracts as in male spikes. Ovary immersed in rachis; stigmas 3, ovate-acute, recurved. Unripe drupe partly connate to rachis, apex rounded. Fl. May-Jul.

Uses: Dried mature unripe fruit : carminative, stomachic, antidiarhael, oxytotic, expectorant.

***Piper sarmentosum* Roxb.**

Synonyms: *Chavica hainana* C. de Candolle; *C. sarmentosa* (Rox-burgh) Miquel; *Piper albispicum* C. de Candolle; *P. brevicaule* C. de Candolle; *P. gymnostachyum* C. de Candolle; *P. lolot* C. de Candolle; *P. pierrei* C. de Candolle; *P. saigonense* C. de Candolle.

Thai name: Cha phlu

Family: PIPERACEAE



Piper sarmentosum Roxb.

Description of the plant: Herbs to more than 10 m, mostly creeping along ground, most parts very finely powdery pubescent at least when young, dioecious. Fertile stems \pm erect. Petiole 2-5 cm (-10 cm on creeping stems), very finely powdery pubescent; leaf blades toward base of stem ovate to suborbicular, those toward apex of stem smaller, ovate or ovate-lanceolate, 7-14 \times 6-13 cm, \pm membranous, finely glandular, abaxially finely powdery pubescent along veins, adaxially glabrous, base cordate to rounded, sometimes cuneate on apical branches, \pm symmetric, apex acute; veins 7, glaucous when dry, abaxially very prominent, apical pair arising 1-2 cm above base, reaching leaf apex; reticulate veins conspicuous. Spikes leaf-opposed. Male spikes white, 1.5-2.5(-3) cm \times 2-3 mm; peduncle to ca. as long as spikes; rachis pubescent; bracts transversely elliptic, 0.5-0.6 mm, peltate, \pm sessile. Stamens 2; filaments ca. 2 \times as long as anthers; anthers subglobose. Female spikes 2-5(-8) cm,

to 8 mm thick in fruit; peduncle as in male spikes; rachis glabrous; bracts suborbicular, peltate, 1-1.3 mm in diam. Stigmas (3 or)4(or 5), hispidulous. Drupe subglobose, 4-angled, 2.5-3 mm, partly connate to rachis. Fl. Apr-Nov.

Uses: The plant is traditionally used to treat various types of sickness including fever, toothache, coughing, asthma, pleurisy and fungous dermatitis of the feet.

Plumbago indica L.

Synonyms: *Plumbago rosea* Linnaeus; *Thela coccinea* Loureiro.

Thai name: Cheat ta moon pleong daeng

Family: PLUMBAGINACEAE



Plumbago indica L.

Description of the plant: Herbs perennial, 0.5–2 m tall, evergreen. Stems pliable, often lianous, simple or branched from base. Petiole base with-out auricles; leaf blade narrowly ovate to elliptic-ovate, (3–)7–9.5(–13) × (0.8–)3–4(–6) cm, papery, base rounded to obtuse, apex acute. Inflorescences (20–)35–90-flowered; peduncle 1–3 cm, not glandular; rachis (8–)10–40(–50) cm, not glandular; bracts ovate, 2–3 × 1.5–2 mm, apex acuminate; bractlets obovate-elliptic to ovate, 2–2.5 × 1.5–2 mm, apex acute. Flowers heterostylous. Calyx 7.5–9.5 mm, glandular almost throughout, tube ca. 2 mm in diam. at middle. Corolla purple to dark red, tube 2–2.5 cm, limb ca. 2 cm in diam.; lobes obovate, ca. 12 × 7 mm, apex rounded and mucronate. Anthers blue, 1.5–2 mm. Ovary ellipsoid-ovoid, indistinctly angular. Style basally pilose; short-styled forms with style arms partly exerted, stigmatic glands without enlarged apex; long-styled form with style arms completely exerted from corolla throat, stigmatic glands capitate. Fruit not seen. Fl. Nov–Apr.

Uses: The root is acrid, vesicant, abortifacient and a stimulant. Applied in bland oil, it is used externally or internally in rheumatism and paralytic afflictions. The root is a powerful sialogogue and a remedy for secondary syphilis, leprosy and leucoderma.

Punica granatum L.

Synonyms: -

Thai name: Tub tim

Family: PUNICACEAE

*Punica granatum* L.

Description of the plant: Shrubs or small trees; branches often terminating as spines. Leaves opposite or subopposite, sometimes crowded on short lateral shoots, simple, entire, estipulate. Flowers solitary, terminal or 1-5 in axillary or terminal clusters, actinomorphic, bisexual. Floral tube thick, leathery, adnate to ovary and produced above it; sepals thick, valvate, persistent. Petals showy, red [or white], strongly crumpled. Stamens numerous, covering inner surface of floral tube from rim to ovary. Ovary inferior, multiloculed; style exserted; stigma capitate. Fruit berrylike, with leathery rind, retaining a crown of sepals. Seeds many, with translucent, juicy sarcotesta; cotyledons spirally rolled.

Uses: The rind of the fruit and the bark of the pomegranate tree is used as a traditional remedy against diarrhea, dysentery and intestinal parasites. The seeds and juice are considered a tonic for the heart, throat, eyes and for a variety of purposes, such as stopping nose bleeds and gum bleeds, toning skin, firming-up sagging breasts and treating hemorrhoids.

Colubrina asiatica* (L.) Brongn.*Synonyms:** *Ceanothus asiaticus* Linnaeus**Thai name:** Khan song**Family:** RHAMNACEAE*Colubrina asiatica* (L.) Brongn.

Description of the plant: Shrubs scandent, evergreen. Young branchlets glabrous. Leaves alternate; petiole 1–1.6 cm, pilose; leaf blade ovate, broadly ovate, or cordate, 4–8 × 2–5 cm, submembranous or thinly papery, both surfaces glabrous or subglabrous, venation pinnate, secondary veins 2 or 3 pairs, prominent on both surfaces, base rounded or subcordate, margin coarsely crenate, apex acuminate, emarginate. Flowers yellow, 5-merous, few in axillary thyrses. Pedicel 2–3 mm. Calyx tube hemispherical; sepals 5, triangular, adaxially distinctly keeled. Petals 5, obovate, cucullate, ca. as long as stamens, clawed. Stamens 5. Disk fleshy. Ovary immersed in stout disk, 2- or 3-loculed; style ± deeply 2- or 3-fid. Capsule globose, 7–9 mm in diam., basally surrounded by remains of calyx tube, loculicidally dehiscent at maturity; locules 1-seeded; fruiting pedicel 4–6 mm. Seeds grayish brown. Fl. Jun–Sep, fr. Sep–Dec.

Uses: In the Maldives, leaves are used to alleviate inflammations and boils. In order to alleviate painful swellings, leaves are crushed and juice is rubbed on the affected body. Young stems are cut into pieces and boiled in water, which is drunk to alleviate stomach disorders.

***Rosa damascena* Mill.**

Synonyms: *Rosa gallica* Linn., *Rosa centifolia* Linn. and *Rosa moschata* Herm.

Thai name: Kuhlabmon

Family: ROSACEAE



Rosa damascena Mill.

Description of the plant: The Damask rose is a deciduous shrub growing to 2.2 metres (7 ft 3 in) tall, the stems densely armed with stout, curved prickles and stiff bristles. The leaves are pinnate, with five (rarely seven) leaflets. The roses are a light to moderate pink to light red. The relatively small flowers grow in groups. The bush has an informal shape. It is considered an important type of Old Rose, and also important for its prominent place in the pedigree of many other types.

Uses: The most therapeutic effects of *R. damascena* in ancient medicine are including treatment of abdominal and chest pain, strengthening the heart, treatment of menstrual bleeding and digestive problems, and reduction of inflammation, especially of the neck. North American Indian tribes used a

decoction of the root of *R. damascena* plant as a cough remedy to ease children's cough. This plant is also used as a gentle laxative. Rose oil heals depression, grief, nervous stress and tension. It helps in the reduction of thirst, healing old cough, special complaints of women, wound healing, and skin health. Vapor therapy of rose oil is helpful for some allergies, headaches, and migraine.

Morinda citrifolia L.

Synonyms: *Morinda bracteata* Roxburgh.

Thai name: Yor, Yor Ban

Family: RUBIACEAE



Morinda citrifolia L.

Description of the plant: Evergreen shrubs or small trees, to 5 m tall, often fleshy; branches subquadrangular, glabrous. Leaves opposite or solitary opposite an inflorescence; petiole 5-20 mm, glabrous; blade fleshy, drying papery, elliptic-oblong, elliptic, or ovate, 10-25 × 5-13 cm, glabrous and shiny on both surfaces, base acute or acuminate, apex acute to obtuse; secondary veins 5-7 pairs, with pubescent domatia; stipules interpetiolar, free or shortly fused to petioles, broadly triangular to ovate, 4-16 mm, obtuse or rounded. Inflorescence solitary and leaf-opposed; peduncle 1-1.5 cm; head 1, oblong to subglobose, 5-10 mm in diam., many flowered; bracts absent. Flowers with hypanthia partially fused, distylous. Calyx glabrous or puberulent; limb subtruncate to truncate, 0.2-0.5 mm, sometimes in 1 to numerous flowers of a head with 1(-3) calycophylls, these white, narrowly elliptic to oblanceolate, 5-16 mm, obtuse to acute. Corolla white, funnellform, outside glabrous; tube ca. 15 mm, densely villous in throat; lobes 5, ovate-lanceolate, ca. 6 mm. Drupecetum white, irregularly ovoid to subglobose, 2.5-5 cm. Drupes not distinguishable individually. Fl. and fr. year-round.

Uses: Leaf: infantile diarrhea; decoction with mustard as a favorite domestic remedy, relieve pain; expressed juice of leaves as externally applied to gout, cooling and externally in fever; boiled leaves can applied in fever and headache. Root: emetic and laxative; decoction of roots.

Tarenna hoensis Pit.

Synonyms: -

Thai name: Chan tha na

Family: RUBIACEAE



Tarenna hoensis Pit.

Description of the plant: *Tarenna hoensis* is a small tree with very large leaves. The species is similar to *T. harmandiana* in the shape and size of the leaf and inflorescence. It differs in having leaves which are glabrous on both surfaces, and in having the inflorescences with sparsely short-hairy axes.

Uses: -

Aegle marmelos (L.) Correa ex Roxb.

Synonyms: *Crateva marmelos* Linnaeus

Thai name: Matoom

Family: RUTACEAE



Aegle marmelos (L.) Correa ex Roxb.

Description of the plant: Trees to 10 m tall; spines to 3 cm. Leaflet blades ovate to elliptic, 4–12 × 2–6 cm, base rounded to narrowly cuneate, margin crenulate, apex acuminate or sometimes acute. Calyx lobes ca. 1 mm. Petals white, ca. 1 cm. Stamens nearly as long as petals. Gynoecium ca. 6 mm. Fruit greenish yellow, 10–12 × 6–8 cm; mesocarp ca. 3 mm thick. Seeds ca. 8 mm. Fr. Oct.

Uses: *Aegle marmelos* has been used as a herbal medicine for the management of diabetes mellitus in Ayurvedic, Unani and Siddha systems of medicine in India, Bangladesh and Sri Lanka. The main usage of the parts of this tree is for medicinal purposes. The unripe dried fruit is astringent, digestive, stomachic and used to cure diarrhea and dysentery. Sweet drink prepared from the pulp of fruits produce a soothing effect on the patients who have just recovered from bacillary dysentery.

***Citrus aurantifolia* (Christm.) Swingle**

Synonyms: *Limonia aurantifolia* Christm., *Limon spinosum* Mill., *Citrus limonia* Osbeck, *Citrus lima* Luman, *Citrus spinosissima* G.F.W. Meyer, *Citrus acida* Roxb.

Thai name: Manao

Family: RUTACEAE



Citrus aurantifolia (Christm.) Swingle

Description of the plant: Key lime is an evergreen, spiny shrub or small tree to 6 m in height. The plant has single or multiple stems and irregular branches covered with smoothish brown to gray bark. The twigs are quadrangular (when young), green, and bare sharp axillary spines 3 to 17 mm long. The leaves are yellow-green to dark green, with 5- to 28-mm winged petioles and elliptic to oval leathery 4- to 13-cm long blades with edges that have minute rounded teeth. The crushed foliage has a strong, distinct, spicy (citrus) odor and taste. The four- to five-petaled white flowers occur in few-flowered axillary clusters. The fruits (hesperidiums) are ellipsoidal, 3 to 5 cm in diameter, have juicy, greenish-yellow flesh, and are yellow at maturity. They contain a few white, pointed seeds about 1 cm long.

Uses: In traditional Chinese medicine to treat nausea, indigestion, and constipation, cancer, cardiovascular effect, sedative.

***Citrus hystrix* DC.**

Synonyms: *Citrus auraria* Michel; *C. echinata* Saint-Lager; *C. hyalopulpa* Tanaka; *C. kerrii* (Swingle) Tanaka; *C. macroptera* Montrouzier var. *kerrii* Swingle; *C. papeda* Miquel; *Fortunella sagittifolia* F. M. Feng & P. I Mao; *Papeda rumphii* Hasskarl.

Thai name: Makrut

Family: RUTACEAE



Citrus hystrix DC.

Description of the plant: Trees 3–6 m tall. Branchlets with spines. Leaves dark red when young; petiole winged, apex rounded to truncate; leaf blade ovate, 5–8 × 2.5–4.5 cm, 1–2.5 cm longer (rarely same length) and 0.5–1 cm wider than winged petiole, tertiary veins conspicuous, margin apically conspicuously and sparsely crenate, apex narrowly obtuse. Inflorescences with (1 or)3–5 flowers; peduncle 1–5 mm. Flower buds globose. Calyx lobes 4 or 5, broadly triangular, ca. 4 × 6 mm. Petals white but pinkish red outside, 7–10 mm. Stamens ca. 30; filaments distinct. Style short, thick. Fruit lemon yellow, ellipsoid to subglobose, 5–7 × 3–5 cm, slightly coarse or smooth, oil dots numerous and prominent, apex rounded; pericarp thick; sarcocarp in 11–13 segments, very acidic and slightly bitter. Seeds numerous 1.5–1.8 × 1–1.2 cm, ridged; embryo solitary; cotyledons milky white. Fl. Mar–May, fr. Nov–Dec.

Uses: Fresh peels and dried fruits are used to relieve nausea, dispel gas, and control normal menstruation.

Cardiospermum halicacabum L.

Synonyms: *Cardiospermum halicacabum* var. *microcarpum* (Kunth) Blume; *C. microcarpum* Kunth.

Thai name: Khok kra om

Family: SAPINDACEAE



Cardiospermum halicacabum L.

Description of the plant: Climbers, herbaceous, 1-1.5 m. Stems and branches green, 5- or 6-sulcate, slender, glabrous or sparsely hairy. Leaves biternate, triangular in outline; petioles 3-4 cm; leaflets subsessile; blades thinly papery, margin sparsely serrate or pinnately parted, abaxially sparsely villous on midvein and lateral veins, adaxially subglabrous or sparsely pilosulose; terminal blade obliquely lanceolate or subrhombic, 3-8 × 1.5-2.5 cm, apex acuminate; lateral ones slightly smaller, ovate or narrowly elliptic. Panicles few flowered, ca. as long as or slightly longer than leaves; peduncles straight, 4-8 cm, tendrils spiralled. Sepals 4, ciliate, outer 2 ovate, 8-10 mm, inner 2 narrowly elliptic, ca. 2 × as long as outer ones. Petals milky-white, obovate. Stamens (male flowers) ca. as long as or slightly longer than petals; filaments sparsely long villous. Ovary (female flowers) obovoid or sometimes subglobose, pubescent. Capsules brown, pearlike, turbinate-obtriangular or sometimes

nearly ellipsoid, 1.5-3 × 2-4 cm, pubescent. Seeds black, shiny, ca. 5 mm in diam.; hilum green when fresh, white when dry, cordate. Fl. summer-autumn, fr. autumn-early winter.

Uses: Traditionally this plant is highly useful in ayurveda, shiddha, homeopathic and unani Indian Systems of medicines to treat rheumatoid arthritis, gastrointestinal diseases, respiratory diseases, urogenital diseases, inflammatory diseases.

Mimusops elengi L.

Synonyms: -

Thai name: Phikun

Family: SAPOTACEAE

*Mimusops elengi* L.

Description of the plant: A small to large evergreen tree, grows up to 15 m high. Generally characterized by a short, dark and very rough trunk and wide spreading, the ends of which tend to rise and forms a thick globular head to the tree. The bark is dark grey, occurs in pieces of 15-25 cm long and 10 -15 cm broad. Externally rough due to the presence of vertical lenticels, cracks and longitudinal fissures. The dried bark is thin and occurs in quills. Berry is ovoid, 2.5 cm long with. It turns yellow and it tastes astringent and sweet. Fruition occurs in rainy season, when ripe containing 1, rarely 2 seeds. Seeds are grayish brown, solitary, ovoid, compressed, shining. The leaves are glossy and are dark green when old with 6.3 - 10 cm in long and 3.2 - 5 cm in wide. The new leaves mostly appear in February when the trees often appear bright vivid green. Leaves are variable, elliptic, oblong or oblanceolate, short or long acuminate, margin undulate, closely but faintly veined. Petioles 1.2 - 2.5 cm long.

Uses: The bark is used for cooling, a cardio tonic, alexipharmic, stomachic, anthelmintic, tonic, astringent which cures biliousness, diseases of the gums and teeth. The flower is cooling, astringent to the bowels are used to cures the disease of blood, cure biliousness, liver complaints, diseases of the nose, headache, their smoke is good in asthma. The fruit is astringent to the bowel, good for the teeth, causes flatulence. The seed fix loose teeth and used as a cure troubles in the head. The root is aphrodisiac, diuretic, astringent to the bowel, good for gonorrhoea and used as a gargle which cures relaxation of the gums. The flowers, which appear twice a year, are somewhat fragrant and powerfully aromatic. The native distil an odoriferous water is collected from them. The fruit is edible. The seeds yield an abundance of oil, in request for painters. If the leaves are put in the flame of a candle, they will make a smart crackling noise.

Limnophila rugosa* (Roth) Merrill*Synonyms:** *Herpestis rugosa* Roth**Thai name:** Phak ka chom**Family:** SCROPHULARIACEAE*Limnophila rugosa* (Roth) Merrill

Description of the plant: Perennials, 10-50 cm tall. Rhizomes transverse. Stems 1 to few, fascicled, erect or ascending, usually unbranched, glabrous. Leaves opposite; petiole 1-2 cm, narrowly winged; leaf blade ovate, rhomboid-elliptic, or elliptic, 3-9 X 1-5 cm, abaxially hispidulous along veins, adaxially glabrous or sparsely hispidulous, margin crenate; veins pinnate, ca. 10 on each side of midrib, abaxially raised. Peduncle 0.2-3 cm; bracts subspatulate-oblong, with flattened membranous glands, margin entire or apically undulate-toothed and ciliate. Flowers axillary, solitary, sessile, usually appearing capitate. Bracteoles absent. Calyx 6-8 mm, without raised veins in fruit or with 5 raised veins and flattened membranous glands, margin ciliate. Corolla purple-red to blue, to 1.6 cm. Style slender, apically cylindrical, pubescent, with a membranous auricle on both sides. Capsule pale brown, ovoid, ca. 5 mm. Fl. and fr. Aug-Nov.

Uses: The juice of the plant is rubbed over the body in pestilent fever. It is applied on elephantiasis with coconut oil. It is administered in diarrhoea, dysentery and dyspepsia. It is used as carminative and tonic. The essential oil is used as flavouring agent in food and as perfuming agent in hair oils.

***Harrisonia perforata* (Blanco) Merr.**

Synonyms: *Paliurus perforatus* Blanco, *Feroniella pubescens* Tanaka; *Harrisonia citrinaecarpa* Elmer, *Lasiolepis multijuga* Bennett; *L. paucijuga* Bennett & R. Brown; *Limonia pubescens* Wallich ex J. D. Hooker; *P. dubius* Blanco.

Thai name: Khonthaa, Kalanthaa, Seefan

Family: SIMAROUBACEAE/ CNEORACEAE



Harrisonia perforata (Blanco) Merr.

Description of the plant: Shrubs nearly erect or somewhat climbing, 1-2 m tall. Leaves odd-pinnate, 3-17-foliolate, 3-14 cm; rachis usually winged; leaflet blades equilaterally or inequilaterally ovate to obovate, 1.5-4.5 × 0.7-2 cm, margin crenulate or sometimes entire, in occasional specimens some crenulations with pellucid cavities that seem to lack oil and may be hydathodes. Inflorescences cymose to racemose, to 3 cm, few to many flowered. Flowers bisexual, mostly 5-merous. Sepals ca. 1.5 mm, connate at base or to ± half their length. Petals ovate-elliptic or lanceolate, 5-7 mm. Stamens to 9 mm.

Gynoecium usually 5-carpelled and -loculed; ovary glabrous, slightly lobed, ca. 1 mm; style pubescent, to 8 mm. Fruit subglobose, entire or slightly lobed, 1-1.5 cm in diam.; endocarp ca. 1 mm thick. Seeds ca. 3.5 mm. Fl. Apr-May, fr. May-Aug.

Uses: The roots and stem are used to malaria and dysentery.

***Capsicum frutescens* L.**

Synonyms: *Capsicum annuum* var. *conoide* (Miller) Irish; *C.annuum* var. *fasciculatum* (Sturtevant) Irish; *C. annuum* var. *grossum* (Linnaeus) Sendtner; *C. conoide* Miller; *C. fasciculatum* Sturtevant; *C. frutescens* Linnaeus; *C. frutescens* var. *fasciculatum* L. Bailey; *C. frutescens* var. *longum* L. Bailey; *C. frutescens* var. *grossum* L. Bailey; *C. grossum* Linnaeus; *C. longum* de Candolle.

Thai name: Phrik khinu

Family: SOLANACEAE



Capsicum frutescens L.

Description of the plant: Shrubs or annual or perennial herbs, 20-80 cm tall. Stems glabrescent. Leaves solitary or paired; petiole 4-7 cm; leaf blade oblong-ovate, ovate, or ovate-lanceolate, 4-13 × 1.5-4 cm, glabrescent, base narrowed, margin entire, apex short acuminate or acute. Inflorescences solitary flowers or few-flowered clusters. Pedicel bent at apex, 1-2 cm. Calyx cup-shaped, undulate, 2-3 × 3 mm. Corolla white, ca. 1 cm. Anthers purplish, 1.8-2 mm. Berry mostly red (orange, yellow, or purple in cultivation), variously shaped, up to 15 cm. Seeds pale yellow, discoid or reniform, 3-5 mm. Fl. May-Aug, fr. Jul-Nov.

Uses: Most of the medicinal properties it has are due to the chemical that gives it its flavor found in the fruit and seeds. This chemical is known as capsaicin. Capsaicin is said to do many miraculous things medicinally. One of the most miraculous is probably its ability to prevent or even stop a heart attack. It increases heart action without raising blood pressure. It also thins your blood and reduces the risks of suffering a stroke

Datura metel L.

Synonyms: *Datura alba* Nees; *D. fastuosa* Linnaeus; *D. fastuosa* var. *alba* (Nees) C. B. Clarke.

Thai name: Lum pong ga sa lu

Family: SOLANACEAE



Datura metel L.

Description of the plant: Herbs annual, 0.5-1.5 m tall, glabrescent. Stems often dark violet. Petiole 2-6 cm; leaf blade ovate or broadly ovate, 5-20 × 4-15 cm, membranous, glabrescent, base truncate or cuneate, asymmetrical, margin irregularly sinuate-dentate, lobed, or entire, apex acuminate; veins 4-6 pairs. Flowers erect. Pedicel ca. 1 cm. Calyx tubular, 4-9 cm. Corolla white, yellowish, or pale purple, funnelform, sometimes doubled or tripled, 14-20 cm; limb 6-10 cm in diam.; lobes elongate. Anthers 1-1.2 cm. Capsules deflexed, subglobose, ca. 3 cm in diam., tuberculate, irregularly 4-valved, subtended by remnants of persistent calyx. Seeds pale brown, reniform-discoïd, ca. 3 mm in diam. Fl. and fr. Mar-Dec.

Uses: The whole plant, but especially the leaves and seed, have anaesthetic, hallucinogenic, anti-asthmatic, anti-spasmodic, anti-tussive, narcotic, bronchodilator, anodyne, hypnotic and mydriatic effects.

Nigella arvensis Linn.

Synonyms: -

Thai name: Thian Dam

Family: RANUNCULACEAE



Description of the plant: Annual herb, 30 to 60 cm high, branching at the top. Stem green, round, hairy, 2 to 5 mm in diameter, internodes 2 to 5 cm long. Leaves alternate, 1 to 3 pinnately dissected into linear, linear-lanceolate, capillary or irregular lobes, lower leaves small, pinnatifid, upper leaves sessile, 6 to 10 cm long, glabrous on the upper surface, hairy beneath and on the rachis. Flowers regular, bisexual, terminal or axillary on branches, white, greenish white or pale blue, about 3 cm in diameter, long-stalked, pedicels 1.5 to 5.5 cm long becoming longer as the fruit matures. Sepals 5, free, greenish white to pale purple, petaloid, caduceous, lanceolate or ovate 1.2 to 1.5 cm long, 0.4 to 0.5 cm wide, longer than petals. Petals 8, about 5 mm long, about 2.5 mm wide, 3-lobed, anterior lobe, small ovate, acuminate, blue, flapped over the fused concave hairy base of the pair of posterior lobes, posterior lobes, posterior lobes ovate, greenish white, apex blue with a blue line across the body, each carrying a shining green mass, scantily ciliated. Stamens numerous, outer one longer than the inner ones, basifixed; filaments 2.5 to 5.2 mm long, slender; anthers 1.5 to 2 mm long; ovary superior, about 5 mm long, smooth, carpels 2 to 4, styles and stigma about 7 mm long. Fruit united follicles forming a

capsule, ultimately inflated with persistent horn-like styles. Seeds ovate to lanceolate, trigonal, black, numerous.

Uses: Seeds or its oil are used as a carminative, diuretic, lactagogue and vermifuge, asthma, hypertension, diabetes, inflammation, cough, bronchitis, headache, eczema, fever, dizziness and influenza.

***Strychnos nux-blanda* A.W. Hill**

Synonyms: *Strychnos nux-blanda* var. *hirsuta* A. W. Hill; *S. nux-vomica* Linnaeus var. *grandifolia* Dop.

Thai name: Tumka khao

Family: STRYCHNACEAE



Strychnos nux-blanda A.W. Hill

Description of the plant: Trees to 15 m tall. Branchlets glabrous or glabrescent. Petiole 1--1.5 cm; leaf blade broadly ovate, elliptic, or suborbicular, 9--22 X 7--16 cm, papery, glabrous, base rounded, apex acute to acuminate, basal veins 5--7. Thyrses axillary, 4--6 cm; bracteoles puberulent. Flowers 5-merous. Pedicel puberulent. Calyx lobes narrowly oblong, 1.5--2 mm, outside puberulent. Corolla white, salverform, 1.2 cm; tube ca. 9 mm, outside villous near base; lobes narrowly elliptic, ca. 3 mm, outside glandular. Stamens inserted at corolla mouth; filaments very short; anthers subovate, ca. 2 mm,

apex exerted. Ovary ovoid, glabrous. Style to 1.2 cm, glabrous; stigma capitate. Berries globose, 6--8 cm in diam., 4--15-seeded. Seeds ovoid, suborbicular, or ellipsoid, 1.5--2.2 X 1.3--2 cm, plano-compressed. Fl. Mar-Jun, fr. Aug-Dec.

Uses: Root: antimalarial; grind with small amount of water, topically apply to snake bite as anti-inflammatory agent; decoction; laxative. Stem bark: combine with *Colona auriculata* fruit, *Gloriosa superba* rhizome and food, used as poisoning agent for dogs.

Aquilaria crassna Pierre ex Lec.

Synonyms: -

Thai name: Kritsana

Family: THYMELAEACEAE



Aquilaria crassna Pierre ex Lec.

Description of the plant: The leaf is 7-11.5 x 2.5-5 cm, simple, alternate, spirally-arranged, lanceolate or narrowly elliptic with tapering tip and blunt or pointed base, untoothed often wavy. Young shoots densely silvery silk-hairy, mature leaves leathery, dark green above, smooth or with scattered silky hairs on main veins below. Three main veins from base, 12-19 pairs of faint side veins with many parallel intermediate ones, reaching margin, tertiary veins ladder-like. Stalks are 0.2 – 0.7 cm long without stipules. The flower is 0.6-0.8 cm, white or pale green or yellow, regular bisexual, in simple clusters (fascicles) at or opposite upper leaf axils. Individual stalks 0.6 –1 cm, slender, silky hairy, main stalks 0.3 –1cm. Calyx (perianth) bell-shaped with 5 lobes, 3-4 mm, no corolla but with 10 hairy petal-like scales attached to mouth of calyx tube opposite lobes, \pm 1 mm, 10 stamens in 2 rows, fused to mouth of calyx, \pm as long as lobes. Style < 1mm, stigma 2-4 lobed, ovary superior, brown-hairy, no disc. The fruit is 2.2 – 4 cm, bright green, silky hairy when young, oval with a narrow longitudinal

ridge and persistent enlarged calyx at base, thinly leathery, becoming strongly wrinkled and eventually splitting into 2 sections, 1-3 (mostly 1-2) glossy seeds with a long, tail-like appendage.

Uses: Agarwood has been used in Ayurvedic, Tibetan and East Asia for medicinal purposes for thousands of years. Agarwood is prescribed for dropsy, as a carminative, a stimulant, for heart palpitations, and as a tonic taken particularly during pregnancy, after childbirth and for diseases of female genital organs.

***Anethum graveolens* L.**

Synonyms: *Anethum graveolens* subsp. *sowa* (Roxburgh) N. F. Koren; *A. sowa* Roxburgh; *Ferula marathrophylla* W. G. Walpers; *Peucedanum anethum* Baillon; *P. graveolens* (Linnaeus) Hiern; *P. sowa* (Roxburgh) Kurz.

Thai name: Thian ta takkataen

Family: UMBELLIFERAE



Anethum graveolens L.

Description of the plant: Plants 30–75(–100) cm, glabrous, strongly aromatic. Basal leaf blade broadly ovate, 3–4-pinnately dissected; ultimate segments narrow linear, 4–20 × ca. 0.5 mm. Upper leaves smaller and less divided, petioles sheathing throughout. Umbels 5–15 cm across; rays 10–25, 3–5 cm; umbellules 15–25-flowered; pedicels 6–10 mm. Fruit brown, 3–5 × 2–2.5 mm; lateral ribs gray-white, narrowly winged. Fl. May–Aug, fr. Jul–Sep.

Uses: In traditional medicine, seed have been used in reliving digestive problems such as stomachache. It's also increase the milk in nursing mothers and to help prevent colic in the babies, used to reduce blood cholesterol and lipid levels, menstrual bleeding and dysmenorrheal.

***Angelica dahurica* Benth.**

Synonyms: *Callisace dahurica* Franch & Sav. *Angelica macrocarpa* H.Wolff. *Angelica porphyrocaulis* Nakai & Kitag

Thai name: Kot So

Family: UMBELLIFERAE



Angelica dahurica Benth.

Description of the plant: Plants perennial 1–2.5 m, stout. Root cylindric, brown, 3–5 cm thick, strongly aromatic. Stem purplish green, 2–5(–7–8) cm thick, ribbed, pubescent above. Basal and lower leaves long-petiolate, sheaths oblong-inflated, glabrous; blade triangular-ovate, 30–50 × 25–40 cm, 2–3-ternate-pinnate; leaflets sessile, oblong-elliptic to oblong-lanceolate, 4–10 × 1–4 cm, base slightly decurrent, margin white-cartilaginous and coarse-cuspidate-serrate, apex acute, pubescent along nerves adaxially. Upper leaves reduced, sheaths saccate-inflated, bladeless. Umbels 10–30 cm across; peduncles 5–20 cm, scabrous; bracts absent or 1–2, like uppermost leaves; rays 18–40(–70), short-hairy; bracteoles many, linear-lanceolate, scarios; pedicels many, scabrous. Calyx teeth obsolete. Petals white, obovate and notched. Ovary glabrous or pubescent. Fruit suborbicular, 4–7 × 4–6 mm; dorsal ribs prominent, obtusely thick-rounded, much wider than furrows, lateral ribs broad-winged; vittae 1 in each furrow, 2 on commissure. Fl. Jul–Aug, fr. Aug–Sep.

Uses: The root contains an essential oil, resins, furanocoumarins. It is analgesic, anodyne, antibacterial, antidote, carminative, diaphoretic, diuretic, poultice and stimulant. It is used in the treatment of frontal headache, toothache, rhinitis, boils, carbuncles and skin diseases.

Coriandrum sativum L.

Synonyms: *Selinum coriandrum* E. H. L. Krause, nom. illeg. superfl.

Thai name: Phak chee

Family: UMBELLIFERAE



Coriandrum sativum L.

Description of the plant: Plants to 60 cm high. Basal and lower leaves pinnate to 2-pinnatisect; petiole to 13 cm, shortly sheathing at base; blade ovate, to 14 × 8 cm; pinnae broadly ovate or flabelliform, 1–2 × 1–1.5 cm, variously toothed or incised; ultimate segments broad. Mid and upper cauline leaves ternate-2–3-pinnatisect, reducing up the stem; ultimate segments linear to filiform, 2–15 × 0.5–1.5 mm, obtuse, entire. Peduncles 2–10 cm; rays 2–8, 1–2.5 cm; bracteoles 2–5, linear, entire; umbellules 3–9-flowered. Pedicels 2–5 mm. Calyx teeth ovate-deltoid or ovate-lanceolate, unequal. Fruit 1.5–5 mm wide. Fl. and fr. Apr–Nov.

Uses: In the Indian traditional medicine, a coriander is used in disorders of digestive, respiratory and urinary system, as it has diaphoretic, diuretic, carminative and stimulant.

Ferula assa-foetida L.

Synonyms: -

Thai name: Mahahing

Family: UMBELLIFERAE



Ferula assa-foetida L.

Description of the plant: A coarse umbelliferous plant growing up to 7 feet high, large fleshy root covered with bristly fibres. stem 6 to 10 feet, numerous stem leaves with wide sheathing petioles; flowers pale greenish yellow, fruit oval, flat thin, foliaceous, reddish brown with pronounced vittae, it has a milky juice and a strong foetid odour.

Uses: It is used in modern herbalism in the treatment of hysteria, some nervous conditions, bronchitis, asthma and whooping cough. It was at one time employed in the treatment of infantile pneumonia and flatulent colic. The gum resin is antispasmodic, carminative, expectorant, laxative, and sedative. The volatile oil in the gum is eliminated through the lungs, making this an excellent treatment for asthma. The odor of asafoetida is imparted to the breath, secretions, flatus, and gastric eructations. Its properties are antispasmodic, expectorant, stimulant, emmenagogue and vermifuge. Asafoetida has also been used as a sedative. It also thins the blood and lowers blood pressure.

***Petroselinum crispum* (Mill.)**

Synonyms: *Carum copticum* Bentham et Hooker filius, *Trachyspermum copticum* (L.) Link, *Sison ammi* L.

Thai name: Thian yao wa panee

Family: UMBELLIFERAE

***Petroselinum crispum* (Mill.)**

Description of the plant: glabrous annual. Aroma: fruit aromatic. Stems: hollow, striate, much branched. Umbels: compound. 5-10 (20) smooth or sparsely puberulent rays .lcm.peduncle > than rays. hermaphrodite. Leaves: lower 2-3 pinnatisect, withered by flrng time, long petiolate. lobes 1-2 cm, linear or filiform. upper leaves smaller, similar, or simply pinnatisect. shortly petiolate, short sheathing base. Bracts: 4-5, linear, sometimes lobed. bracteoles 3-6, linear-lanceolate. sparseley puberulent. Flowers: white, sepals small, acute. petals hairy beneath. styles form a stylopodium. fl 9.Fruit: 15-20mm, ovoid, laterally compressed. Covered in grey papillae. Commisure narrow. Mericarps with prominent ridges. Carpophore present. Vittae solitary. Pedicels 1-4mm, hairy. Styles x2 > as stylopodium, recurved. Stigma capitate. 2n=18.

Uses: *T. ammi* is much used as a medical plant in Ayurvedic medicine (India). Mainly, it helps against diseases of the digestive tract and fever. In India, where any amount of tap water can result in arbitrary complications, often comes to the traveller's rescue: Just chew one spoonful of the fruits for a few minutes and wash down with hot water. In the West, thymol is used in medicines against cough and throat irritation.

Distribution of fern family

Cyathea gigantean (Wall. ex Hook.)

Synonyms: *Trichomanes solidum* G.Forst.

Thai name: Neraphusi

Family: DAVALLIACEAE



Cyathea gigantean (Wall. ex Hook.)

Description of the plant: Rhizome long creeping, 6–12 mm diam., scaly throughout; scales oblong-subtriangular, gradually narrowing towards apex, 4–5 mm long, apical part thin, pale brown, with dense hairs about 1 mm long, caducous, basal portion dark brown to nearly black, imbricate; old portion of rhizome covered by these basal portion of scales up to 3 mm in length. Stipes stramineous or sometimes brown, 9–35 cm long. Lamina subdeltoid, 15–90 x 21–40 cm, tripinnate; lateral pinnae subopposite; all pinnae anadromous; basal pinnae the largest, oblong-subtriangular, with distinct stalk; pinnules stalked, oblong, cuneate at base, gradually narrowing towards acuminate apex; secondary pinnules (ultimate segments) narrowly oblong, sessile, narrowly cuneate at base, moderately acute at apex; axes distinctly grooved, grooves decurrent to each other; veins visible, but not raised; glabrous or with finely branched woolly hairs sparsely scattered beneath and at main junction points. Sori terminal on veinlets, at margin of ultimate segments; involucre cup-shaped, up to 1.5 mm long, about twice as long as wide.

Uses: Rhizomes used as herb tonic; for treatment of osteoporosis, arthralgia and arthritis.

***Angiopteris evecta* (G.Forst.) Hoffm.**

Synonyms: *Polypodium evectum* G.Forst., *Angiopteris elongata* Hieron.

Thai name: Wan kib raet

Family: MARATTIACEAE



Angiopteris evecta (G.Forst.) Hoffm.

Description of the plant: The Giant Fern has either leaves tufted near ground level, or an erect rhizome forming a massive, woody trunk up to 1 metre in diameter and 3 metres in height in older specimens. The stipes (leaf stalks) are green, smooth and swollen at the base where a pair of ear-like stipules enclose the stipe base. These stipules are dark with large, sunken white spots. The bi-pinnate fronds are massive, up to 8 metres in length, and are reputedly the largest fronds of any fern on earth. The pinnae and pinnules are attached by swollen bases and the lower pinnules have an ear-like lobe at their base. Pinnae are up to 1.2 metres long and 40 centimetres wide. The pinnules are 4 to 20 centimetres long and 15 to 25 millimetres wide, with serrulate margins and free veins. False veins occur between the true veins of the pinnules; these are believed to be an evolutionary relic from a time when the pinnules were more deeply divided and they may represent the junction of pinnule edges.

Uses: *Angiopteris evecta* is cultivated worldwide as an ornamental fern. Also, its starchy rhizomes are sometimes eaten or used to perfume coconut oil.

***Drynaria quercifolia* (L.) J. Sm.**

Synonyms: *Polypodium quercifolium*

Thai name: Kra tee tai mai

Family: POLYPODIACEAE



Drynaria quercifolia (L.) J. Sm.

Description of the plant: Rhizome 2 cm thick, the younger portions densely covered with dark brown scales. Scales of about 2 cm long, base peltate, narrowing to the apex and edge finely toothed. Nest fronds to 40 x 30 cm, lobed with the lobes broad and rounded. Foliage fronds with stipe of about 30 cm long, lamina to 100 x 40 cm, lobes to about 1 cm from the midrib and oblique. Sori in a regular row on each side of the main vein, round and 2 mm wide.

Uses: In the treatment of diarrhoea, typhoid, cholera, chronic jaundice, fever, headache, skin diseases and syphilis.

Acrostichum aureum L.

Synonyms: -

Thai name: Prong tha le, Prong khai

Family: PTERIDACEAE

*Acrostichum aureum* L.

Description of the plant: Caudex stout and erect to 5 x 10 cm, bearing polished, dark brown scales to 1 x 3 cm, and many narrower smaller scales, spreading onto the stipe bases. Frond to 2 m or more tall, stipe to 80 cm long, 1 - 1.5 cm diameter, pinnae on stalks to 2 cm long, oblong, to 3 - 7 x 20 - 40 cm, apex abruptly rounded to truncate, or retuse, shortly mucronate, base asymmetric, rounded to cuneate, margin entire, coriaceous, glabrous, midrib grooved above, strongly prominent below, veins with areoles roughly elongated at 50 - 70 degrees to the midrib, apical pinna similar to lateral pinnae, sessile and often slightly decurrent; when fertile the apical few pinnae slightly contracted, completely covered with sporangia beneath, sometimes only the apical half of a pinnae fertile, sporangia mixed with paraphyses with many-lobed apical cells.

Uses: The pounded or grated leaves and rhizomes are applied as a paste to wounds, ulcers and boils all over South-East Asia. In China the rhizome is used against worms.