

## Chapter I

### INTRODUCTION

#### Brief Background

Traditional medicine, including herbal medicine, has been, and continues to be, used in virtually every country. The global market for traditional medicine was estimated at US\$ 83 million annually in 2008, with a rate of increase that has been exponential (Zhang & Robinson, 2011). The “back-to-nature” and “health conscious” global trends have partly contributed to the welcoming and acceptance of herbal medicine and dietary supplements as a means of health care and health promotion (Chokevivat, Chutaputti, & Khumtrakul, 2005). Consumers’ perceive herbal medicine as less toxic than chemicals or allopathic medicines.

In 1978, the World Health Organization (WHO) has issued the Alma-Ata Declaration on primary health care urging member states to use indigenous medicine as well as herbal medicine. In 2002, WHO launched the traditional medicine strategy. The main objectives of the WHO Traditional medicine activities are (WHO, 2002):

- To facilitate integration of traditional medicine into the national health care system by assisting Member States to develop their own national policies on traditional medicine.
- To promote the proper use of traditional medicine by developing and providing international standards, technical guidelines and methodologies.

- To act as a clearing-house to facilitate information exchange in the field of traditional medicine.

The WHO strategy is to facilitate the integration of traditional medicine into nation health systems and promote the collection and use for better evidence on quality, safety and efficacy. This is a starting point for the world to look back on wisdom or traditional knowledge.

In Thailand, Thai herbal medicine is well recognized. One reason is because modern medicine has not been the answer for the good health of Thai people since a large amount of the country's healthcare budget is spent on high technology medical equipment and pharmaceutical products to treat major health problems, i.e. diabetes, hypertension, cardiovascular diseases and various types of cancer. In order for Thailand to become more cost-effective and self-reliant, the Thai government has looked back at the country's heritage in healthcare, and acknowledged the role of Thai traditional and herbal medicine. This can play an important role in the treatment of common diseases, disease prevention and health promotion. The policy support for Thai Traditional and herbal medicine began during the 4<sup>th</sup> National Economic and Social Development Plan (1977-1981), at which time 57 medicinal plants were selected and recommended for the treatment and relief of 19 groups of common diseases. During the 7<sup>th</sup>-9<sup>th</sup> National Economic and Social Development Plan (1992-2006), Thai traditional and herbal medicine knowledge was developed through research and the improvements were made on the standard for successful integration into the health service system and for health promotion through self-care. The 10<sup>th</sup> National Economic and Social Development Plan focused on research



and development for improving the quality of life and creating economic value, managing intellectual property rights derived from research and development, and developing personnel so that they would be capable of integrating Thai traditional medicine into the modern medical system. Moreover, the National List of Essential Medicines (NLEM), first compiled in 1999, broaden the list of drugs derived from herbs to support Thai traditional medicine use and acceptance among the Thai population. The latest version of NLEM, 2011, contains 71 herbal medicinal products. The prior version produced in 2006, contained only 19 herbal medicinal products. Another support from the government sector was the Ministry of Public Health (MOPH) policy for easily access to herbal medicines. This was accomplished by revising the criteria and broadening the groups of medicines and symptoms so that more traditional household drugs could be registered and sold in all pharmacies (Chokevivat, Wibulpolprasert, & Petrakard, 2012).

As a result of government support, the demand for Thai traditional and herbal medicine is increased. That emerging popularity of Thai herbal medicines caused an increasing in the number of herbal product manufacturers and herbal products launched into markets. This can be observed in the growth of manufacturing programs such as the one at Abhaibhubejhr, which experienced annual growth rates rising in each successive year from 2002 to 2012. Their number of products manufactured rose from 66 items in 2001 to 110 items in 2012 and sale increased from 16 million baht to 230 million baht in the same period.



## Rational and Statement of the Problem

Finding reliable information on herbal use by the general public is difficult because of lack of trustable sources of information, on Internet may exist in large volumes, but it is very difficult to search for specific information, and often search results must be interpreted by specialists or experts, the number of which is limited.

Chao Phya Abhibhubejhr Hospital (CAH) recognized this problem. In 2006, CAH established Thai Traditional Medicine Information Service (TTM-IS) under the responsibility of the Drug Information Service (DIS) of the Pharmacy Department. The objective of this unit is a protect consumers by providing appropriate information on herbal and their use for health care professionals in the hospital and consumers. A consultation unit in traditional and herbal medicine provides Thai herbal medicine experts consultations and provides useful herbal medicine information for users. Approximately 30 questions are received by the unit each day. The most frequently asked questions include, "What are the indications of certain herbs?", "Is it safe to consume certain herbs?" and "What herbal remedies are suitable for my health condition?".

In the process of answer finding, staffs use a keyword-based search technique from general search engine such as Google, Yahoo or Pharmacy department electronic files. Documents or information retrieved only if they contain keywords specified by the staff. Name of herbs, diseases or symptoms can be called in different name depend on the region. The result of keyword search in general search engine may not cover other related keywords or synonyms because of multiple



synonyms. For example, searching for the indication “Yor (ยอ)” by using it as a keyword. In general, “Yor” is the most common name and widely used in many regions. But, in some region it can be called in other name such as Indian mulberry, *Molindacitrifolia* or Mak-ta-suea (หมากตาเสือ). General search may find only Indian mulberry and *Morindacitrifolia*. Mak-ta-suea is not a common name and only some region use this term to call “Yor”. The search result of using Mak-ta-suea as a search keyword may not retrieve because it is an uncommon term and the relationship between Yor and Mak-ta-suea has not been defined in the search engine. With ontology employed search system, relations of name, synonym and other related information will be defined in the process of ontology development. Hence, a search result will display all related information of a certain keyword. In this case, using either Yor or Mak-ta-suea as a keyword search, the result will be retrieved. Other medicinal plants which have indication related to “Yor” will be finding. This means ontology help increasing performance of search system in finding correct and precision result. Other problem of finding answers is sources of information which experts use is still largely text based, not well organize and difficult and time consuming to search for certain answer. Information comes from various sources, has different formats, is scattered, and is not well organized. Most such information is kept in text document form. Using this knowledge, and eventually reusing it, is not convenient.

Nowadays ontology is now pervasive in biomedicine, it serve the standardized terminology, to enable access to domain knowledge (Hoehndorf, Dumontier, & Gkoutos, 2012). to manage various sources of information (Siricharoen, 2009). Ontology provides an understanding of the structure of information or knowledge by



defining related terms and concepts in herbal medicine and their relationships.

In biomedicine, there is varieties ontologies i.e. medical ontology or disease-based ontology. In the future, interoperability between ontologies, including herbal medicine ontology, will help to enhance searching performance to cover most related information. Ontology allows common knowledge sharing and the reuse of knowledge .

In this study, ontology is used to define all related tems, concepts, classes, sub-classes and properties of Thai herbal medicine knowledge. Hence, the relations of each concept will be defined to create an ontology map. The result from the first stage is ontology map of Thai herbal medicine terms, concepts, classes, sub-classes and properties. The second stage is creating the Thai herbal medicine database system and integrate ontology map to the search system of the database. The result from this stage is Thai herbal medicine database that integrate Thai herbal ontology in the search system.

The output of the study is expected to support an information searching process of the TTM-IS, consume less time and produce more relevant and precise information. Ontology will act as facilitator for the database in searching for require information.



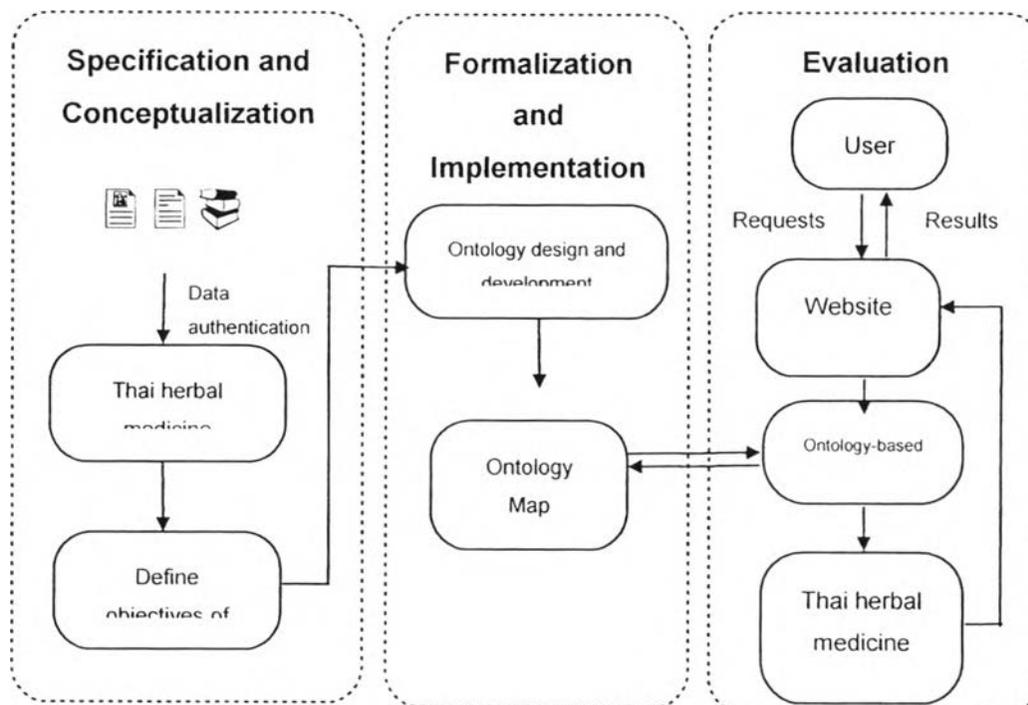
## Purpose of the Study

To develop an ontology of Thai herbal medicine knowledge of Thai Traditional Medicine Information Service (TTM-IS) of Chao Phya Abhaibhubejhr Hospital (CAH)

## Research Questions

1. What are the topics commonly used for searching herbal medicine knowledge of Thai Traditional Medicine Information Service (TTM-IS) of Chao Phya Abhaibhubejhr Hospital (CAH)?
2. What is the ontology of the Thai herbal medicine?

## Conceptual framework



## Operational Definitions

- Thai Herbal Medicine-herbs or medicinal materials are used for the treatment diseases or symptoms in Thai Traditional Medicine
- Ontology-a description of the concepts and relationships among them that can exist for an agent or a community of agents in a specific knowledge domain
- Thai herbal medicine terminology-a study to define and represents term used in Thai Herbal Medicine
- Semantic search system-the prototype system for searching and displaying the result

## Scope of the Study

1. Scope of domain knowledge in herbal medicine selected from Chao Phya Abhaibhubejhr Hospital Drug List (Herbal medicine list) which five main health problems which can be treated with herbal medicine These are:

- Gastro-intestinal problem
- Musculoskeletal problem
- Respiratory tract problem
- Diabetes
- Fever



## 2. Scope of data collection

2.1. Herbs or medicinal plants

2.2. Scientific name

2.3. Synonym

2.4. Local name

2.5. Family

2.6. Properties of herbs

2.7. Pharmacological effect/ ethnopharmacological property

2.8. Taste ( 3 major taste- รสประธาน)

2.9. Safety and adverse reaction

2.10. Reference

2.11. Herbes application

- Formulas/recipes

- Indication

- Preparation

- Dosage form



- Dose
- Precaution and contraindication

## 2.12 Symptoms

- Symptoms name
- Symptoms description

### Expected Benefits

- 1 Thai herbal medicine terminology that were used in Traditional Medicine Information Service (TTM-IS) of Chao PhyaAbhaibhubejhr Hospital (CAH) be defined and organized
- 2 Ontology map of Thai herbal medicine in Traditional Medicine Information Service (TTM-IS) of Chao PhyaAbhaibhubejhr Hospital (CAH) will be used as one set of ontology to mapping with other ontology and enhance the ontology of herbal medicine knowledge domain and other related knowledge domain

