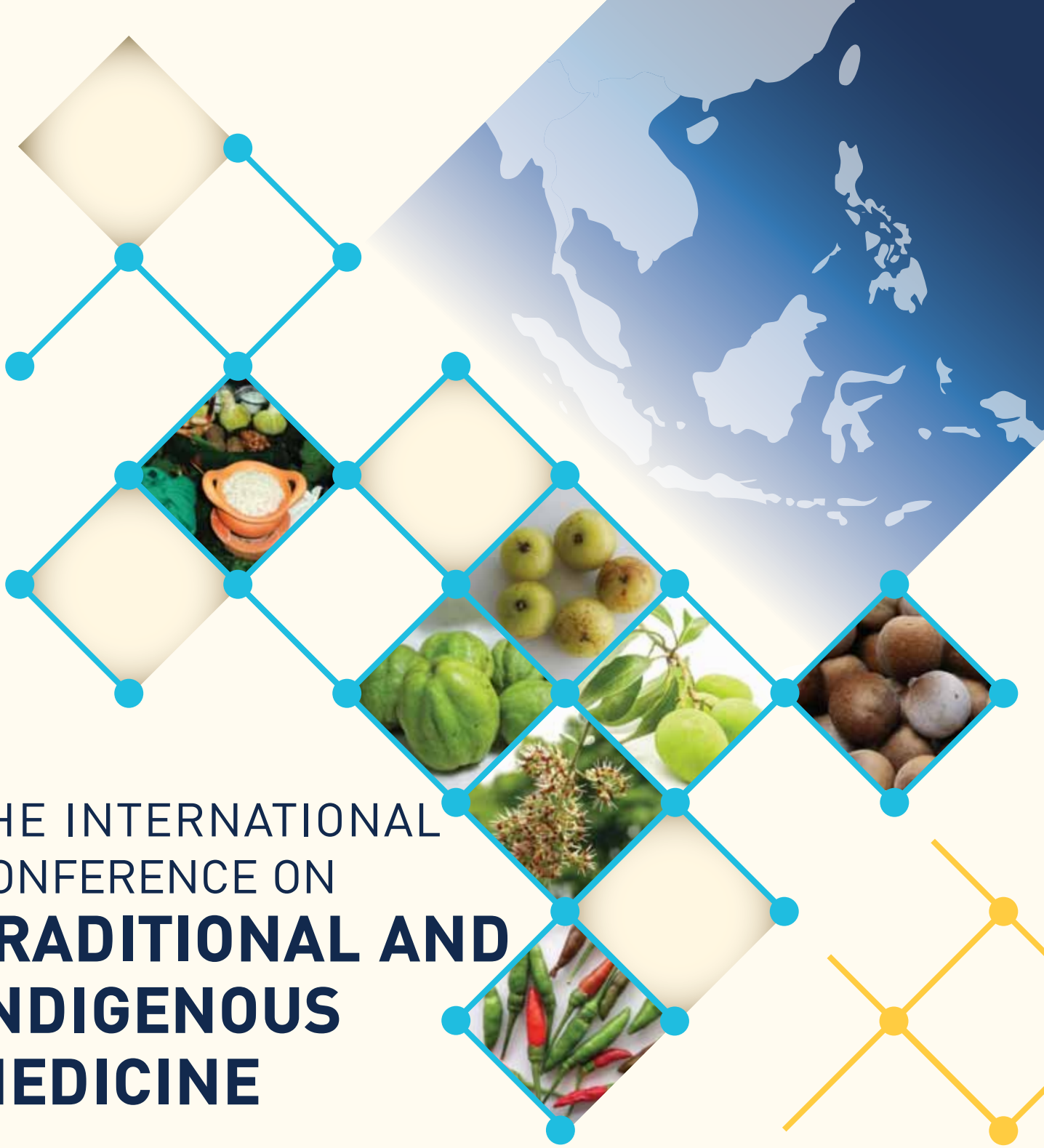

THE INTERNATIONAL CONFERENCE ON

TRADITIONAL AND INDIGENOUS MEDICINE

4 - 5 SEPTEMBER 2015

PHOENIX ROOM 5 - 6
IMPACT EXHIBITION & CONVENTION CENTER
NONTHABURI, THAILAND

ABSTRACT BOOK

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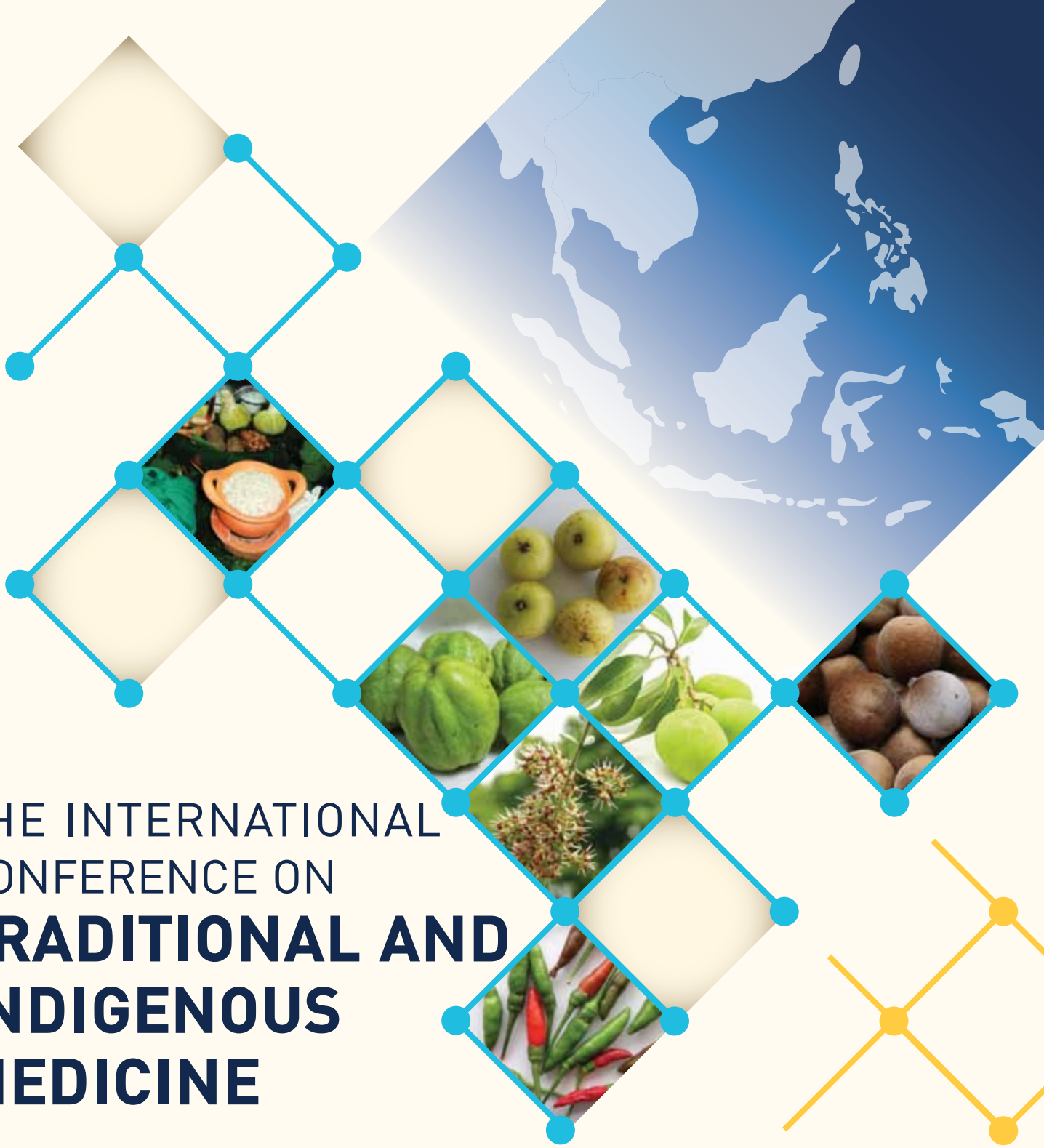

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DEPARTMENT OF THAI TRADITIONAL & COMPLEMENTARY MEDICINE
MINISTRY OF PUBLIC HEALTH
THAI TRADITIONAL MEDICAL KNOWLEDGE FUND

CONTENTS :

International Conference on Traditional and Indigenous Medicine

4-5 September 2015
Nonthaburi, Thailand

Southeast Asian and East Asian Nations have a long history of traditional knowledge of health care that evolve throughout each country's history. In many countries, such traditional heritage has developed into the systems of traditional medicine (TM) that are still practiced by licensed traditional practitioners as a form of service provided in complementary with modern medicine or as integrative medicine in public and private health care system. In addition to traditional medicine, in several Asian countries, especially in the Mekong Basin, indigenous (IM) or folk medicine and folk healers still play a significant role in the community health care as their tacit knowledge on health care is well respected and recognized by people in the community.

Department of Thai Traditional and Complementary Medicine, Ministry of Public Health (DTTCM), Thailand is therefore organizing the **International Conference on Traditional and Indigenous Medicine** during 4-5 September 2015 to bring together traditional medicine doctors and folk healers and researchers in this field from countries in Asia to come to exchange their knowledge and share their experience.

The main objectives of the Conference are:

- To build a platform where people working in traditional medicine & indigenous medicine can meet and share knowledge on the subject and establish research collaboration,
- To promote evidence-based traditional and indigenous medicine for possible future integration into the public health service system
- To promote mutual recognition of traditional medicine & indigenous medicine of neighboring countries
- To exhibit and showcase of traditional and indigenous medicine in ASEAN

The International Conference on Traditional and Indigenous Medicine is held in Phoenix Rooms 5-6 IMPACT Convention & Exhibition Center during 3-5 September 2015. Concurrently, Department of Thai Traditional and Complementary Medicine and allied network will also organized **the 12th National Herbs Expos** during 2-6 September 2015 at Halls 6-7-8 opposite the conference venue and **the 7th Meeting on Indigenous Medicine in the Mekong Basin** during 1-3 September 2015 at the same conference venue. Hence, participants of the conference will experience exhibits of Thai traditional medicine and traditional medicine and alternative medicine of various countries and many herbal products as well as showcase of indigenous medicine practices from the Mekong Basin.

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The International Conference on Traditional and Indigenous Medicine

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Program of
The International Conference on Traditional and Indigenous Medicine

4-5 September 2015
Phoenix Rooms 5-6, IMPACT Exhibition and Convention Center
Nonthaburi, Thailand

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09.30 – 10.00	**Keynote Address on "Health Issues: Past and Present"** by H.E. Mr. Kasem Wattanachai, Privy Councillor	
Session 1: Traditional medicine knowledge: protection and knowledge management		
10.10 – 10.30	**Keynote lecture on "Current Situation on the Protection of Traditional Medicine Knowledge in China"** Prof. Pei Shengji Kunming Institute of Botany Chinese Academy of Sciences, People's Republic of China	10
10.30 – 10.50	**Keynote lecture on " DNA Barcoding of Medicinal Plant Materials in Traditional Medicine"** Assoc. Prof. Dr. Suchada Sukrong Department of Pharmacognosy and Pharmaceutical Botany Faculty of Pharmaceutical Sciences, Chulalongkorn University, Thailand	17
10.50 – 11.10	**Documentation of Philippine Traditional Knowledge and Practices on Health, Disease and Healing** Ms. Emeline Rose Mariano Philippines Institute of Traditional and Alternative Health Care (PITAHC) Philippines	18
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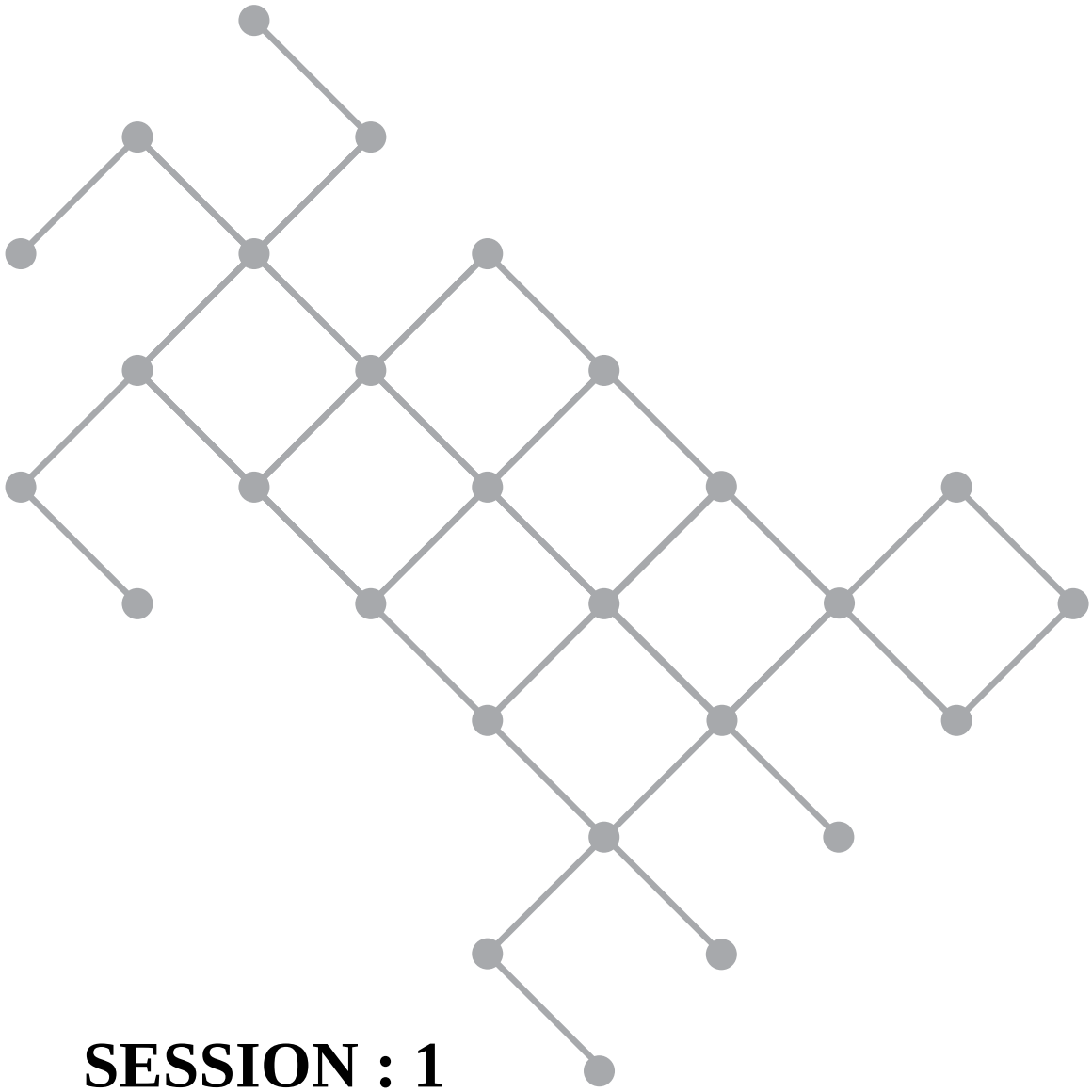
POSTER PRESENTATION



SESSION : 1

TRADITIONAL MEDICINE KNOWLEDGE : PROTECTION AND KNOWLEDGE MANAGEMENT

KEYNOTE LECTURE

Current Situation on the Protection of Traditional Medical Knowledge in China

Pei Shengji

Professor, Kunming Institute of Botany, Chinese Academy of Sciences, Kunming 650201, China

Abstract

Use of traditional medicine by Chinese Society has been extended from ancient time to modern societies for thousands of years. Today, traditional medicine is believed and relied upon by a major part of the country's population for primary healthcare needs from clinic treatment to self health care maintenance. Over the past half century, China experience rapid economic development and environment changes. Significant progress has been made in protection and development of traditional and indigenous medicines. At present, traditional medicine plays very important role in the public health care system of China, and as an important part of major industry and agriculture in building up the national economy. The impact of modern development and changes on health care system, as well as rapid disappearing of traditional and indigenous medical knowledge and medicinal plants all are seen as country wide situation and challenges that we face today in China. Protection of traditional and indigenous medical knowledge is a common concern all over China. This paper presents a general review on current situation pattern of the protection of traditional medical knowledge in China. Perspectives on the future development trends of traditional medical knowledge transmission and suggestions for improving the current trends are also proposed for discussion.

Key words: traditional medical knowledge, medicinal plants, knowledge transmission, challenges, protection.

Content

1. Introduction

Use of herbal medicine in China represents a long history of human interaction with environment. Written accounts testify to the use of Chinese herbals for medicinal purposes can be traced back to 5,000 years ago, and Shen-Nongs book is suggested to be one of the earliest sources of traditional knowledge on the use of herbals; it comprises 365 plants, animals, and minerals useful as medication from the period of Shen-Nong (3,000BC) (Pei, 1987, 2001). The recent studies on Dai medical culture suggested that the earliest Palm leaf records on Dai herbals was in 3,000years ago (Society of Xishuangbanna Dai Studies, 2014).

Traditional management of medicinal plants and practices of indigenous medicine are built on the basis of indigenous knowledge. There is a long tradition in the traditional societies of the Mekong Region, of using medicine plants for both preventive and curative health care; local

people have developed reliable knowledge and effective methods to identify, harvest, utilize, maintain and preserve medicinal plants and associated traditional medical knowledge for their health care and their habitats for sustainable use.

Over the last half century, the transition from centuries of isolation to intense interaction with the outside world since 1960's, the acceleration of globalization has been rapid and abrupt. Traditional system of medical knowledge, including traditional medicine and indigenous medicine has disintegrated in many areas of the region including China. Modern life and cultural changes, and access to modern allopathic medicine and improved health care facilities, has resulted in population growth. This has causes changes in consumption patterns of medicinal plants among local societies, from home and local use in small quantities to massive harvesting for marketing in large quantities, for instance medicinal Orchids, Rauwalfia, Dracaena, the Dragon-blood tree and Paris herbals etc., on the other hand, population growth has also caused changes in land and resource maintenance systems resulting not only in uncontrolled over-harvesting of wild medicinal plants and loss of traditional knowledge, but also massive changes on forest vegetation, for example, in Xishuangbanna area, 47% of land area below 900meters above sea level has been occupied by Rubber plantations, which resulted many medicinal plants disappearing and loss of conservation traditions. The impact of social, economic and environmental changes on traditional medical knowledge is enormous and profound in Chinese history.

2. Transmission of Traditional Medical Knowledge in China

Traditional medical knowledge in China is composed by three groups that are: Traditional Chinese Medicine (TCM), Traditional Ethno-Medicine (TEM) including Tibetan Medicine, Mongolian Medicine, Uyghur Medicine and Dai Medicine, as well as other Ethno-Medicines of Miao, Yao, Hani, Zhuang and traditional medicines used by other ethnic minorities in China, and folk medicine of community common uses. All of these traditional medical systems have been practiced for thousands years representing rich indigenous medical knowledge in literature records and oral traditions, for example, TCM Materia Medica books found are over 2000 Volumes; The Dai medicine have recorded 1,776 species of plants and animals for medicine and some 7,000 recipes used in 10 traditional therapies for the treatment of 96 kinds of illness in Xishuangbanna.

At present, mechanism of transmission of traditional medical knowledge in China can be concluded into 4 major approaches that are:

1) Handing down in the family from generation to generation;
2) Transmission from masters or teachers to apprentice who are not relatives;
3) Self-study by traditional medical practitioners;
4) Educated by modern traditional medical schools.

According to field survey on transmission of indigenous medical knowledge in China conducted in 2008, current situation and trends of transmission and inheritance of indigenous medical knowledge of the ethnic groups of Dong, Miao, Yi, Mongolia and Tibetan in China is not optimistic and even on the crisis in some aspects of the transmission situation, the study reveals that the main factors of crisis of indigenous medical knowledge are three, one is age of

the medical practitioners are getting old and no more younger people interested in traditional medicine resulting a big gap of medical knowledge transmission; another factor is decreasing of the number of traditional medical practitioners. For example, in Xishuangbanna the Dai medical practitioners was decreased from 1,000 in 1960's to 200 in 2014; the third fact is the culture changes, due to the introduced modern medicine become a main stream, traditional medicine is marginalized, especially the intrinsic impact from customary laws, languages and mechanism of indigenous medical knowledge transmission (Zhao & Xue, 2008).

The GMR is one of the rich biodiversity regions in the world tropics, where the plant diversity and traditional medical knowledge diversity are met in large human inhabited region. From ethnobotanical point of view, the medicinal plant richness is co-related to both plant diversity and medical cultural diversity. However, today global biodiversity is under threat, there are 50,000 medicinal plants recorded in the world of which 20 percent are threatened (Hamilton A. C, 2004); IUCN (2004) evaluated that 4,400 plant species of China are threatened, which is 15 percent of the total flora of China. Government of China launched (1999) the list of priority protection plant 393 species, of which 101 species are medicinal plants. Medicinal plants constitute a major component of global biodiversity which close links to human healthcare and community livelihoods. The Xishuangbanna Dai Autonomous Prefecture located in middle Mekong basin, has a land area of 19,220km² and 400,000 inhabitants, of which 390,000 are belonging the Dai Minority making up 40 percent of the indigenous people in the area. A total of 4,347 plant species are recorded of which 1,776 spp. are medicinal plants used in traditional Dai medicine. Dai medicine has a long history and even today still provides primary health care for many Dai people living in 660 villages in the area today. Over the last two decades, modern development in particular un-controlled expansion of rubber plantations has accelerated the loss of forest cover and medicinal plant, it is believed that about 30 percent of medicinal plants used in Dai medicine is threatened and difficult to find in their habitat areas. At the same time, associated medical knowledge is being rapid lost among the Dai population, similar situation is found among other ethno traditional medical knowledge in China. The impact of modern development and changes on health care systems rapid disappearing of traditional and indigenous medical knowledge and associated medicinal plants are seen as country wide situation and challenges that we face today in China.

3. Strategy and Action on Protection of Traditional Medical Knowledge in China

Protection of traditional medical knowledge is a systematic operation involving strategies and actions of political, socio-economic, science & technological and environmental issues and reform. In China, the most important strategy adopted by government on protection of traditional medical knowledge can be concluded into the following five areas:

1) Policy and law enforcement

As early as the year 1956, the first National Constitution of China has made a legal statement in recognizing and supporting to development of traditional Chinese medicine as public healthcare service in the country, in 1986 the State Administration of Traditional Chinese Medicine was established, in the followed years, Traditional medicine protection policies and regulations have been launched by government including TCM and TEM ranging from law and policy on medical doctor and hospital registration; Patent Law (1992): Publication copyright law (1991);

Trade Mark Law (1983) and Geographic Indicator products; "National strategy outline on IPR" (2008) regulates to establish TCM IPR Protection system, support and promote TK study. inheritance and development; and policy on standardization of traditional medicine, policy on conservation of medicinal plants, and policy on modernization of traditional medicine etc. all of these law and policy have been successfully implemented becoming country wide actions to play a leading role in protection of traditional and indigenous medical knowledge in China. In 2010 State council issued document emphasized on support and develop TCM IPR and TCM material varieties; TMC Patent evaluation standards and Traditional medical knowledge protection inventory etc.

2) New development of education and training institution

Development of education and training institutions on traditional medicine in China is another important strategy and action for protection of traditional medical knowledge. So far more than 50 TCM and TEM universities, colleges and training centers have been established in China, Degrees are offered from diplomatic level to doctoral degree, every year thousands of traditional medical doctors are trained; at the same time, traditional education and training mechanism are still maintained, for instance, master and apprentice, family handing down and self-studies are still common transmission ways in China; traditional medical doctor registration policies on masters trained doctor, family handing down specialized doctor and doctors that qualified from self-study throughout experts selection, examination, and evaluation. All have been implemented in recent years. This new development of integrated education system has great helped on traditional medical knowledge transmission and protection in China.

3) Scientific research and technology support

Scientific research on traditional medical knowledge in China began with the study of literature recorded medical knowledge in 1960's such as Materia Medica. Field survey on traditional and indigenous medicinal plant resource has been organized three times and the fourth time country wide field survey on TCM and TEM medicinal plants is being conducted, and hundreds of ethno-medical surveys on indigenous medical knowledge were conducted by researchers. As results, inventories on indigenous medical knowledge combined with TCM medical knowledge are produced. From these studies, we come to know that the total traditional medicine used in China accounts for 12,807 kinds, of which medicinal plants comprise 11,146 species, including 492 spp. under cultivation and the remaining 10,654 from wild habitats (SEPA, 1997). The pharmacopoeia was established in 1963, and there has been documentation of more than 9,000 medical remedies, 1,242 of those have already been listed in the National Essential Medication List. Ethno-medical inventory shown that the traditional Dai medicine accounts for 1,776 kinds consisting 1715 plants, 47 animals and 14 mineral maters; the Zhuang medicine in Guangxi accounts for 2,600 plants; Tibetan medicine 3,294 kinds; Miao medicine 1,300 kinds; Yao medicine 980 kinds; and the Yi medicine 1,189 kinds. Another important inventory is on traditional medical therapy recipes, and from many years survey conducted reveals that there are 20,000 traditional medical recipes are recorded in one traditional Chinese medicine publication (SEPA, 1997), an estimation suggested that the total number of traditional herbal recipes may reach to 200,000 in China, which shows a great gap on the survey and documentation works in China.

4) Protection of medicinal plants

Protection of traditional medical knowledge always linked with protection of medicinal plants. The use of plants for medicine in the world represents around 20% of the world flora (Schippmann et al, 2001). As mentioned above medicinal plants used in traditional medicine of China is about 30% of total flora of China (37,500 species), thus conservation of medicinal plants is particular important in the context of biodiversity. Over the past half century, Natural Reserve and Protected Areas system has been established in China, till the year 2010, there has been 2,700 Nature Reserves making up 18% of the total land mass, where about 70% of plant species and 80% of wild life are inhabited in protected areas. Ex situ conservation of plants in botanical gardens has been reached to 220 gardens, of which some are specialized medicinal plant gardens and living medicine plants collections consisting about 4,000 medicinal plants. More recently, medicinal plants has been involved in Germplasm Conservation at Germplasm Bank in Kunming. In China cultivation of wild medicinal plants made great contribution to reduce pressures on over-harvesting of wild medicinal plants, for instance, cultivation of medicinal orchids: *Dendronbium, Gastrodia* and many other medicinal plants, such as *Paris, Fritillazia, Erigeron, Aquilaria* are now fast expanding in cultivation area (Pei, et al, 2010).

5) Regional and international collaboration

Under the WHO, UNESCO and CBD frameworks, China has established effective collaboration on various international Treats and Agreements to protect traditional medical knowledge including the Nagoya Protocol (NP) on Access Benefit Sharing on Genetically Resources and Associated Traditional Knowledge (ABS), protection of traditional medical knowledge holders and successors is now included in National Programme on Non-Tangible Heritage Protection. Several hundred of traditional and indigenous medical doctors have been identified as traditional and indigenous medical knowledge successors under protection, which is an important policy action responding to the International Agreement on Protection of Non-Tangible Culture Heritage. Over the past years China has made many efforts to develop collaboration with the GMR countries and Asian countries on protection of traditional and indigenous medicine, and sharing of knowledge and experiences, development programmes on training and capacity building, joint research and technology as well as trans-boundary collaboration on conservation of traditional medical knowledge and medicinal plants, all these actions have positively supported to revitalize and develop traditional medicines in the region.

4. Perspectives and Suggestions

Over the last half century, government of China has formulated policies to protect, respect and develop all traditional medicines, including the main streams of traditional medicine TCM and TEM practiced by ethnic minorities. Great progress has been made in the protection of traditional medical knowledge and preservation of medicinal plants, development of new drugs from traditional medicines etc. As time has passed, significant achievements have been made in all aspects of traditional medicines. Today traditional medicine, both TCM and TEM, play very important role in the public healthcare systems for people and as a component of major industry and agriculture in building up the national economy.

However, the challenges are facing to the development of traditional medicines, in particular more effective protection of traditional medicinal knowledge in the fast changing economy and societies in China is a major concern, in this context, the major challenges are: transmission of traditional medical knowledge in the rapid changing society with particular younger generation value changes on traditional medicine, showing no interesting to learn traditional medicines; another challenge is rapid loss of traditional indigenous medical knowledge as documentation works much behind the speed of losing; and the challenge of conservation indigenous Intellectual Property Rights (IPR) with medical knowledge resources, which is linked with the ongoing implementation ABS-NP International Treat. So far we have not yet established community biodiversity registration strategy for documenting and registration of indigenous medical knowledge that is very much useful for development of new products of medicine, cosmetics, skin-care, health food and beverages, on the other hand protection of medical plants and associated medical knowledge at community level, is ignored by societies, current attention is too much focused on increasing economy benefit from use of medicinal plant resources and related indigenous knowledge.

The future of traditional medicine of China in the next decade will be further developed along with the line of complimentary with modern medicine, anti-biotic and synthesis drugs, peoples will use more natural medicine than chemicals to maintain their health and environment, which means a greater demanding on natural plants for health care and resource consumption will be increased day by day. During the time, declining of medical plant resources from natural habitats and the lost speed of indigenous medical knowledge will be accelerated.

With all the concerns above, we can conclude that use of traditional medicine by Chinese Society has been extended from ancient time to modern societies for thousands of years. Today, traditional medicine is believed and relied upon by a major part of the country's population for primary healthcare needs from clinic treatment to self-health care maintenance. In the past century, great progress has been made in science and technology and it has been rapid developed in socio-economic powers, which has positively influenced on traditional medical knowledge and its protection.

To face the challenge mentioned above, it is important for us to develop innovative methods and approaches on the protection of traditional medical knowledge in order to improve the current situation and, herewith, following suggestions are proposed for discussions:

1) To improve transmission mechanism for protection of traditional medical knowledge. Traditional knowledge is an important part of human value system in a society and environment, therefore, protection of traditional medical knowledge shall be based on one hand customary transmission mechanism such as approaches of family handing down, mater and apprentice as well as self-studies, on the other hand, innovative approaches shall be further developed to adopt the changing world, emphasis shall be placed on modern education system development for training of professional traditional medical doctors.

2) To integrate conservation of traditional medical knowledge and medicinal plants together into community-based conservation programs. Many rural communities still maintain good cultural and natural environment that is good for protection of traditional medicine, herbal doctors, family health-care traditions and community health care systems, to which government support should be further strengthened.

3) To implement Nagoya Protocol for protection of genetic resources and traditional knowledge and Access to Benefit Sharing (ABS) in which traditional medical knowledge and associated medicinal plants are included; documentation of traditional medical knowledge and community biodiversity registration must be put on agenda. This will ensure community medical knowledge is preserved before it is lost and support to sustainable use for community well-being.

4) To further strength regional collaboration on traditional medical knowledge and medicinal plants protection in GMR countries. The GMR countries share many commonalties and interests in traditional medical cultures, medicinal plants and modern development demandings. Based on past successful experiences, priority area for regional collaboration on training education programmes, and research collaborations ought to be urgently developed in order to protect our common medical tradition for the health of people and sustainable development in the region.

Acknowledgement:
I would like to extend my sincerely thanks to the conference organizer, Department of Thai Traditional & Complementary Medicine, Ministry of Public Health, Government of Thailand, and Dr. Anchalee Chuthaputti, inviting me to the conference and to deliver the keynote lecture.

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KEYNOTE LECTURE

DNA Barcoding of Medicinal Plant Materials in Traditional Medicines

Suchada Sukrong*

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Medicinal plants have played key role in world health. Herbal formulations have reached extensive acceptability as therapeutic agents for treatment of several diseases. Herbal drug technology is used for converting botanicals materials into medicines, where standardization and quality control with proper integration of modern scientific techniques and traditional techniques is important to produce and distribute healthy and nutritious fresh products in an efficient and safe manner. Quality control of crude drugs can be done by means of various methods, for instance, morphological, microscopical, physical, chemical, biological, including DNA testing. Since DNA of herbs in the herbal medicine products do not diverse due to various harvest seasons, plant origins, processing and other factors, DNA method such as DNA barcoding become popular among various tests.

DNA barcode consists of a standardized short sequence of DNA between 400 and 800 base pairs long that in theory can be easily isolated and characterized for all species on the earth. It has been found that three plastid (rbcL, matK, and trnH-psbA) gene regions and one nuclear (ITS) gene regions in the plant genome have become the standard barcode of choice in most investigations for plants. DNA barcoding can be used to confirm the authenticity of herbal or botanical ingredients prior to extraction in herbal supplements. There was a report that DNA barcoding showed approximately 20 percent of the store-brand supplements contain the plants listed on the labels and that many products (80 percent) do not contain any DNA from a botanical source. This finding is a matter of public health for regulation of herbal industries to prove what's in its products. Database of DNA barcode of medicinal plants for all of the active herbal or botanical ingredients used in its supplements should be generated. However, traditional techniques, microscopy and validated chemical test methods, like those found in official pharmacopeias, should be conducted to confirm the DNA findings.

HAVE A NICE DNA

Key words: DNA barcode, gene regions, medicinal plant, traditional medicine

Documentation of Philippine Traditional Knowledge and Practices on Health, Disease and Healing

Isidro Sia*, Sandra Tempongko*, Rafaelita Ong*, Julie Charmain Bonifacio**, Erlinda Palaganas*, Myfel Joseph Paluga*, Arthur Sebastian***, Buenalyn Ramos*, Maria Teresa Mendoza**, **Emeline Rose Mariano****, Maria Gabriela Aparentado*, Rainier Galang*, Aubrey Manzo*, Lydia Ysrael*, Ariel Reyes*, Aster Lyn Sur*, Anna Bernardo*, Tito Mata*****

**University of the Philippines, **Philippine Institute of Traditional and Alternative Health Care, ***Mindoro Medical Society, ****Palawan Indigenous Community*

Background and rationale:
The Philippines is known for its rich cultural diversity including those of healing traditions. There are more than one hundred eighty (180) ethnolinguistic groups (Summer Institute of Linguistics) and one hundred ten (110) indigenous communities (National Commission on Indigenous Peoples) in the country.
The Philippine Institute of Traditional and Alternative Health Care (PITAHC), together with the Philippine Council for Health Research and Development (PCHRD), the University of the Philippines System and several institutes of higher learning in the Philippines, have embarked on a systematic undertaking to document this cultural heritage.

Objectives:
The general objective of the project is to document with the communities their traditional knowledge and practices on health, disease and healing.

Methods:
The information were gathered through a combination of methods such as interview, focus group discussion, participant observation, and survey. Free and prior informed consent was obtained before each study was conducted.

Results:
We have undertaken the documentation of the traditional knowledge and practices on health, disease and healing of thirty-one (31) Philippine indigenous groups and cultural communities. In all, we have conducted the documentation involving four hundred sixty-eight (468) informants, mostly indigenous healers. Each study area reported an average number of ninety-one (91) plants for an average of thirty-one (31) medical indications. Ethnographic description was also done for each study area.
The sets of information were encoded in a database and, where consent was given, the data were published in a website (www.tkdlph.com).

Conclusion:
The documentation showed that the Philippines has rich cultural traditions with regard to health, disease and healing.

Key words: Philippines, traditional knowledge, traditional medicine, indigenous medicine

Community Based Exploration of Local Ethnomedicine Knowledge and Medicinal Plants in Indonesia

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Community Based Exploration of Local Ethnomedicine Knowledge and Medicinal Plants in Indonesia, hereinafter referred to RISTOJA, is a mapping study of traditional knowledge in the use of plant-based medicines by ethnic or tribes conducted by the National Institute of Health Research and Development in 2012. The research was carried out to address the needs of information related to the data of traditional medicinal plants and herbs used by every ethnicity in Indonesia. RISTOJA aims to establish ethnomedicine knowledge databases, traditional medicine (TM) and medicinal plants (MP) in Indonesia. Data collected include: characteristics of traditional healers, symptoms and diseases, plant species, plant use in medicine, part of the plant used, herbs, how to prepare and how to utilize for treatment, local wisdom in the management and utilization of the medicinal plants and the data of the environment. RISTOJA I, year 1 (2012) was implemented in 26 provinces across Indonesia except the island of Java and Bali, in collaboration with 25 universities.

The number of informants (traditional healers) who were interviewed were 1,324 people, of which 95.2% live in rural areas; 41.9% more than 61 years old; 18.3% had no formal education and 55.8% do not meet the 9-year basic education program. Seeing this trend appears that traditional healers' knowledge is still ORIGINAL who handed down from generations, little affected by external knowledge, this is supported by a resource in a rural residence with limited access and information.

There are 15.773 herbs information, dominated symptoms/diseases that are associated with health behavior, such as fever, headache, sore skin and abdominal pain, are also symptoms/diseases associated with metabolic or degenerative diseases such as cancer/tumor and high blood pressure. There are also herbs for malaria as much as 486 potions, 75 potions for tuberculosis and 13 herbs for HIV/AIDS.

Plants that are used in the treatment amounted to 19.738 information, of which 13.576 were identified to species level comprising of 1,740 species/types and 211 plant families. Medicinal plants are often used, among others, Curcuma domestica Val. or commonly known as turmeric that is most widely used in 191 ethnic, followed by Piper betle L., Cocos nucifera L. and Zingiber officinale Roscoe and Jatropa curcas L.

Key words: community base, exploration, ethnomedicine, medicinal plants.

Survey on Indigenous Knowledge of Using Medicinal Plants and Remedies of Ethnic Communities in Lang Son Province, Vietnam

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Background and rationale: Lang Son is a province in the Northeast of Vietnam, including 10 districts and 1 city with 226 communes, wards and towns. Lang Son has 7 different ethnic groups living together, including Tay, Nung, Dao, H'mong, Kinh, Hoa, San Chay. Due to typical topographical features, pedologic geology and climate, Lang Son has abundant and diversified natural vegetation. Many species are used as medicinal plants, including precious herbs. In addition to abundant and diversified natural resources, the indigenous knowledge of the ethnic groups in Lang Son has special features and also is the value to be preserved and promoted.

Objective: Survey on medicinal plant resources and indigenous knowledge of using medicinal plants in the remedies of ethnic groups in Lang Son province.

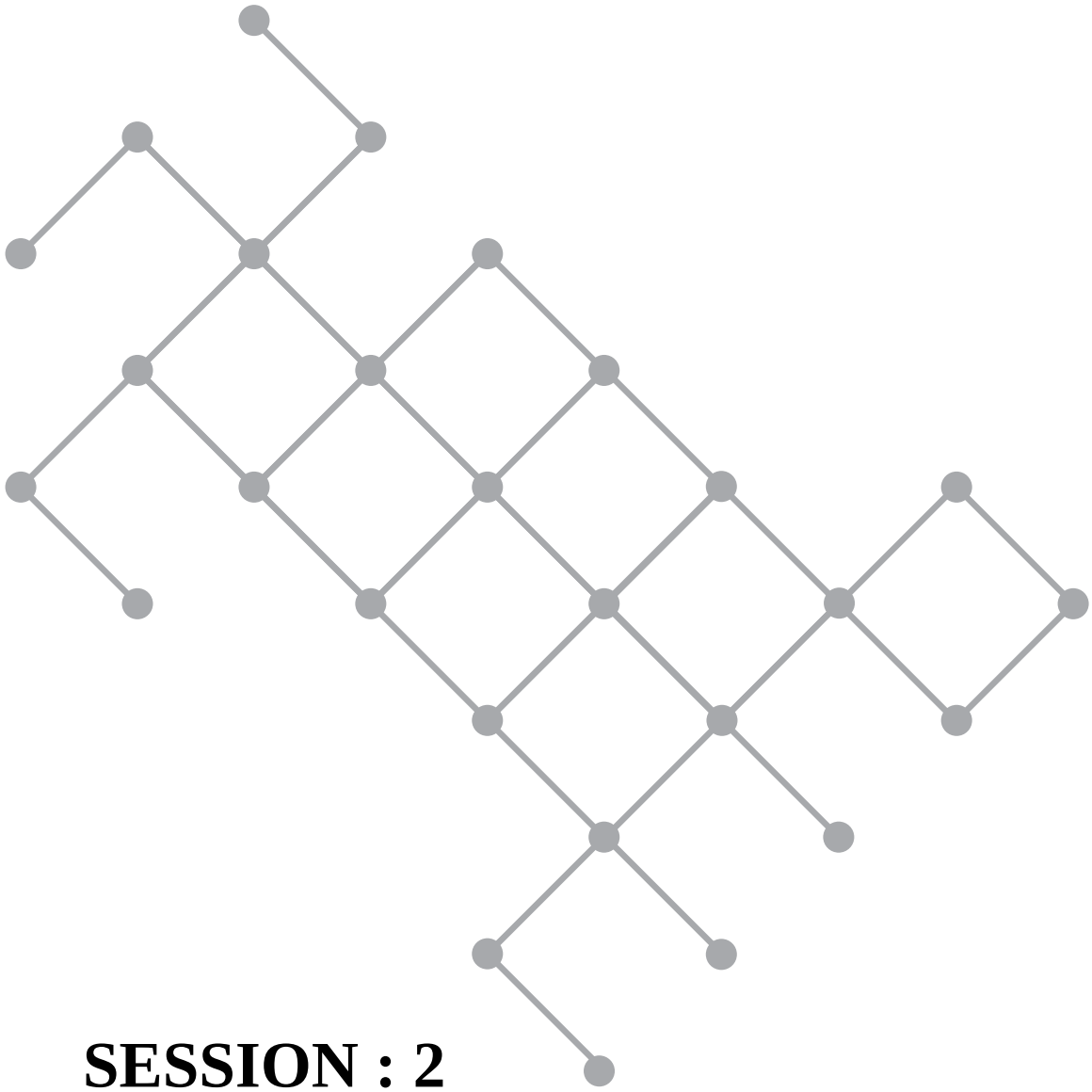
Methodology: Using questionnaires and direct interview with 200 local healers. Construct route-based surveys, collecting sample and specimen of medicinal plants. Applied morphological comparision method with the identification key and detailed descriptions in the documents.

Results: The result of survey are recorded 785 species of medicinal plants, belonging to 514 genera, 175 families, 62 orders, 2 subdivisions, 6 divisions and 3 species of medicinal fungi, belonging to 3 genera, 3 families, 3 orders, 1 division.
Total of 200 remedies were collected from 4 ethnic groups in Lang Son Province, including: Dao ethnic group, Tay, H'mong and Nung. The remedies that are used to treat for 12 groups of common diseases. Besides, the survey found 180 medicinal plants that are used in 200 remedies. Using and processing methods of each ethnic group are different. Depending on types of diseases, local peoples have different ways of processing so as to promote the highest effectiveness of herbs.

Depending on the types of diseases, local healers use various parts of medicinal plants. Therefore, the use of plant parts depends on the experience in treatment of healers. They can use whole plant or 3 parts, 2 parts or even 1 part, but there are some species used in combination with other medicines; for example, roots/tubers are soaked with alcohol to be used for massage, others can be eaten with honey, etc.

Conclusion: Lang Son province has diverse medicinal plant resources and indigenous knowledge on using of medicinal plant for health care in the community of ethnic groups in the province is extensive and has its own characters.

Key words: Lang Son, Vietnam, indigenous knowledge, medicinal plants, remedy



SESSION : 2

CLINICAL STUDIES AND CLINICAL APPLICATION OF TRADITIONAL AND INDIGENOUS MEDICINE

KEYNOTE LECTURE

Ethical Considerations in Conducting Human Research in Indigenous and Traditional Medicine

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Introduction

The World Health Assembly issued the Resolution regarding the goal to achieve "Health for All by the year 2000" in 1977. Later on, meetings were therefore held to consider strategies to achieve that goal. It was concluded that in addition to modern medicine, it was necessary to rely on traditional medicine of each country to reach this challenging and magnificent goal.

Traditional medicines of each country and each community are mostly overlooked and neglected for a long period of time because of prior misbelief that traditional medicine is obsolete, non-scientific, useless, and dangerous, while modern medicine is the answers to all health problems.

Since the time when scientists discovered the "magic bullet" called "antibiotics" which have later been widely and successfully used in medical care to help doctors overcome infectious diseases, the previous main killers of millions of people. In addition, vaccines were also invented to prevent against various infections leading to a complete eradication of smallpox from the face of the earth. In addition, scientists have also been able to develop efficient process of food production by Green Revolution which can drastically reduce the problem of malnutrition. This, together with the improvement of sanitation system, led to the myth that modern medicine alone will overcome serious diseases and successfully solve major world's health problems. As a result, traditional medicines of each country and each community are therefore neglected and have not been developed or made good use of.

Later on, it was found that modern medicine has faced several limitations, namely:

- The cost of medical care and medicines are more and more costly making modern medicine health care unaffordable and inaccessible for many people.
- The distribution of medical service and healthcare personnel has much limitations.
- The results of the treatments are still not satisfactory, especially for chronic diseases and life style-related diseases??diseases related to social pathology.
- Many modern medicine therapies often cause some serious side effects and adverse events.

Therefore, when we will make use of traditional medicine, it is very necessary to revive and develop the traditional knowledge in order to prove or confirm two major points, namely Safety and Efficacy.

Myths about Traditional Medicine

There are myths among both general public and traditional medicine practitioners that traditional medicine, particularly commonly used medicines derived from herbs and medicinal plants are safe because they come from nature and have long history of use. Such believes are widely accepted, especially when there are a lot of "news" or "data" on toxicities and serious adverse drug reactions caused by medicines and therapeutic methods used in modern medicine.

Such believes are myths as stated in Item 16 of the Declaration of Helsinki 2013 "In medical practice and in medical research, most interventions involve risks and burdens."

Thailand has had some experience with toxicities of herbal medicines, for example, in the case of 'Ma Kluea' or the fruit of ebony tree from the plant with scientific name Diospyros mollis. Traditionally, the fruit of 'Ma Kluea' has long been used as an anthelmintic that can effectively expel different types of intestinal worms. But later on when it was widely used in a nationwide campaign to eradicate intestinal worms in children, some cases of blindness, a rare adverse effect, were detected. Another example is 'Khi Lek' or the leaves of Siamese cassia from the plant Senna siamea used as sleeping pill was later found to be toxic to the liver. Therefore, it is necessary to conduct studies to prove and confirm the safety, and of course, efficacy of herbal medicines, and in the end, researches involving human subjects must be conducted as stated in the Declaration of Helsinki Item 5 that "Medical progress is based on research that ultimately must include studies involving human subjects".

Ethical consideration on research involving human subjects In the field of indigenous and traditional medicine

Even though indigenous medicine and traditional medicine have basic theories, diagnostic and therapeutic methods that are different in various aspects from those of modern medicine, whenever TM/IM researches involving human subjects will be conducted, ethical considerations for research in human, similarly used in modern medicine research, must also be followed.

First of all, is the three basic ethical principles, initially stated in **the Belmont Report** on 18 April 1979 as **"Ethical Principles and Guidelines for the Protection of Human Subjects of Research"**, namely:

1. Respect for persons,
2. Beneficence, and
3. Justice.

These three basic ethical principles must be applied and strictly adhered to as follows:

The First Principle "RESPECT FOR PERSONS" demands that subjects enter into research voluntarily and with adequate information. Hence, informed consent from each human subject is required. Informed consent must comprise of all three components, namely 1) study information which has to be adequate, clear, simple, without duress, deceit, or undue inducement, and 2) human subjects must enter the study on the basis of voluntariness with full understanding of the project.

The Second Principle "BENEFICENCE" – requires that there should be systematic assessment of risks and benefits and beneficent actions are expressed as 1) do no harm and 2) maximize possible benefits and minimize possible harm.

The Third Principle "JUSTICE" – is that there should be fair procedures in the selection of research subjects.

Second of all, in addition to the three basic ethical principles in the Belmont Report, researchers must follow international guidelines on research ethics, particularly:

1) Declaration of Helsinki

2) International Ethical Guidelines for Biomedical Research Involving Human Subjects prepared by the Council for International Organization of Medical Sciences (CIOMS) in collaboration with the World Health Organization (WHO)

3) For clinical trials of herbal products **"Operational guidance: Information needed to support clinical trials of herbal products"** of WHO TDR (WHO Special Programme for Research and Training in Tropical Diseases) should also be followed.

Special considerations

As mentioned previously that indigenous medicine and traditional medicine have different basic theories and practices from those of modern medicine, it is essential to have special considerations so that it can be applicable to clinical research in these fields of medicine. Researchers should follow **"WHO General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine"** which gives key advice on Study Designs other than Randomized Controlled Trial or RCT, namely:

- Single-case design
- Black-box design
- Ethnographic design
- Observational design
- Etc.

Certainly, such study designs would give less reliable results than the results from RCT studies. However, at least, these study designs allow researches on indigenous and traditional medicine to be carried out with certain level of reliability.

One major problem of human research on indigenous and traditional medicine is if it is required that reobust safety data from preclinical studies, as same as in modern pharmaceutical products studies, must be submitted, it might not be possible to further conduct clinical study. As herbal recipes used in these fields of medicine are usually composed of many herbal ingredients, if in vitro and in vivo studies in animals on all compounds from all herbs are requested, it would require huge investment such that R&D on herbal recipes cannot be done.

In order to comply with the principle that researches involving human subjects can be carried out only when there is information to show that the test drug is safe enough and has potential efficacy to risk human lives in the clinical study, the long history of use and the recorded documents on its use should be utilized as evidence for the consideration of its safety.

As a result, the Committee for the Consideration of Human Research in the Field of Traditional and Alternative Medicine of the Ministry of Public Health, Thailand therefore set key criteria to facilitate the conduct of clinical study in these fields of medicine in Item 2.7 of the Committee guideline as follows:

"Should have adequate, convincing and qualified evidences of substantiate in safety based on previous history of use, references or text books, animal experiment, or research papers."

Conclusion

As stated in the item 16 of the Declaration of Helsinki 2013 that "In medical practice and in medical research, most interventions involve risks and burdens." and item 5 that "Medical progress is based on research that ultimately must include studies involving human subjects", indigenous medicine and traditional medicine also subject to research and studies to prove the safety and the efficacy. And when research involving human subjects is needed, it is necessary to follow international guidelines on research ethics. In order to make it possible to conduct research on indigenous and traditional medicine, it is necessary to appropriately design the study and consider safety data so as to facilitate proper conduct of research in these fields of medicine and promote ethical research.

IMEvidence: Application of Systematic Review for Evidence-Based Practices of Traditional & Complementary Medicine

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Background and rationale:
IMEvidence is the acronym for evidence based integrated medicine. This project advocates the application of the best available evidence gained from the scientific method to clinical decision making. In the effort of integrating traditional & complementary medicine (T&CM) with conventional medicine, it is important to evaluate the evidence of the treatments' safety and efficacy. The issue is that the scattered and small sized studies might erroneously render certain treatment inadequate due to the superficial evidences. One solution is to evaluate such issues by assembling all published literatures/journals on the relevant topics and to review the evidence in a systematic method.

Objectives:
To appraise the outcome of systematic reviews that has been conducted for IMEvidence.

Methods:
The evaluation was based on whether the authors followed the systematic review methods which includes the process of identifying, reviewing and extracting the citation indexed articles from several databases with specific methodologies based on the predetermined SICOM (study samples, type of intervention, comparison, outcomes and study model) criteria. These would be followed by abstract and full text screening. For the titles with clinical trials publications, a statistical assessment was applied to combine the results and resolve any scoring differences to minimize bias.

Results:
Eight different topics that ranged from specific herb or T&CM therapies used as treatment for specific diseases were chosen. Based on the highest level of the available evidence pertaining to a topic, the types review in IMEvidence were narrative or systematic reviews. There are many levels of scientific evidence including the preclinical and clinical stages and based on the eight titles, there were two systematic reviews with one meta-analysis conducted. The six narrative reviews are based on mixtures of articles that ranged from *in vitro* and *in vivo* studies to observational study designs.

Conclusion:
A proper systematic review highlight that there is scientific evidence for herbal & T & CM treatments in specific diseases where some studies have progressed into clinical trials that enabled meta-analysis to be conducted. The narrative reviews indicate that the treatment can be evaluated further. All these will assist the progress of integrated medicine.

Keywords: Evidence-based medicine, IMEvidence, traditional & complementary, integrated

Development of Detoxicant Standardized Sapium insigne (Roxb.) Benth. (Yar-ke) Extract and Assessment of Its Clinical Efficacy on Opiate Addicts

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Background and rationale:

Traditional medicine has recently received wide attention in the treatment of drug addiction. The plant *Sapium insigne* (Roxb.) Benth. (Yar-ke) is the origin of Shan State of Myanmar. It is also called Ta-see-fray-tan which means the royal antidote or powerful detoxifying agent. Main therapeutic usefulness is antinarcotic action on opiate addicted patients. There is some mention about the detoxification process whereby drug users who are detoxed using Yar-ke reported suffering from opiate withdraw symptoms. It is seemed to be a very promising herbal source.

Objectives:

- To conduct scientific investigation to prove clinical effectiveness of *S. insigne* in opiate addicts
- To standardize the herbal pharmacopoeia monograph of *S. insigne*

Methods:

Scientific investigation on bark of Yar-ke, the water extract of the bark was studied on the 63 opiate dependent patients to assess its detoxification effect on withdrawal symptom. The control group 20 was on standard treatment for opiate addiction with Tincture of Opium (TO) as the main opiate substitute whereas the experimental test group 43 was treated with the aqueous extract of *S. insigne*. The water extract of bark was pharmacognostically, phytochemically and physicochemically standardized.

Results:

The clinical effectiveness was assessed by the absence of opiate withdrawal symptoms by the Subjective Opiate Withdrawal Scale and Clinical Opiate Withdrawal Scale (SOWS and COWS) and when two consecutive negative urine tests were obtained for opiates conducted 24 hours apart. The strong points of *S. insigne* are the significantly shorter duration of the detoxification period needed than control group. In the alanine aminotransferase (ALT) tests, comparison of the mean change values between the two groups showed statistically significant, the test group displayed reduction in ALT levels whereas control group showed elevated levels. Herbal pharmacopoeia monograph of Yar-ke bark was documented for its quality standards.

Conclusion:

This research finding suggested that *S. insigne* (Yar-ke) can be used to assist patients go through the detoxification period with a 100% success rate.

Key words: *Sapium insigne,* opiate detoxification, standardization

Efficacy of Capsaicin Cream Applied Once Daily to Pain in Knee Osteoarthritis Patients

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Background and rationale: Knee osteoarthritis (OA) was found in almost 50% of elderly population. It causes joint pain, with physical disability and also reduces quality of life. Topical analgesics can provide therapeutic effects on sites of inflammation. There are various topical formulations used for the treatment of OA, such as diclofenac gel (DG) and capsaicin cream (CC). Nevertheless common topical formulations require 3-4 times daily application which causes inconvenience for patients. Capsaicin cream was therefore developed as a once-daily preparation using nanotechnology to slowly release capsaicin to the affected areas. This clinical trial was performed to evaluate the efficacy and safety of once-daily capsaicin cream (ODCC).

Objective: The aim of this clinical study was to study the efficacy and safety of ODCC for the treatment of OA. Patients' satisfaction with the treatment was also assessed in this trial.

Methodology: This study was a single-blinded randomized controlled trial in 90 patients with mild to moderate knee OA. Thirty patients in each group were randomly assigned to receive DG, CC or ODCC. Subjects in DG and CC groups applied their medication to the knee and rubbed until dry for four times a day. For ODCC group, the ODCC was applied to the affected knee for once daily at bedtime. Subjects were treated for a period of 4 weeks and followed up every week. Visual analog scale (VAS) and Modified Western Ontario and McMaster Universities Arthritis Index or WOMAC score were used as primary end point to determine treatment efficacy and patients' satisfaction was also assessed.

Results: Average ages in each group (DG, CC and ODCC) were 51.93±6.50, 55.21±7.15, 54.46±6.80 years old, respectively ($p=0.129$). Baseline of VAS and WOMAC scores in three groups showed no difference ($p=0.556$). Outcome at week 0-4 in all groups showed statistically significant reduction of VAS and WOMAC scores ($p<0.001$). There was no difference in VAS and WOMAC scores between groups. Mean satisfaction scores were not different ($p=0.182$). Burning sensation was found in CC and ODCC group (4.17% and 3.57%).

Conclusion: Once-daily capsaicin cream was effective in mild to moderate pain knee OA. Comparing with other topical preparations, the efficacy of once-daily capsaicin cream in relieving pain was not different. Most patients (75%) in ODCC group reported that they were satisfied or very satisfied with the products. Burning sensation was reported less in ODCC group than that in the group receiving common capsaicin cream.

Keywords: Once-daily capsaicin cream, knee osteoarthritis

Recent Advances in the Management of Chronic Inflammatory Diseases with Special Reference to Leech Therapy

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Background and rationale: Ayurveda, one of the most ancient and holistic Indian systems of medicine, is serving the mankind since the vedic era. Shamana and Shodhana are the two major pillars of the Ayurvedic therapy. Raktamokshan or bloodletting is one of the ancient and important para-surgical procedures which is used to drain impure blood or vaikrit rakta from the diseased body. Charaka and Sushruta treated successfully many incurable wounds (Asadhya Vrana) and other medical conditions such as *Kustha, Switra, Vatarakta, Sandhigatavata*, etc. Non-poisonous Leech is one of the most beneficial, safe delicate and cheap treatment modality. Leech therapy has gained greater attention globally, because of its medicinal values. The saliva of leech contains more than hundred biologically active substances which exerts potent effect to reverse disease condition. The main chemical constituents are: hirudin, calin, destabilase, hirustasin, cathepsin G, bdellins, hyaluronidase, tryptase inhibitor, eglins etc. These constituent showed very good anti-inflammatory, analgesic, vasodilators, anesthetics effects. It also increases microcirculation by decreasing the blood viscosity. Apart from this, it decreases the oxidative stress and increases the antioxidant level in the patients.

Objectives: Nowadays leech therapy is being used in the treatment of rheumatoid arthritis, osteoarthritis, gout, various skin diseases like psoriasis, eczema, acne, filariasis, non-healing ulcers, varicose veins, ischemic conditions like IHD and CVA infarct. In this study an attempt has been made to understand the effect of leech therapy.

Methods: Keeping above facts in the mind, various clinical researches are going on leech therapy in Department of Kayachikitsa, IMS, BHU with encouraging results. Bivariate analysis and paired t-test has been used to know the changes occurred in different parameters, before and after treatment.

Results: According to the study it is reveal that the treatment by leech decreases serum TNF-alfa significantly. Before treatment it was 75.5±10.03 pg/ml and after treatment it was 54.64±13.52 pg/ml. Similar result is found in case of serum IL-6, it reduces drastically from 93.21±26.98 to 28.14±9.78 pg/ml. In osteoarthritis the leech therapy reduces the oxidant level (MDA) from 1.54±0.658 to 1.31±0.625 and it is significant at 5 percent level of significance. Also the protein carbonyl level decreases significantly, before treatment it was 2.80±1.038 nmol/mg and after treatment it was 1.79±1.251 nmol/mg.

Conclusion: Since leech therapy is low cost therapy and has no side effect, it gains popularity in the Indian society as well as cross border peoples. Leach sucks bad quality of blood and inserts good bio-chemical agents in the body through its saliva.

Key words: Ayurveda, Leech therapy, Rakta, Leech saliva.

Antihyperlipidemia Effect of Benjakul Remedy Extract in Addition to Simvastatin in Dyslipidemia Subjects: A preliminary Analysis

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Background and rationale:
Benjakul remedy is a Thai Traditional medicine listed in Thailand National List of Essential Medicine. It is composed of five plants; *Piper chaba* fruit, *Piper sarmentosum* root, *Piper interruptum* stem, *Plumbago indica* root and *Zingiber officinale* rhizome. Benjakul remedy extract can significantly decrease low density lipoprotein (LDL) in an animal study.

Objective:
This pilot study objective was to investigate the lipid lowering efficacy and safety of ethanolic extract of Benjakul remedy, in addition to simvastatin treatment in dyslipidemia subjects.

Method:
Twelve participants (3 males and 9 females) with the mean age of 61.16±5.98 years old (range 51-70) and the mean BMI of 26.75±2.67 kg/m2 (range 21.68-32.52), had received 100 mg of the Benjakul extract capsule twice a day after meals for 3 months in addition to their current simvastatin treatment. All of them modified their life style during one month run-in period until the study completion. Simvastatin was continued without dosage adjustment throughout the study period. Laboratory data were obtained at 30th, 60th and 90th days.

Results:
Benjakul remedy extract significantly decreased total cholesterol level at 90th day (232±35.52 vs. 200±23.27 mg/dl, p=0.005 for pre- and post-treatment, respectively). The significant decrease of LDL was demonstrated at 90th day (154±31.32 vs. 119±20.61, p=0.006 for pre- and post-treatment, respectively). The triglyceride and high density lipoprotein (HDL) were not different between pre- and post-treatment. There was no reported side effect .

Conclusion:
In conclusion, Benjakul remedy extract in dyslipidemia subjects provided additional benefits of cholesterol and LDL lowering effect to simvastatin treatment with demonstrable short-term safety.

Keywords: Benjakul remedy extract, dyslipidemia

Efficacy and Safety of the Sahastara remedy versus Diclofenac in the Treatment of Osteoarthritis of the Knee: A Double Blind, Randomized Controlled Trial

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Background and rationale: The Sahastara (SHT) remedy is a Thai traditional medicine that has been acknowledged in the Thai National List of Essential Medicines and has been used as an alternative medicine to treat knee osteoarthritis (OA). Although, SHT remedies have been used in Thai traditional medical practices for a long period of time, there are few reports on their clinical trials.

Objective: To investigate the clinical efficacy and safety of the SHT remedy in treating OA of the knee when compared to diclofenac.

Methods: A phase 2, double-blind, randomized controlled trial study was conducted to determine the clinical efficacy and safety of SHT in comparison with diclofenac for the treatment of knee OA. Sixty six patients, ages between 45-80 years of age were randomly allocated into 2 groups. The SHT group received 1,000 mg of SHT powdered capsules 3 times per day, orally before meals, while another group received 25 mg of diclofenac sodium capsules 3 times a day, orally after meals for 28 days. Both groups received placebos to maintain the double-blind conditions and Omeprazole 20 mg, twice daily, orally before meals for GI prophylaxis. All patients were followed up at 14 and 28 days for the evaluation of the efficacy and safety by using clinical examinations, blood tests, a visual analogue scale (VAS) for pain, and the 100 meter walk-time test. Improvement on the quality of life was also assessed by the WOMAC index.

Results: There were 31 and 30 patients in SHT and diclofenac groups, respectively, who had completed the study. Both medications have shown to significantly improve the VAS for pain, the 100 meter walk-time test and the WOMAC index score. However, there were no differences in the efficacy between the two groups. Abdominal discomfort was the most frequent adverse event found in both groups. The blood chemistry showed no toxicity on renal and/or liver functions but the patients taking diclofenac showed significant increases in their AST, ALT, and ALP. Systolic and diastolic blood pressures slightly increased in the diclofenac group but were not altered in the SHT group.

Conclusions: The SHT remedy similar to diclofenac in all evaluating symptoms of knee OA. However, the SHT remedy has shown to be a good alternative treatment for knee OA with less systemic side effects when it was compared with diclofenac.

Keywords: Sahastara remedy, knee OA, diclofenac, alternative medicine, Thai traditional medicine

The Safety and Immunostimulatory Effect of Triphala Extract in Thai Healthy Volunteers.

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Background and rationale: HIV/AIDS is one of the biggest challenges we face today as a country. The incidence of HIV/AIDS is rising rapidly and there are over 36.9 million people living with HIV in 2014. It is a disease that destroys the patient's ability to fight against the infections through the immune system. So it is urgent to find the medication for improving the immunity of HIV/AIDS positive people. One of the foremost formulas in Thai Traditional Medicine is Triphala, which is effective, and has been recommended to be used for improving immunity and balancing health. Previous report showed Triphala (a Thai traditional foremost formula) had the immunomodulatory effect in mice but it has not been investigated yet for immunostimulatory and side effects in healthy human volunteers.

Objective: This study sought to examine the efficacy on immunity and safety of Triphala extract in a clinical phase I study.

Methods: In this study all assigned volunteers took Triplala extract 3 capsules per day for 2 weeks, with measurement taken at the baseline and at the end of every week, for 2 weeks during medication and another 2 weeks after finishing medication by complete physical examination, routine laboratory analysis (hematology, liver function, renal function), and immunological analysis.

Results: This study showed that Triphala extract demonstrated significant immuno-stimulatory effects on cytotoxic T cells (CD3−CD8+) and natural killer cells (CD16+CD56+) when compared with those of the control samples and had no obvious adverse effect.

Conclusion: Triphala extract has significant immunostimulatory effects on cellular immune response, especially cytotoxic T cells and natural killer cells. Increases in the absolute number of these cells may improve immunity of people living with HIV/AIDS.

Keywords: HIV, AIDS, Triphala, immunomodulatory effect, side effect, clinical trial phase I

An Assessment of the Impact of Indian Traditional Medicine & Methodology in Controlling Diabetes Mellitus

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Background and rationale: The global burden of diabetes has become endemic amongst health administrators over the world. Diabetes is termed as silent killer and is a chronic metabolic disorder that arises when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin produced. The resistance of insulin and occurrence of side effects from prolonged administration of allopathic drugs have been observed. Thus there is a need to search safe and effective alternatives. The Indian medicine system i.e. Ayurveda says sugar levels can be maintained in optimum level by proper medication, healthy diet, regular physical activity, maintaining a normal body weight, and avoiding substance use.

Objectives: In the present study an attempt has been made to know the effect of an Ayurvedic drug (Varadi Kwatha) with diet & lifestyle in reduction of level of diabetes on the basis of case-control study.

Methods: The data have been collected in the OPD of Kayachikitsa, Sir Sunderlal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India. Thirty patients have been observed for a period of 8 weeks under the medication of Ayurvedic drug with diet & lifestyle (Group-A) and other 24 patients with only Ayurvedic drug (Group-B). Bivariate analysis and paired t-test has been used to know the changes occurred in different parameters, before and after treatment.

Results: It has been observed that in biochemical parameters of Group-A, the fasting blood sugar (FBS) was 164.34±54.11 mg/dl before treatment and 124.81±26.22 mg/dl after treatment (24 percent change) shows highly significant improvement, while post-prandial blood sugar (PPBS) 247.39±56.52 mg/dl before treatment and 198.34±38.33 mg/dl after treatment (20 percent change) also shows highly significant improvement. However, in Group-B there was only 16 percent change observed in the FBS after the treatment (before treatment 172.34±68.11 mg/dl and after treatment 144.81±46.22 mg/dl) and only 13 percent change in PPBS observed after treatment was given. (before treatment 259.68±52.32 mg/dl and after treatment 225.34±58.33 mg/dl).

Conclusion: It is clearly reveals that the Ayurvedic drug (Varadi Kwatha) works significantly to control the level of blood sugar, in the presence of controlled diet and lifestyle.

Keywords: Ayurvedic drug (varadi kwatha), FBS, PPBS, diet & lifestyle

Treatment of the Symptoms of 'Lom' Disorders Based on the Concept of Lanna Folk Healers in Chiang Rai and Chiang Mai Provinces

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Background and rationale: The old Kingdom of Lanna in the north of Thailand is the home of various ethnic groups with multi-ethnic cultural heritage on health care practices. This study aimed to investigate individual tacit knowledge about 'Lom' (literally means 'wind') disorders, the meanings, the believes and the treatment of symptoms of 'Lom' disorders based on the concept of Lanna folk healers in Chiang Rai and Chiang Mai Provinces.

Objective: To study the knowledge about Lom disorders and Lanna treatment procedures of the symptoms of 'Lom' disorders as the basis for knowledge development which can be applied and formulated into a curriculum for the next generation of Lanna folk healers in the upper northern Thailand and Greater Mekong Sub-Region.

Methods: In-depth interviews and group discussion were employed to collect data from 9 expert folk healers who provided treatment for people in their communities in Chiang Rai and Chiang Mai Provinces. The treatment procedures and the practice of 9 folk healers were observed at the home clinics. The meeting with 15 folk healers was organized to confirm the knowledge obtained.

Results: It was found that Lanna folk healers had basic believes in the balance of body elements (dhatu) and the relationship between human and nature and supernatural beings. Their explanations about 'Lom' are dhatu Lom or wind is one of the four elements in the body (earth, water, wind and fire). The causes of 'Lom' disorders may be due to *heat and cold* that causes disturbance to the body, *poisonous food* causing weakening of fire leading to indigestion, malfunction of water and earth (stomach) elements, the 'wind' that could not enter the body then moves upward resulting in 'Lom' disorders, *air pollution,* and *seasonal change.* Lanna healers divide 'Lom' disorders into 16 types; each type can be subdivided based on symptoms, causes and wind-affected organs. Diagnosis is based on observations, body examinations and rites. Treatment usually relies on herbs combined with rites. There are 346 herbs/medicinal plants that can be used for the treatment of 'Lom' disorders. Commonly found 'Lom' disorders that have still been treated by Lanna procedure include 'Lom Pid Duen' (postpartum disorders), 'Lom San Ni Baat' (neurological problems), 'Lom Ma Hok' (disorders of body tissues) and 'Lom Ma Heng Kud' (neurological and blood circulation disorders).

Conclusion: It was found that folk healers still play a role in providing health care for community people. Their knowledge is therefore crucial for the promotion of self-health care. Hence, in-depth studies of their knowledge should be encouraged to promote the use of local wisdom of health care of their culture, to further develop and inherit the knowledge, and eventually integrate the knowledge in the health care and education systems in the future.

Keywords: Lom disorder, wind dhatu, folk healer, Lanna, traditional knowledge

Raising Consciousness: The Process of Integrating Thai Traditional Medicine into Current Health Care Systems of Physicians' Experiences

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Background and rationale: Thailand's current health care system is in the pluralistic medical system. Modern medicine has become the mainstream health care system and Thai Traditional Medicine (TTM) has become a branch of non-conventional medicines. It is well recognized that modern medicine is probably not the definite answer to the health of the nation. High burden on health care expenditure has played a role in the "come back" of TTM and physicians play a crucial role in the successful integration of TTM in health care systems.

Objective: The purpose of this study was to gain a greater understanding of the physicians' experiences in integrating TTM into current health care systems.

Methodology: A qualitative grounded theory method was deemed to be the best way to explore the ways of knowing and thinking about the interested issues from physicians' perspective. A purposive sample of 12 participants was obtained from physicians working in seven hospitals under the Ministry of Public Health (MOPH) with successful/unsuccessful integration of TTM into their practice at the hospitals. Primary data were collected by conducting semi-structured and open-ended interviews, observations, interview with patients and staff, and review of hospital chart, record and documents. Various data collection methods were employed to increase trustworthiness by triangulation approach.

Results: The findings showed that the conditions enabling physicians to integrate TTM into their practice were 1) the MOPH policy, and 2) physicians' perceptions on limited effectiveness in some diseases, side effects, and high cost of modern medicine and the physicians were raising other health personnel's consciousness to integrate TTM into their practice and current health care system was divided into 3 phases including (1) developing of the TTM integrated service model (2) disseminating, and (3) implementing. It was found that the processes to persuade health care personnel to accept TTM and integrate it into their practices were improving their TTM knowledge, attitudes, understanding, and trust in TTM using various strategies including 1) communicating, 2) training, and 3) directly and indirectly gaining experience about TTM.

Conclusion: Recommendations relating to the findings are TTM knowledge and experience should be included in the curriculum of medical school to inculcate knowledge, positive attitudes, understanding and trust in TTM among medical students.

Key words: Thai traditional medicine, raising consciousness, communicating, training, gaining experience

Local Wisdom on the Obstetrics of Austroasiatic Ethnic's Groups in Lower Mekong Sub-region.

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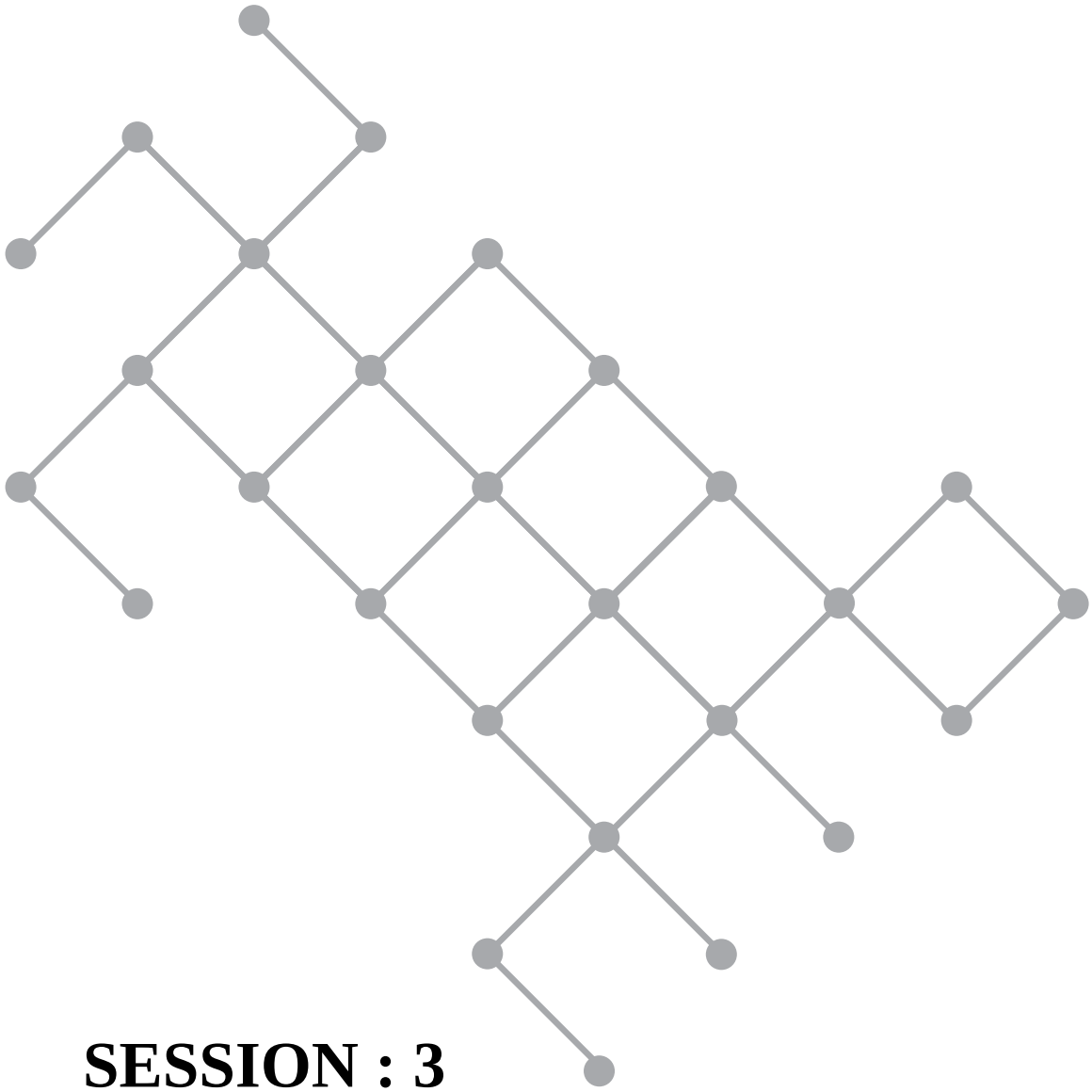
Objectives: This research aims to 1.) study the obstetric wisdom of Austro-Asiatic ethnic in the lower Mekong Sub-region. 2) analyze the composition of Austro-Asiatic ethnic woman and man obstetric in Thailand and 3.) provide practical guidebook for pregnant and postpartum women, people edition, on the culture of the Austro Asiatic ethnic basis, in Thai, Lao, Cambodian and English languages.

Methods: This research was mainly carried out by merging qualitative research methods with ethnography from in-depth interviews, participatory and non-participant observation and using quantitative research methodology techniques with exploratory factors analysis techniques, including validated by the expert group.

Results: The results are as follows;

1. Results of the qualitative study found that the obstetric wisdom of Austro-Asiatic ethnic in the lower Mekong Sub-region could be divided into two phases which are Firstly, before marriage. Start of relationship, selection related to the code of karma and destiny equality and the wedding ceremony must be supported by the parents and relatives which are network of karma, as witnessed that the couple will accept their physical, mental and social bonding and Secondly, after the marriage shall begin when pregnant. Fertilization of mind will contain the karma code and it will take control of genetic code called DNA, the growth of the embryo in the uterus of the mother, safety in intra-partum phase until after delivery and baby care. The babies will be good or bad depending on the religious practices, rituals, taboos, including the roles of the father and mother in each ethnic groups.
2. Results of the quantitative study, composition of Austro-Asiatic ethnic woman and man obstetric in Thailand consist of five elements: 1) In each stage of the wedding traditions is the long-term practices of marriage to carry on and preserve obstetric wisdom creating a new life. 2) The role of women and man in relevant with the ancient trail and current practices ought to follow in obstetrics. 3) The inherited obstetric postpartum wisdom period resulting in healthy mother and child. 4) The obstetric contraindications, pregnancy period affecting health after delivery and 5) Courtship moral, mate selection and marriage influence in promoting physical–mental health of a family.
3. Results of practical guidebook for pregnant and postpartum women, people edition on the culture basis, when the draft edition was presented to the academy experts and group of mothers and baby specialists in Surin and Srisaket Provinces has considered and selected content for proposal suggestions to refine the document. This generated a substance and complete guidebook edition which proven of the combination of integration and modern medication harmoniously that could be applied in both Thailand area and ASEAN regions.

Key words: Austro-Asiatic, local wisdom, obstetric, Lower Mekong Sub-region



SESSION : 3

PRECLINICAL STUDIES OF HERBAL AND TRADITIONAL MEDICINE

KEYNOTE LECTURE

Phenolic Constituents Analysis and Activity Evaluation in Two Kinds of Traditional Chinese Medicines

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Background and rationale: Mango leaves and sophora flower bud are heat-relieve herbs and used for diabetes clinical treatment and have been successfully used to prevent and control diabetes.

Objectives: To reveal the active phenolic compounds and possible anti-diabetes mechanism of Mango leaves. To establish the phenolic compounds quality control method and confirm the best harvest period of sophora flower bud.

Methods: Type 2 genetic diabetes animal model and cells were used to find active compounds and clarify the possible mechanism. HPLC-QQQ-MS was used to confirm the best harvest period of sophora flower bud.

Results and Conclusion: Ethanolic extract of Mango leave dose-dependently decreased serum glucose and triglyceride in KK-Ay mice. Our *in vitro* and *in vivo* investigations revealed that the effect of Mango leave extract (ME) on glucose and lipid homeostasis is mediated, at least in part, through PI3K/AKT and AMPK signaling pathway. ME up-regulated the expression of PI3K, AKT and GYS genes by 2.0 fold, 3.2 fold, and 2.7 fold, respectively, leading to a decrease in glucose level. On the other hand, ME up-regulated AMPK and altered lipid metabolism. ME also down-regulated ACC (2.8 fold), HSL (1.6 fold), FAS (1.8 fold) and PPAR-$_{y}$(4.0 fold). From the active fraction, the active compounds of ME can inhibit the TG accumulation in HepG2 cells and the action mechanism maybe related to LKB1-mediated and AMP/ATP ratio-mediated AMPK activation.

HPLC-QQQ-MS was used to analysis 14 main compounds concluding flavonoids, matol glycoside, and saponins of S. *japonica* from different places and different growing period. As a result, a multi-component quantitative analysis method was established and the best harvest period was confirmed.

Key words: Traditional Chinese Medicine, Mango leave, sophora flower bud, anti-diabetes, quality control

Creation of National Cambodian Pharmacopoeia for the Quality Control of the Medicinal Plants, the Plant Extracts and the Plant-Based Medicines

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Background and rationale: The medicinal plant is a drug: it has biologic activities, it can show toxicity, and it is intended for a fragile population. In the light of this, the medicinal plant needs scientific expertise (both botanical, chemical, pharmacological, clinical and toxicological) and its distribution should be supervised. Traditional plant-based medicine takes up an important place in Cambodian primary health care system. Several hundreds of plants are indeed known for their prophylactic and healing properties. Yet, as for today, Cambodia has a poor legislation toward traditional medicine. The Ministry of Health of Cambodia has approved national policy on traditional medicine. This policy concerns the implementation of traditional medicine policy and highlights the need for quality, safety, and effectiveness of traditional medicine practices.

Objectives: Our objective is to create the National Pharmacopeia of Cambodia which will be tools to verify the conformity of both raw materials and plant based medicines. This project is supported by Institut de Recherche Pierre Fabre (IRPF), World Bank, and Ministry of Health of Cambodia.

Methods: The appointed plants have been selected through rigorous criteria, their monographs set up according to international standards. Analytical methods such as macroscopic and microscopic study, Thin Layer Chromatography (TLC), chemical reactions, High Performance Liquid Chromatography (HPLC) and UV-visible spectrophotometry methods are developed for quality control of the raw material and the plant extract.

Results: Today, the first monographs of raw plants have been established at the Joint Laboratory of Phytochemistry UHS-IRPF of the Cambodian University of Health Sciences *(Herba cum radice Andrographidis* and *Curcumae longae rhizome)* and new monographs are currently being developed.

Conclusion: Each monograph composing the National Pharmacopeia of Cambodia will be a tool for herbalists and plant based medicines producers and authorities to control the quality of both the raw medicinal plant and the plant extract.

Key words: Pharmacopoeia, monograph, traditional plant-based medicine, quality control, Cambodia

New Finding of An Anti-TB Compound in the Genus Marsypopetalum (Annonaceae) from a Traditional Herbal Remedy of Laos

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Tuberculosis has existed in Southeast Asia for thousands of years. Many traditional treatments involve herbal remedies. Over time, these traditional treatments have had the chance to become refined based on efficacy and safety. It was therefore hypothesized that plants that were used in the past and are still used today to treat symptoms associated with tuberculosis are more likely to contain anti-tubercular compounds than plants that have not been used continuously. To try to deduce which plants were used in Laos in the past, a collection of palm leaf manuscripts was studied and a list of plants used to treat symptoms associated with tuberculosis was compiled. Interviews were then conducted with contemporary healers to see if the same plants are still being used today. Plants that were found in the manuscripts and/or are presently used by healers were collected, extracted and were evaluated in an anti-tubercular assay. This paper presents the methods used to identify and collect plants used to treat symptoms indicative of tuberculosis, and the results of anti-TB assays to test for activity.

Ethnopharmacological relevance: There is widespread use of traditional herbal remedies in the Lao PDR (Laos). It is common practice to treat many diseases with local plants. This research project documented and analysed some of these traditional remedies used to treat symptoms of tuberculosis (TB).

Keywords:
2.080: antimycobacteria
2.136: botany
2.168: chromatography
2.204: cytotoxicity
2.480: phytochemistry
2.642: Traditional medicine Asia & Oceania

Additional keywords: medical ethnobotany, Laos, *Marsypopetalum*, Annonaceae

Chemical compounds studied in this article: Dipyrithione (PubChem CID: 3109)

Reduction of Colchicine Content after Detoxification of *Gloriosa superba* L. Roots

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Background and rationale: *Gloriosa superba* L. root, or 'Dong Dueng', is a crude drug employed in Thai traditional remedies for several ailments, including chronic rhinitis. Colchicine is an active constituent in the roots. It was reported that 7-11 mg caused lethal effect in human. The common side effects of colchicine include nausea, vomiting, diarrhea, and abdomen pain. However, in Thai traditional medical practice, the roots must be detoxified, either by 'roasting' or 'burning', prior using in compounding into Thai herbal remedies.

Objective: To quantitatively compare the amount of colchicines before and after detoxification by 'roasting' method

Methodology: Eight samples of *Gloriosa superba* L. roots, either collecting from wild populations or purchasing from herbal shops, were ground and passed through sieve No 60. Each sample was divided into 2 test-samples. The first test-sample was treated as a control, while the other test-sample was detoxified by roasting. Colchicine was then separated from each sample, both control and detoxified, and quantitatively analyzed by High Performance Liquid Chromatography (HPLC).

Results: Comparing with the controlled test-samples, the crude extracts of the detoxified test-samples were significantly increased by 15.44±8.30% ($p=0.000$), whereas the amount of colchicines in the detoxified test-samples were significantly decreased by 42.79±8.24% ($p=0.001$).

Conclusion: Detoxification by roasting has been proven to be one of the effective ways in preparing certain potentially toxic crude drugs before using in compounding into Thai herbal medicine.

Key words: *Gloriosa superba* L. roots, colchicine, detoxification, colchicine

Inhibitory Effect on β-Hexosaminidase Release of Extracts and Some Constituents of Ha-Raak, a Thai Herbal Remedy, Used for Allergic Disorders

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Background and rationale: Ha-Raak (HR) or Benchalokawichian, a Thai traditional herbal formulation, has long been used as antipyretic and to treat skin disorders. It comprises roots from five herbs: *Ficus racemosa, Capparis micracantha, Clerodendrum petasites, Harrisonia perforata,* and *Tiliacora triandra.* This polyherbal remedy has recently been included in the Thailand National List of Essential Medicines (Herbal Medicinal Products list).

Objective: To isolate the pure constituents and investigate anti-allergic against BSA-induced β-hexosaminidase release from RBL-2H3 cells.

Methods: A Bioassay-guided fractionation technique was used to evaluate anti-allergic activities of crude extracts, and those obtained by the multistep column chromatography isolation of pure compounds. Inhibitory effect on the release of β-hexosaminidase from RBL-2H3 cells was used to determine anti-allergic activity.

Results: Two pure compounds from HR formulation showed higher anti-allergic activity than crude or semi-pure extracts. Pectolinarigenin showed the highest anti-allergic activity, followed by *O*-methylalloptaeroxylin, with IC50 values of 6.3 μg/mL and 14.16 μg/mL, respectively. Moreover, the highest activities of pure compounds were significantly higher than chlorpheniramine (16.2 μg/mL).

Conclusions: This study provides some support for the use of HR in reducing itching and treatment of other skin allergic disorders. The two isolated constituents exhibited high anti-allergic activity and it is necessary to determine their mechanism of action. Further phytochemical and safety studies of pure compounds are required before development of these as anti-allergy commercial remedies.

Keywords: Ha-Raak (HR) remedy, anti-allergy, Thai traditional remedy

In vitro Anti-inflammatory, Mutagenic and Antimutagenic Activity of Cha-Tu-Ka-La-Thad Remedy and Its Ingredients

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Background and rationale: Cha-Tu-Ka-La-Thad (CKT) remedy is composed of the roots of *Plumbago indica* L. (Plumbaginacea), *Acorus calamus* L. (Araceae), *Clerodendrum paniculatum* L. (Verbernaceae) and *Dolichandrone serrulata* (Wall. ex DC.) Seem. (Bignoniaceae), each in an equal part by weights. CKT has been used as an antipyretic and anti-inflammatory drug in traditional Thai medicine. However, there is no evidence to support anti-inflammatory activity of this traditional remedy yet.

Objectives: This present study investigated the in vitro anti-inflammatory, mutagenic and antimutagenic activities of the roots of four plant species and CKT remedy.

Methods: Murine macrophage J774A.1 cells were treated with the CKT remedy and its ingredient extracts at the concentrations of 0, 6.25, 12.5, 25, 50, and 100 µg/ml in 96-well plates. The cells were stimulated by lipopolysaccharide (LPS) to evaluate the production of nitric oxide (NO), tumor necrosis factor-α (TNF-α) and prostaglandin E2 (PGE2) in the anti-inflammatory test while the concentration of 25, 50, 100 and 200 mg/ml of CKT remedy and its ingredient extracts were investigated the mutagenic and antimutagenic potential by the Ames test in *Salmonella typhimurium* strain TA98 and TA100.

Results: The outcome of this study displayed that all root extracts and CKT remedy significantly inhibited LPS-induced nitric oxide (NO), tumor necrosis factor-α (TNF-α) and prostaglandin E2 (PGE2) production in the anti-inflammatory test. Additionally, only the extracts of *A. calamus* exhibited direct mutagenicity on both strains and the fractionated water of *P. indica* based on without and with nitrite treatment exhibited direct mutagenicity on TA98 strain. Moreover, all extracts inhibited the mutagenicity of reaction of nitrite treated 1-aminopyrene on both strains in the Ames test.

Conclusion: Our findings suggest that CKT remedy and its ingredients can be further developed as promising anti-inflammatory and antimutagenic agent.

Keywords: Cha-Tu-Ka-La-Thad remedy, antimutagenic, murine macrophage anti-inflammatory activity, bacterial reverse mutation assay

Immunomodulatory Effect of Hua-Khao-Yen-Nua and Hua-Khao-Yen-Tai

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Background and rationale: The immune system is the important system that helps the body fight against foreign substances. Many plants were investigated for immunomodulatory activity and later developed into immunomodulatory agents or health products. Hua-Khao-Yen-Nua (*Smilax corbularia* Kunth) and Hua-Khao-Yen-Tai (*Dioscorea membranacea* Pierre) have been used as ingredients in traditional remedies for the treatment of cancer, inflammation and lymphopathy by Thai traditional doctors. Moreover, previous studies showed that they have anti-cancer, anti-oxidation and anti-inflammatory activities. However, there has not yet been a report on the immunomodulatory activity of these herbs.

Objectives: The objective of this study was to investigate immunomodulatory effect of Hua-Khao-Yen-Nua (*Smilax corbularia* Kunth) and Hua-Khao-Yen-Tai (*Dioscorea membranacea* Pierre) that might be useful for treatment cancer and AIDS.

Methods: The ethanolic extracts were obtained by maceration in 95% ethanol. For the water extracts, plant powder was boiled with water. Natural killer cells activity and lymphocyte proliferation activity were performed using peripheral blood mononuclear cells. Lymphocyte proliferation was investigated by 3H-thymidine uptake assay, while natural killer cells activity was performed by chromium release assay.

Results: The ethanolic extract of Hua-Khao-Yen-Nua showed significantly increased NK cells activity at a concentration of 10 ng/ml. However, it had no significant effect on lymphocyte proliferation. For Hua-Khao-Yen-Tai, its aqueous extract at all concentrations significantly stimulated natural killer cells activity. Moreover, the aqueous extract of Hua-Khao-Yen-Nua significantly increased lymphocyte proliferation at the concentrations of 1 ng/ml-10 μg/ml.

Conclusion: These results showed that the water extract of Hua-Khao-Yen-Tai showed a high potency of immunomodulatory effect. However, animal study of immunomodulatory activity of Hua-Khao-Yen-Tai should be performed to determine if it has a potential to be further developed into an immunomodulatory agent.

Key Words: *Smilax corbularia* Kunth, *Dioscorea membranacea* Pierre, immunomodulatory effect, Hua-Khao-Yen-Nua, Hua-Khao-Yen-Tai

Pharmacognostic Specifications and Lawsone Content of *Lawsonia inermis*

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Background and rationale: *Lawsonia inermis* L., commonly referred to henna, belongs to the Lythraceae family and is the sole species in the genus. It has been used as traditional or folk medicine for the treatment of a wide range of skin infectious diseases.

Objectives: To investigate pharmacognostic specifications and lawsone contents of *Lawsonia inermis* leaves from various sources throughout Thailand.

Methods: Twelve samples of *L. inermis* leaves were collected from different geographical areas in Thailand. Pharmacognostic specifications were performed according to WHO guideline for Quality control methods for medicinal plant materials. A simple and reliable method to determine lawsone contents was performed by thin layer chromatography (TLC) coupled with densitometry analysis and image analysis.

Results: Macroscopic evaluation of *L. inermis* was illustrated as whole plant drawing. Microscopic evaluation of *L. inermis* powders showed fragment of mesophyll, fragment of parenchyma, epidermis layer with stomata, and the rosette crystal of calcium oxalate. Physico-chemical parameters revealed that total ash, acid insoluble ash, loss on drying, and water content should be not less than 6.98, 1.12, 8.08, and 9.86% of dried weight respectively; whereas ethanol and water extractive values should be not less than 19.67 and 23.06% of dried weight respectively. Lawsone was detected in all samples of *L. inermis* ethanolic extracts. The content of lawsone in *L. inermis* leaves by TLC-densitometry was found to be 0.76 ± 0.05 g/100 g of dried crude drug; while the lawsone content evaluating by TLC image analysis was found to be 0.87 ± 0.11 g/100 g of dried crude drug. The validation parameters were investigated according to ICH guideline. The validation of the methods revealed that both TLC-densitometry and TLC image analysis showed good sensitivity and accuracy for lawsone quantitation in *L. inermis* leaves extracts.

Conclusion: The results obtained from pharmacognostic specifications could be used as the standardization data of *L. inermis* leaves and the results obtained from the development of TLC method could be applied to determine lawsone in other plant materials. Moreover, establishment of pharmacognostic profile and lawsone content of *L. inermis* will be able to guarantee quality, purity and identification of this plant.

Keywords: *Lawsonia inermis* L., pharmacognostic specification, lawsone, thin layer chromatography

Phytochemical Profiling of *Centotheca lappacea* (L.) Desv. Aerial Part

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Background and rationale: Barbed grass or *Centotheca lappacea* (L.) Desv. is a Thai indigenous herbal medicine that is used in the treatment of a post-partum period by topical and oral administrations. Previous phytochemical study on *C. lappacea* (L.) Desv. showed no report of chemical compounds from this plant. Therefore, the investigation of a phytochemical variant which might be expected to be responsible for its traditional use could be revealed and be preceded to a more detailed in biological activities.

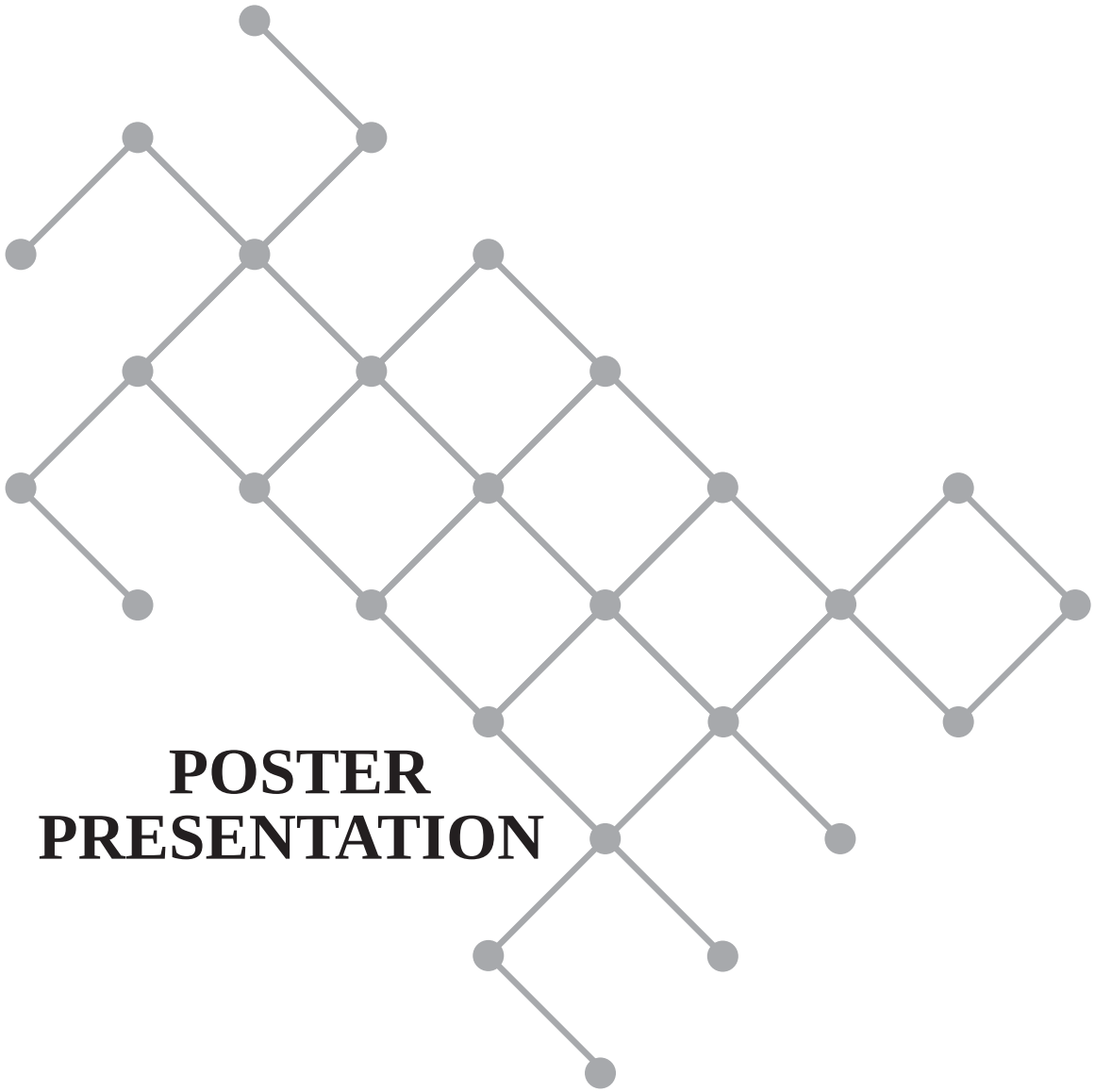
Objectives: To study the chemical constituents of *C. lappacea* (L.) Desv. aerial part.

Methods: Three techniques, GC/MS, Column Chromatography and X-Ray Fluorescence (XRF) were used to identify the phytochemical profiling of the aerial part of this grass. The determination of total phenolic and the total flavonoid contents using spectrophotometric methods were also investigated.

Results: The present study showed that *C. lappacea* (L.) Desv. aerial part consists of a wide range of compounds, i.e. phenolic compounds, fatty acids, triterpenes and phytosterols which the major isolated compounds from Column Chromatography are 4-coumaric acid and 5,7,4'-trimethoxyflavone. The grass smoke and its residue contain compounds, such as syringols, guaiacols, other substituted phenols and fatty acids. Silica was remarkably found in the crude drug sample and the boiling-water extract with concentration of 6.15% and 3.78% dry weight, respectively. The mineral, particularly silicon, was also detected in the crude drug sample and the boiling-water extract with concentration of 2.89% and 1.77% dry weight, respectively. Furthermore, the highest value of total phenolic content was 1770.6 µg gallic acid equivalents (µg GAE/g dry weight) in the boiling-water extract and the highest value of flavonoid content was 618.3 µg quercetin equivalents (µg QE/g dry weight) in the ethanol extract. No alkaloids were detected in any extracts by TLC-phytochemical screening.

Conclusion: Various extracts from the aerial part of *C. lappacea* (L.) Desv. were investigated for their chemical compounds. The phenolic compounds, silica and silicon content that are found in this plant may play an important role in its traditional use in a post-partum rejuvenating treatment.

Key words: *Centotheca lappacea*, Poaceae, barbed grass, phenolic, flavonoid



POSTER PRESENTATION

POSTER PRESENTATION # 1

New Technology for Alum Treatment (Sarn-Som Satu) by Microwave

Jiranan Plubprasit *, Raywatchai Plubprasit**

** Independent Researcher, **Independent Researcher*

Background and rational: Treated alum (anhydrous alum or sarn-som satu in Thai) is generally used as one of the ingredients in Thai Traditional recipes. It can be treated by heat applying to ceramic pot containing grinded alum crystalline on charcoal stove until it is dried and easily broken. Modern technology such as microwave can be applied to this purpose for facilitating, time saving and energy saving.

Objectives: The new technology "microwave" can be applied to Thai Traditional Medicine instead of the conventional method.

Methods: Alum crystalline is grinded and put into beaker or ceramic pot; therefore, it is able to apply microwave to break their hydrate bonds and to evaporate all of dissociated water out of alum in microwave oven.

Results:

1. Very good form of treated alum can be obtained and ready to use as an ingredient in Thai Traditional Medicine Recipes.
2. Microwave can break hydrate bond of alum crystalline and generate heat for dissociated water evaporation.
3. The experimental calculation confirms KAl(SO4)2.12H2O (potash alum) is the molecular formula of the alum crystalline material used in these trials because there are other alums such as soda alum (NaAl(SO4)2.12H2O), ammonium alum (NH4Al(SO4)2.12H2O) and chrome alum (KCr(SO4)2.12H2O)

Conclusions: Microwave; which is new source of energy, can be utilized instead of direct heat to prepare very good treated alum (anhydrous alum or sarn-som satu in Thai), in addition it is very convenient, time saving and energy saving. This modern technology can be applied to promote Thai Traditional Medicine go along with the modern world.

Key words: Treated alum, potash alum, sarn-som satu, microwave, recipes,

POSTER PRESENTATION # 2

Thai Traditional Medicine (TTM) vs. Modern (Western) Medicine (MM) Treatments for the Ebola Case Example

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Background and rational: The Thai Traditional Medicine (TTM) has been the valuable way of taking care of health for more than a thousand years ago. There are patterns of the infectious diseases treatments in The Takkasila Scripture of The Thai Traditional Medicine Textbook (Tumra Paesart Songkhrau) which will be compared to the standard practice of The Modern Medicine (MM) treatments in the Ebola case example.

Objectives: To compare the difference ways of practical treatments of TTM and MM through the same target of fighting with the serious infected Ebola virus disease by functioning the innate immune system.

Methods: Comparison of general TTM and MM in terms of philosophy, origins of diseases, diagnosis and treatments. Matching signs and symptoms of Ebola disease to TTM's hemorrhagic fever (khi pan dum/khi pan daeng in the Takkasila Scripture of Tumra Paesart Songkhrau). Comparing the MM practical treatments of Ebola virus disease: supportive care and symptomatic treatments i.e. rehydration and blood transfusion via IV, coagulation prevention, maintaining oxygen status and blood pressure to the three steps of TTM treatments: the toxin driving out (kra tung pit), internal treatment (prae khi) and prevention the recurrence and side effect (krob khi).

Results: Both of TTM and MM survivals depend on how a person's innate immune respond to the disease. The reports from the MM show that the death rate is from 25 percent and 90 percent so the average is about 50 percent. TTM treatment for khi pan dum/khi pan daeng depends on the first step treatment if there is insufficient of toxin driving out (kra tung pit) there will be malfunction of internal organs and their inside bleeding. The appearance of half body of maculopurpura rash indicates the 50 percent death but the total body one particularly the red, purple and black rash will lead to totally death.

Conclusions: Both TTM and MM are based on the functioning of the innate immune system responding to fight against virus infectious disease, i.e. Ebola. The TTM has three steps to treat which to bring back the body elements balancing while the MM has modern technology to diagnose by laboratory testing and supportive care and symptoms treatments, i.e. rehydration, blood transfusion via IV, maintaining oxygen status & blood pressure and treating other complications. If the TTM & MM systems are able to be integrated, the treatments will be better.

Key words: Ebola, hemorrhagic fever, Takkasila, kra tung pit, MM, TTM

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