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Ancient Thai Medicinal Formula, Volume 5: The Therapeutic and Clinical Drug Review Extracted from Ancient Thai Palm Leaf Manuscripts

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Abstract

This research is a descriptive and explorative study and is aimed at defining the composition and indication of Thai traditional herbal medicinal preparations which were derived from the ancient Thai medicinal of palm leaf scriptures, chapter no.3, and volume 5. The research was investigated by the team of Mahasarakham University committee which consisted of pharmacist, biologists, interpreters and editors. The complete manuscripts contained 5 volumes in Thai Noi, Tham Esarn, khemer and Thai traditional languages. Each traditional medicinal herb diagnosed the symptoms of the patients and treats them with herbal preparations according to their local herbal medicinal knowledge and experiences in order to relieve various symptoms and diseases. These historic formulations were created over a period of hundreds of years before the advent of modern medicine.

Key words: Palm leaf manuscripts; Therapeutic treatments; Thai Folk Herbalists

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INTRODUCTION

Herbal Medicine sometimes referred to as Herbalism or Botanical Medicine is the use of herbs for their therapeutic or medicinal value. An herb is a plant or plant part valued for its medicinal aromatic or savory qualities. Herb plants produce and contain a variety of chemical substances that act upon the body. Herbalists use the leaves flowers stems berries and roots of plants to prevent relieve and treat illness. From a "scientific" perspective many herbal treatments are considered experimental. The reality is however that herbal medicine has a long and respected history. Many familiar medications of the twentieth century were developed from ancient healing traditions that treated health problems with specific plants. Today science has isolated the medicinal properties of a large number of botanicals, and their healing components have been extracted and analyzed. Many plant components are now synthesized in large laboratories for use in pharmaceutical preparations. For example vincristine (an antitumor drug), digitalis (a heart regulator), and ephedrine (a bronchodilator used to decrease respiratory congestion) were all originally discovered through research on plants.

HISTORY OF HERBAL MEDICINE

Herbal medicine is the oldest form of health care known to mankind. Herbs had been used by all cultures throughout history. It was an integral part of the development of modern Pharmaceutical or medicinal practices. Primitive man observed and appreciated the great diversity of plants available to him. The plants provided food clothing shelter and medicine. Much of the medicinal use of plants seems to have been developed through observations of wild animals and by trial and error. As time went on each tribe added the medicinal power of herbs in their area to its knowledge base. They methodically collected

information on herbs and developed well-defined herbal pharmacopoeias. Indeed well into the 20th century much of the pharmacopoeia of scientific medicine was derived from the herbal lore of native peoples. Many drugs commonly used today are of herbal origin. Indeed about 25% of the prescription drugs dispensed in the United States contain at least one active ingredient derived from plant material. Some are made from plant extracts; others are synthesized to mimic a natural plant compound.

Undisputedly the history of herbology is inextricably intertwined with that of modern medicine. Many drugs listed as conventional medications were originally derived from plants. Salicylic acid a precursor of aspirin was originally derived from white willow bark and the meadowsweet plant. Cinchona bark is the source of malaria-fighting quinine. Vincristine used to treat certain types of cancer comes from periwinkle. The opium poppy yields morphine codeine and paregoric a treatment for diarrhea Laudanum a tincture of the opium poppy was the favored tranquilizer in Victorian times. Even today morphine-the most important alkaloid of the opium poppy-remains the standard against which new synthetic pain relievers are measured. Prior to the discovery and subsequent synthesis of antibiotics the herb Echinacea pursuer (which comes from the plant commonly known as purple coneflower) was one of the most widely prescribed medicines in the United States. For centuries herbalists prescribed Echinacea to fight infection. Today research confirms that the herb boosts the immune system by stimulating the production of disease-fighting white blood cells. The use of plants as medicine is older than recorded history. As mute witness to this fact marshmallow root hyacinth and yarrow have been found carefully tucked around the bones of a Stone Age man in Iraq. These three medicinal herbs continue to be used today. Marshmallow root is a demulcent herb soothing to inflamed or irritated mucous membranes such as a sore throat or irritated digestive tract. Hyacinth is a diuretic that encourages tissues to give up excess water. Yarrow is a time-honored cold and fever remedy that may once have been used much as aspirin is today.

In 2735 B.C., the Chinese emperor Shen Nong wrote an authoritative treatise on herbs that is still in use today. Shen Nong recommended the use of Ma Huang (known as ephedrine in the Western world) for example against respiratory distress. Ephedrine extracted from ephedrine is widely used as a decongestant. You'll find it in its synthetic form pseudoephedrine in many allergy sinus and cold-relief medications produced by large pharmaceutical companies. The records of King Hammurabi of Babylon (c. 1800 B.C.) include instructions for using medicinal plants. Hammurabi prescribed the use of mint for digestive disorders. Modern research has confirmed that peppermint does indeed relieve nausea and vomiting by mildly anesthetizing the lining of the stomach. The entire Middle East has a rich history of herbal healing. There are texts surviving from the ancient cultures of Mesopotamia, Egypt and India describe and illustrate the use of many medicinal plant products including castor oil, linseed oil and white poppies. In the scriptural book of Ezekiel which dates from the sixth century B.C., we find this admonition regarding plant life: "and the fruit thereof shall be for meat and leaf thereof for medicine." Egyptian hieroglyphs show physicians of the first and second centuries A.D. treating constipation with sienna pods and using caraway and peppermint to relieve digestive upsets. Throughout the middle Ages, home-grown botanicals were the only medicines readily available, and for centuries, no self-respecting household would be without a carefully tended and extensively used herb garden. For the most part herbal healing lore was passed from generation to generation by word of mouth. Mother taught daughter the village herbalist taught a promising apprentice. By the seventeenth century the knowledge of herbal medicine was widely disseminated throughout Europe. In 1649 Nicholas Culpeper wrote A Physical Directory, and a few years later produced The English Physician. This respected herbal pharmacopeia was one of the first manuals that the layperson could use for health care and it is still widely referred to and quoted today. Culpeper had studied at Cambridge University and was meant to become a great doctor in the academic sense of the word. Instead, he chose to apprentice to an apothecary and eventually set up his own shop. He served the poor people of London and became known as their neighborhood doctor. The herbal he created was meant for the layperson.

The first U.S. Pharmacopeia was published in 1820. This volume included an authoritative listing of herbal drugs with descriptions of their properties uses dosages and tests of purity. It was periodically revised and became the legal standard for medical compounds in 1906. But as Western medicine evolved from an art to a science in the nineteenth century information that had at one time been widely available became the domain of comparatively few. Once scientific methods were developed to extract and synthesize the active ingredients in plants pharmaceutical laboratories took over from providers of medicinal herbs as the producers of drugs. The use of herbs which for most of history had been mainstream medical practice began to be considered unscientific or the least unconventional and to fall into relative obscurity. Evidence of life in what comprises modern day Thailand dates back as far as 12,000 years. Much of it comes from excavated artifacts and cave drawings. Rudimentary prehistoric cave paintings were first discovered in Thailand in 1922 but in the last forty years complete figures of men, animals and geometric patterns have been reported from caves in almost every part of the country, especially the northeast. The earliest written records are from the pre-Thai cultures of Thara-wadee (550-900 AD) and Lawoh, or old Lopburi (95-1250 AD), and mainly concerned with the introduction of Buddhism to the region. During those

times, several other ethnic communities also lived in the "Land of Gold", as Thailand is believed to have been called according to ancient Indian sources.

These early people used bai larn (palm leaf) to keep written records. Palm leaf was commonly used because of its ubiquity. Each leaf had adequate space for inscribing, and could be sewn together easily and neatly so pages could be opened and read conveniently. With the exception of the alphabets and languages used, the types of palm leaf, inscription techniques and tools used in various regions of Thailand were almost the same. Aside from religious stories, such as that of the Jataka, the story of the Lord Buddha's life, the people also expressed themselves through folklore and wrote about their way of life[1, 2].

PALM LEAF MANUSCRIPTS OF SOUTHEAST ASIA

Folk law and records for traditional ways of conducting ruling systems. An example is *kotmai buhan soi sai kham* (ancient law called *soi sai kham*) by Samlid Buasisawat[5]. Jaruwan Thammawat[6] states that most of Lao folk law comes from two collections: *khamphi phra thammasat luang* (Royal ruling scripture) and *phra khamphi phra thammasat buhan Lao* (Ancient Lao ruling scripture). She cites two volumes: one complied by Maha Sila Viravongs in 1956 and one by Samlid Buasisawat in 1993. Folksong and poetry, proverb and saying, and riddle are the last types of oral literature to be presented in this course. Folksongs in Lao are called *lam*, a type of verse for singing. The words of *lam* will be examined in this section, but the performance aspect of it will be discussed under "Performances". Along with the folksong comes the Lao poetry of less complex structures. Most of them are used to tell stories. Proverbs and sayings are called *phaya* or *phanya* which means wisdom or knowledge. Most of the proverbs and saying use simple forms of poetry to deliver messages. These proverbs and sayings could be divided into several categories. They could be about religions, beliefs, proper or moral conducts of people in the society. Riddles are "traditional questions with unexpected (albeit, traditional) answers-verbal puzzles (only a few involved writing) that demonstrate the cleverness of the questioner and challenge the wit of his audience".

Historical chronicles record legendary history of the Lao people as well as some true historical accounts about what happened to the people. Examples are *tamnan phrabang* (The Legend of Phrabang Buddha Image) by Maha Sila Viravongs;[7] *prawatsat lao buhan* (Ancient Lao History) by Buaphan Thammavong;[8] *Sikhotabong* by Sai-u-koed;[9] Sikhottabong by Duangkhai Luangphasi[10]. Jaruwan Thammawat classes this type of narratives as *phuensueb* or true legend.

PALM LEAF MANUSCRIPTS OF THAILAND

Palm leaf manuscripts are an ancient document form that comprises a significant documentary heritage of the Isan people of Northeastern Thailand. These materials contain a vast amount of knowledge that can be classified into eight categories: Buddhism, tradition and beliefs, customary law, economics, traditional medicine, science, liberal arts, and history. Seventy percent of the content recorded in these palm leaf manuscripts consist of Buddhist stories and doctrine; the other 30% record local wisdom in the form of folktales, diaries, poems, ethics, customary law, rites and rituals[4].

Northeastern Thai palm leaf manuscripts vary in size. A standard palm leaf manuscript is generally 5-6 cm in width and 50-60 cm in length with 48 pages (24 leaves written on both sides). Palm leaf manuscripts can be as short as 15 cm or as long as 80 cm and can vary as to the number of pages. The people of Isan use the various sizes in different ways: the longer palm leaf manuscripts are used as textbooks to record Buddhist stories and doctrine, while the shorter ones are used as notebooks to record local wisdom related to daily life. The languages used on the palm leaf manuscripts are either local or undergoing shift (Pali, ThaiIsan, Pali-ThaiIsan, Old Thai, and Khmer); in addition, manuscripts are written in four archaic orthographies (ThaiIsan, Thai Noi, Khmer, and Old Thai). Because the length of a palm leaf manuscript is determined by its physical dimensions rather than its content, a single manuscript may record many stories, or a single story may require more than one manuscript. Furthermore, one palm leaf manuscript may be inscribed in various scripts and languages. A one-story palm leaf manuscript might also be inscribed in many literary styles the manner in which the inscribers express the story (e.g. outstanding, fine, ordinary, etc.). In order to preserve both knowledge and the manuscripts themselves, this project is exploring the most suitable method to digitize and organize the palm leaf manuscripts. In providing access the collection through the web it also promotes understanding of Isan culture. This has been an ongoing project since 2004 with funding partly provided by the Southeast Asian Digital Library Project based at Northern Illinois University Libraries.

The lists of **ancient Thai medicinal manuscripts** and **folklore legends** were discovered from Mahachai Temple Palm Leaf Scriptures, Mahasarakham, Thailand. The Mahasarakham University has addressed the ancient Thai Palm Leaf Legends Scriptures and ancient Thai Traditional Medicinal Drugs formulas Scriptures Palm Leafs to be in the system of Northeastern Thailand national inheritance in order to preserve as Thai heritage site of literature and Thai pharmacopoeia and also the Mahasarakham University has located the museum of all the scriptures inside Mahachai Temple and another site at

Faculty of Humanities and Social Sciences, Mahasarakham University, Thailand. The contents of scripture consist of thousands of Thai traditioanal medicinal Formula slocal ancient folk legends such as Sinchai, Karakhet, Praluk-Praram, Prakud-Prapan, Lum Pradak, Lum Budsaba, Lum Tao Budsaba Kumal, Buarapuntha, Lum Chandhakhat, Suriyawongse, Lumchumpubordi, Nook Krajork, Linkum Linthong, Suwanchiwaha, Tao Sowat, Sriton, Sritonmanora, Praya khun kark, Chumpaseeton,Lumtangon, Mahawongse, Moonkitti, Khuntung, Pa Daeng Nang Ai, Tao Kumkadum, Lumphumhom, Lumpraya Kaikaew, Takatan Mookum, Shiangmiang, Taohua Koh Loh, Tao Hua,Koorunang Aue, Suthanu, Suthanu Nutharak, TaoMaMui, HongHin, Lumkhun Maeng, Lumprabu, Kumprapee noi, Lum SuwanMuka,Nang Aurapim, Tao Bae, Tao Yee Tao Ba, Buahome-BuaHaew-Buahong, Suchawannachak Kumal, Srisuwan Tomkum-Praya Srisao, Lumtangkhaew, Bachiaeng, Tao Punya, LumBuaWong, Puttasaen, Lum Nisaimaneechieng, ect..

HERBAL IMAGES I NSPIRED BY THAILAND FOLK TRADITIONS

Ancient Thai History and the relevance to contemporary Artistic fields. The representations forth with deals with a combination of ancient texts and visual imagery linking ancient records and responding to them. This requires a knowledge of texts from the period of 1400-1600 AD. During the advent of printing in the European the medieval period much was done to disseminate knowledge in both text and woodcut printed and imagery. It appears that a great deal of knowledge was safeguarded by members of the Buddhist community. These were notated in Thai folk language however many involve a great deal of bi-lateral suggestions worthy of investigation. The material presented offers a possible solution to this disparity.

HERBAL MEDICINE TODAY

The World Health Organization (WHO) estimates that 4 billion people 80% of the world population presently use herbal medicine for some aspect of primary health care. Herbal medicine is a major component in all indigenous people's traditional medicine and a common element in Ayurvedic homeopathic naturopathic traditional oriental and Native American Indian medicine. WHO notes that of 119 plants-derived pharmaceutical medicines about 74% are used in modern medicine in ways that correlated directly with their traditional uses as plant medicines by native cultures Major pharmaceutical companies are currently conducting extensive research on plant materials gathered from the rain forests and other places for their potential medicinal value.

Today the U.S. Pharmacopoeia, with its reliance on herbal compounds has been all but forgotten. Most modern physicians rely on the Physician's Desk Reference an extensive listing of chemically manufactured drugs. It is important to note that each entry in this enormous volume in addition to specifying the chemical compound and actions of a particular drug also includes an extensive list of contraindications and possible side effects. Rather than using a whole plant pharmacologists identify isolate extract and synthesize individual components thus capturing the active properties. This can create problems however. In addition to active ingredients plants contain minerals vitamins volatile oils glycosides alkaloids, bioflavonoid and other substances that are important in supporting a particular herb's medicinal properties. These elements also provide an important natural safeguard Isolated or synthesized active compounds can become toxic in relatively small doses; it usually takes a much greater amount of a whole herb with all of its components to reach a toxic level. Herbs are medicines however and they can have powerful effects. They should not tee taken lightly. The suggestions for herbal treatments in this book are not intended to substitute for consultation with a qualified health care practitioner but rather to support and assist you in understanding and working with your physician's advice.

Substances derived from the plants remain the basis for a large proportion of the commercial medications used today for the treatment of heart disease high blood pressure pain asthma and other problems. For example ephedrine is an herb used in Traditional Chinese Medicine for more than two thousand years to treat asthma and other respiratory problems. Ephedrine the active ingredient in ephedrine is used in the commercial pharmaceutical preparations for the relief of asthma symptoms and other respiratory problems. It helps the patient to breathe more easily. Another example of the use of an herbal preparation in modern medicine is the foxglove plant. This herb had been in use since 1775. At present the powdered leaf of this plant is known as the cardiac stimulant digitalis to the millions of heart patients it keeps alive worldwide.

There are over 750,000 plants on earth. Relatively speaking, only a very few of the healing herbs have been studied scientifically. And because modern pharmacology looks for one active ingredient and seeks to isolate it to the exclusion of all the others most of the research that is done on plants continues to focus on identifying and isolating active ingredients rather than studying the medicinal properties of whole plants. Herbalists however consider that the power of a plant lies in the interaction of all its ingredients. Plants used as medicines offer synergistic interactions between ingredients both known and unknown.

The efficacy of many medicinal plants has been validated by scientists abroad from Europe to the Orient. Thanks to modern technology, science can now identify some of the specific properties and interactions of

botanical constituents. With this scientific documentation we now know why certain herbs are effective against certain conditions. However almost all of the current research validating herbal medicine has been done in Germany, Japan, China, Taiwan, and Russia. And for the most part the United States Food and Drug Administration (FDA), which is responsible for licensing all new drugs (or any substances for which medicinal properties are claimed) for use in the United States does not recognize or accept findings from across the sea. Doctors and government agencies want to see American scientific studies before recognizing the effectiveness of a plant as medicine. Yet even though substantial research is being done in other countries drug companies and laboratories in the United States so far have not chosen to put much money or resources into botanical research. The result is that herbal medicine does not have the same place of importance or level of acceptance in this country as it does in other countries. The Area of **Herbal Folk Remedies in Thailand**, it has been proven through many centuries that various herbs can benefit the recipient yet also may be detrimental if not consumed in the proper manner. By proper manner it is important to regulate the active ingredients or pharmaceutical potential of certain groups of herbs using a combination of current studies into this discipline. Briefly; there are herbal remedies which can vary in effectiveness and are usually controlled through oral traditions and may move to current practices. This requires a botanical/chemical/medicinal analysis which appears to be fertile ground in research studies. My area of study involves various faculties within Mahasarakham University which is facilitating this ongoing research. The study approaches Thai traditional herbal formula has been used in previous old time and currently used in many indications of preparations in Thailand and is concerned with interpreting past Thai herbal formula such as antihelmintic preparations among 1500 of Thai traditional preparations in Thailand in order to make a connection and implement a series of studies in this most interesting field.

Administering herbal treatment: Herbs and prepared herbal compounds are available in different forms each of which has its own particular characteristics. Your health food store will have individual herbs as well as complex herbal formulations, including raw herbs, tinctures, extracts, capsules, tablets, lozenges, and ointments. Here's a look at what's available.

Tinctures: If the label says tincture the preparation contains alcohol. In a tincture alcohol is employed to extract and concentrate the active properties of the herb. Alcohol is also a very effective natural preservative. Because a tincture is easily assimilated by the body it is a very effective way to administer herbal compounds. Tinctures are concentrated and cost-effective. However, the full taste of the herb comes through very strongly in a tincture. Children - and adult's too-may find the taste of some herbs unpleasant. Goldenseal for example is bitter-tasting. Another concern when using tinctures is the presence of the alcohol. If you wish to lessen the amount of alcohol in a tincture before giving it to your child mix the appropriate dose with one-quarter cup of very hot water. After about five minutes most of the taste of the alcohol will have evaporated away and the mixture should be cool enough to drink.

Extracts: Extracts can be made with alcohol like tinctures or the essence of the herb can be leached out with water. When purchasing a liquid extract of an herb, the only way to be certain of the extraction process (alcohol or water) is to read the label. Extracts offer essentially the same advantages and disadvantages that tinctures do. They are the most concentrated form of herbal treatment and therefore the most cost-effective. They are easy to administer but have a strong herbal taste.

Capsules and tablets: Capsules and tablets contain a ground or powdered form of raw herb. In general there seems to be little difference between the two in terms of clinical results. Because finely milled herbs degrade quickly, it is important that herbs be freshly ground and then promptly encapsulated or tablet within twenty-four hours of being powdered. When making your selection read the label to make sure fresh herbs have been used in the product. With the exception of certain herbal concentrates in capsule form both capsules and tablets tend to be much less strong and potent than tinctures and extracts.

Teas: There are many delicious blends of herbal teas on the shelves of your health food store they need no introduction here. You'll find loose herbs ready for steeping herbal formulations aimed at specific conditions and convenient pre-bagged teas. Some are just for sipping some are medicinal. When your child is ill a comforting cup of herbal tea (medicinal or not) is a wonderful way to give additional liquids.

Lozenges: Herbal-based nutrient-rich, naturally sweetened lozenges are readily available in most health food shops. You'll find cold-fighting formulas natural cough suppressants some with decongestant properties. Many are boosted with natural vitamin C. Choose lozenges made without refined sugar.

ANCIENT MEDICINAL PALMLEAF MANUSCRIPTS VOLUME 5

Medicinal herbs can be classified into several categories involving roots, leaves, branches, bark, stems, fruits, seeds which can be extracted in specific methods depending on polarity, solubility, partition coefficient, and their toxicology of plants. The active ingredients are very important including colours, scents, tastes which can be identified in medicinal treatment in various kinds of symptoms.

THE COLLECTION OF MEDICINAL PLANTS

Most of medicinal preparations are derived from plants, animals,minerals which can be collected during the highest concentration of chemical ingredients inside the plant itself. These quantities of active ingredients have exhibited certain properties depending upon seasons of the year, demographics,correct climate and maturity of the plants. Normally root or underground stem parts will be collected during the highest maturity of the plants. Sometimes during the fading of leaves and fallen flowers will be collected at a full growth period. Stems and barks will be collected between the summer and the rainy season. Peeling of the barks should be done carefully from the small branches not from the main stem. Chemical and pharmacological ingredients are normally divided into two categories as follows: 1. **Primary metabolites** are mainly found in all plants and are synthesized by Photosynthesis such as fats, proteins, color pigments and inorganic salts. 2. **Secondary metabolites** are compounds which possess the medicinal actions within the constituents of herbs. There are some enzymatic and biological concerns in these areas which can produce Alkaloids, Anthraquinones and essential oils which should give therapeutic actions in the treatment of various diseases. **Alkaloids** are an organic substances which is a nitrogen based compound. Alkaloids normally have a bitter taste, water insoluble and dissolves in organic solvents such as reserpine, quinine and morphine. **Glycosides** consist of 2 structures of sugar (glycone) and non-sugar (aglycone) contents. Aglycone is normally an organic compound which usually has high pharmacological actions such as cardiac glycosides used for a cardio tonic agent and stimuli of blood flow. Anthraquinone glycoside are used for a laxative and sapponin glycosides for producing steroidal substances, and flavonoid glycoside for giving high anti oxidant action. 3. **Volatile oils** or **essential oils** are obtained from a steam distillation process which has specifics odors. 4. **Tannin** has a metallic taste and is an acid which can precipitate the protein and giving the bactericidal action. This research was aimed at studying the chemical contents and therapeutic actions of Thai Herbal medicine from ancient Thai medicinal palm leaf manuscripts volume 5 and will be useful to develop Thai traditional medicinal formulae which is certified by Thai FDA, Ministry of Public Health. Future research including pharmacokinetics of herbs and clinical pharmacological modes of actions of herbs are of interest to be explored. Herbs can be tested for their therapeutic action for daily uses. If the symptoms are not relieved, we have to replace them with other kind of herbs. The benefits of Thai medicinal herbs are very affordable and also lower in toxicity than modern medicine. The herbs can be grown at private home as in a kitchen garden. Thai people have dispensed the sources of herbs to cure aliments since ancient times by folk herbalists. **Thai traditional drug volumetric and quantitative measurement units** one cup is equal to 25 ml, one teacup is equal to 75 ml, one glass is equal to 250 ml, one tea spoon is equal to 5 ml, one tablespoon is euqal to 15 ml.

ANTI HYPERLIPIDEMIC DRUGS

1. Botanical Name is *Hibiscus sadariffa* L. Common name is **Jamican Sorel Rosella, Krachiab.**

Preparations: Fresh fruits, seed, flower have been traditional indications for decreasing cholesterol, LDL, HLDL and Triglycerides. Take petals or sepals and dry them, then triturate as a powder form.Mix one teaspoonful of powder (3 gram) with hot boiling water (250 ml) and drink at red clear portion of the tisane 3 times daily. Red Krachiab has Anthocyanin and used as a food dye.

2. Botanical Name is *Carthamus tinctorious* L. Common name is Safflower, False Saffron, Saffron Thistle, Kumphoi Indications of Therapeutic action **Anti hyperlipidemia drug.**

Preparations: Using flowers, Take petals or sepals and dry them, then triturate as a powder form. Mix one teaspoonful of powder (3 gram) with hot boiling water (250 ml) and drink at red clear portion of the tisane 3 times daily. Normally Thai people use this in the form of tisane. Chemical ingredients: **Carthamin, Sapogenin, Carthamone, Safflonin A.**

3. Botanical Name is ***Passiflora laurifolia* Linn.** (Passifloraceae) **Common name: Passion fruit, yellow granadilla, Saovaros.**

Preparation: Squeeze the juice and mix with sugar. It will be ready for drinking juice to decrease hyperlipidemia condition.

4. Botanical Name is ***Hibiscus sabdariffa* Linn (Malvaceae) Common name** is **Sorrel Rosella, Krachiab Dang** (Thai).

Herbal Preparation: Take the immature fruits as a condiment or take as a dry powder form of ***Hibiscus sabdariffa* Linn**. And mix ***Hibiscus sabdariffa* Linn**. With hot water as a drinking tisane.

5. Botanical Name is ***Xanthium strumarium* Linn. (Compositie) Common name** is **Cocklebur, Burweed.**

Herbal Preparation: Take fresh 120 gram root of ***Xanthium strumarium* Linn** then crush them and boil with 3 glasses of hot water for 20 minutes as a drinking water before breakfast and dinner.

6. Botanical Name is ***Leucaena leucocephala* (Lamk.) (LEGUMINOSAE) Common name** is **white popinac, Lead Tree, Wild Tamarind, Krathin.**

Herbal Preparation: Take ***Leucaena leucocephala*** seed and triturate them or fry it without oil in pan. Fresh top stems and young fruits can be eaten with chilli pickles.

7. Botanical Name is ***Acacia farnesiana* Wild. (MIMOSACEAE) Common name** is Krathin ted.

Herbal Preparation: Take ***Acacia farnesiana*** seed and triturate them or fry it without oil in pan and it can be eaten with chilli pickles.

8. Botanical Name is ***Allium sativum*** **L. (Alliaceae)**

Common name is **Common Garlic, Allium, Garlic,**

Herbal Preparation: Take fresh galic 3-5 pieces daily by slicing them in small pieces, the amount should be 2 teaspoonful (10 gram) of garlic or take as side dishes.

9. Botanical Name is ***Ocimum sanctum*** **Linn. (Labiatae)**

Common name is **Basil, Kraprao**

Herbal Preparation: Dry leaves can be triturated and used as tisane for drinking medication to use as hypoglycemic drug.

10. Botanical Name is ***Brassica oleracea*** **L. *var. capitata*** **L. (CRUCIFERAE)**

Common name is **cabbage, Kralumpree**, Common Cabbage, White Cabbage, Red Cabbage

Herbal Preparation: use raw and cooked cabbages.

11. Botanical Name is ***Salacia chinensis*** **L. (CELASTRACEAE)**

Common name is Khampang jetchun

Herbal Preparation: Boil leaves or stem part and filter it. Take liquid portion as liquid medication.

12. Botanical Name is ***Scoparia dulcis*** **Linn. (SCROPHULARIACEAE)**

Common name is Sweet Broomweed, Macao tea, Krudnam

Herbal Preparation: Take stems and leaves one portion and 3 glasses of water and boil them for 30 minutes then drink before breakfast daily to control blood sugar.

13. Botanical Name is: Cissampelos pareira L. var. hirsuta (Buch. ex DC.) Forman (MENISPERMACEAE)

Common name is Krung Khema

Herbal Preparation: Take stem and leaves for ten portions and boil them for 30 minutes then drink before breakfast daily to control blood sugar.

14. Botanical Name is ***Syzygium aromaticum*** **(L.)** (Myrtaceae)

Common name is ***Caryophyllus aromatica*** **L.; *Eugenia aromatica*** **(L.) Baill; *E.Caryophylla*** **(Spreng.) Bullock et Harrison; *E.caryophyllata*** **Thunb., Clove Tree**

Herbal Preparation: Use floral parts for cooking as a condiment.

15. Botanical Name is ***Coffea arabica*** **L. (Rubiaceae)**

Common name is **kofi, coffee, koffie, Brazilian coffee, Arabian coffee.**

Herbal Preparation: Toast ***Coffea arabica*** **L.** in the pan and grind them then make as hot tisane for drinking.

16. Botanical Name is ***Saussurea lappa*** **Clark** (COMPOSITAE)

Common name is Costus, Kotekradoug

Herbal Preparation: Take fresh root 90-120 grams, then crush them and boil for 30 mintutes in purified water. Drink it before meal.

17. Botanical Name is ***Musa sapientum Linn.*** (Musaceae)

Common name is Banana, Klua

Herbal Preparation: Take flower or fruit for cooking.

18. Botanical Name is ***Oryza sativa*** **L. (POACEAE)**

Common name is **rice, Khao**

Herbal Preparation: Take root portion and make it as drinking liquid.

19. Botanical Name Triticum vulgare Vill. (GRAMINEAE)

Common name is Bread wheat,khao sali

Herbal Preparation: Take grain portion and mix with hot water as tisane.

20. Botanical Name is ***Zea Mays*** **L.** (Gramineae)

Common Name is Maize, **corn, Khao pote**

Herbal Preparation: Take 100 gram of young flower of corn stem,then boil it and drink at breakfast and dinner.

21. Botanical Name is ***Artocarpus heterophyllus*** **Lam.** (MORACEAE)

Common name is Jackfruit Tree

Herbal Preparation: Take mature leaves for 5-10 pieces, then boil them in 3 glasses of water for 30 mintutes. Then drink it before a meal at morning and at night.

22. Botanical Name is ***Zingiber officinale*** **Roscoe** Zingiberaceae

Common Name is Ginger, King

Herbal Preparation: Take underground mature stems of ginger and macerate with water, then squeeze it and filter the solution. Take the liquified parts, mix with water and consume the solution 3 times daily.

23. Botanical Name is ***Cassia fistula*** **L.** (LEGUMINOSAE-Caesalpinioideae)

Common Name is Golden Shower, Indian Laburnum, Pudding-pine Tree, Purging Cassia, Koon.

Herbal Preparation: Take 90-120 grams ***of Cassia fistula*** **L**. fresh root นำ and pulverize, then boil with 3 glasses of water for 30 minutes. Take as liquid medication for lowering blood sugar daily before morning and evening meals.

24. Botanical Name is ***Apium graveolens*** **linn.** (Umbelliferae)

Common Name is Celery, Kinchai

Herbal Preparation: Use leaves, stems and boil with water and then squeeze and filter it into a solution and drink before meals 2 times daily.

25. Botanical Name is ***Bixa orellana*** **L**. (BIXACEAE)

Common Name is Annatto Tree, Khamsad

Herbal Preparation: Use 110-120 grams of seeds or 90-120 grams of roots. then mill them and boil with water to be ready for administration before meals 2 times daily.

26. Botanical Name is ***Daucus carata*** **Linn**.

Common Name is Carrot

Herbal Preparation: Use roots for cooking salads or stews for soups.

27. Botanical Name is ***Sesbania grandiflora*** **(L.) Desv.** (Leguminosae-Papilionoideae).

Common Name: Agasta, Sesban, Vegetable humming bird, Kaedang

Herbal Preparation: Use stem and bark one portion and boil with water for liquid medication. Or bring flower and cook at low heat to boil and take it with chilli pickle.

28. Botanical Name is ***Albizzia Odoratissima*** **(lebbeckoides Benth)** (MIMOSEAE)

Common Name is **Kang**

Herbal Preparation: Use bark 3-4 pieces then boil it with water and drink it before morning and dinner.

29. Botanical Name is ***Michelia champaca*** **Linn.** (MAGNOLIACEAE)

Common Name is **Jumpa**

Herbal Preparation: Use 90-120 grams of fresh root and mill it then boil with water in 3 glasses of water for 30 minutes. Drink the solutions before meals 2 times daily.

30. Botanical Name is ***Barringtonia Acutangula*** **Gaerth-*Barringtonia edaphocarpa*** (BARRINGTONIACEAE) **Common name** is Jigna .

Herbal Preparation: Use 90-120 grams of fresh root and mill it then boil with water in 3 glasses of water for 30 minutes. Drink the solutions before meals 2 times daily.

31. Botanical Name is ***Camellia sinensis Ktze.*** **var. assamica Kitamura** (Theaceae)

Common name is Tea, Green tea, Black tea, Cha

Herbal Preparation: Use dry or fresh leaves then boil for 30 minutes. Drink the solutions before meals 2 times daily.

32. Botanical Name is ***Cassia alata (L.)*** **Roxb.** (Leguminosae)

Common name is Ringworm Bush, Chumhedthed

Herbal Preparation: Use dry or fresh leaves then boil for 30 minutes. Drink the solutions before meals 2 times daily.

CONCLUSIONS AND SUGGESTIONS

The result of this research has revealed the uses and the compositions of traditional Thai herbal medicine from volume 5 which were extracted from Mahachai Temple Palm leaf manuscripts by Mahasarakham University researchers, Thailand. Further study will involve the exploration of the area of drug potency, efficacy, safety, adverse reactions, drug interaction, side effects etc., and also the perspective investigations which may involve the exploration of the benefits in combining Thai historical Palm leaf medicinal manuscripts with the current modern pharmaceutical techniques in order to create an advanced resource for new formulation of drugs. The study of this research directly links to traditional and modern medicine and may encourage pharmacists and physicians in producing a new approach to alternative medicine in the next decade. Future research including pharmacokinetics of herbs and clinical pharmacological modes of actions of herbs are of interest to be explored. Herbs can be tested for their therapeutic action for daily uses. If the symptoms are not relieved, we have to replace them with other kinds of herbal preparations. The benefits of Thai medicinal herbs are affordable and also lower in toxicity than modern medicine. The herbs can be grown at private homes as in a kitchen garden. Thai people have dispensed the sources of herbs to cure aliments since ancient times by folk herbalists.

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FIGURES

Figure 1
Diospyros Decandra Lour
Source: http://c.doa.go.th/hrc-cpn/index.php?option=com_content&view=article&id=82:2011-06-07-09-53-36&catid=35:2011-02-22-09-59-01&Itemid=77

Figure 2
Irving Malayana (Olive)
Source: http://thailand-an-field.blogspot.com/2009/12/blog-post_6182.html

Figure 3
Diospyros Ehretioides Wall
Source: http://www.qsbg.org/database/botanic_book%20full%20option/Search_detail.asp?Botanic_ID=809

Figure 4
Spondias Mombin Linn
Source: http://www.floridahillnursery.com/products_new?disp_order=5&page=6&zenid=bnuq4lobtqk1fkam4q9tuevl77

Figure 5
Sesamum Indicum Linn
Source: http://www.rakbankerd.com/kaset/view.php?id=42&s=tblplant

Figure 6
Imperata Cylindrica Beauv
Source: http://florabase.dec.wa.gov.au/browse/profile.php/453

Figure 7
Sophora Exigua Craib
Source: http://science.sut.ac.th/gradbio/florae/pg183a.html

Figure 8
Streptocaulon Juventas Lour
Source: http://thrai.sci.ku.ac.th/node/2168

Figure 9
Kaempferia Galangal Linn
Source: http://naturemiracle.blogspot.com/2010/01/scientific-name-kaempferia-galanga-linn.html

Figure 10
Caesalpinia Sappan Linn
Source: http://www.csamunpri.com/herbals/merit/%E0%B8%AA%E0%B8%A1%E0%B8%B8%E0%B8%99%E0%B9%84%E0%B8%9E%E0%B8%A3-%E0%B8%9D%E0%B8%B2%E0%B8%87-735.html

Figure 11
Allium Sativum Linn
Source: http://www.sahavicha.com/?name=knowledge&file=readknowledge&id=1433

Figure 12
Naringi Crenulata (Roxb.)
Source: http://www.bspwit.ac.th/S-PROJECT/WEB-DESIGN/WEB-DESIGN%202552/Doungjai%20Khamtead/krajae.html