Development of a template for the classification of traditional medical knowledge in Korea

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ABSTRACT

Ethnopharmacological relevance: Traditional Medical Knowledge (TMK) is a form of Traditional Knowledge associated with medicine that is handed down orally or by written material. There are efforts to document TMK, and make database to conserve Traditional Medicine and facilitate future research to validate traditional use. Despite of these efforts, there is no widely accepted template in data file format that is specific for TMK and, at the same time, helpful for understanding and organizing TMK.
Aim of the study: We aimed to develop a template to classify TMK.
Materials and methods: First, we reviewed books, articles, and health-related classification systems, and used focus group discussion to establish the definition, scope, and constituents of TMK. Second, we developed an initial version of the template to classify TMK, and applied it to TMK data. Third, we revised the template, based on the results of the initial template and input from experts, and applied it to the data.
Results: We developed the template for classification of TMK. The constituents of the template were summary, properties, tools/ingredients, indication/preparation/application, and international standard classification. We applied *International Patent Classification*, *International Classification of Diseases (Korea version)*, and *Classification of Korean Traditional Knowledge Resources* to provide legal protection of TMK and facilitate academic research. The template provides standard terms for ingredients, preparation, administration route, and procedure method to assess safety and efficacy.
Conclusions: This is the first template that is specialized for TMK for arranging and classifying TMK. The template would have important roles in preserving TMK, and protecting intellectual property. TMK data classified with the template could be used as the preliminary data to screen potential candidates for new pharmaceuticals.

1. Introduction

Traditional knowledge (TK) is the collective heritage of a particular indigenous people or local community. Among the many types of TK, traditional medical knowledge (TMK) has social, cultural, and scientific value in the maintenance of health, and in the prevention, diagnosis, and improvement or treatment of physical and mental illnesses. Increased commercial and scientific interest in traditional medicine has led to a demand for better recognition, respect, preservation, and protection of TMK (World Intellectual Property Organization [WIPO], 2008).

The pharmaceutical industry has increasingly focused on TMK.

The industry has obtained patents on traditional medicinal plants and developed new pharmaceuticals. This type of intellectual property rights (IPR) infringement by powerful nations is a big issue. Some IPR issues have been solved by world opinion against pharmaceutical companies. For example, a patent was revoked that had been obtained by a pharmaceutical company for a drug produced from the neem tree in India (Hoggan, 2000; Marden, 1999). However, IPR continue to be threatened because of the lack of documentation.

There are strong arguments concerning the protection of IPR of TM on the international stage (Twarog and Kapoor, 2004). The World Intellectual Property Organization (WIPO) is primarily concerned with the protection of TMK in an intellectual property (IP) sense (WIPO, 2008; Twarog and Kapoor, 2004). Documentation is important and may be useful for the defensive protection of TMK. Documenting TMK includes recording it, writing it down, and taking pictures of it or filming it. Documenting may help

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preserve knowledge for future generations. Important IP rights may be strengthened when TMK is documented in a defensive publication (Abbott, 2014; WIPO, 2008).

The WIPO has suggested technical proposals on databases and registries of TK (The Asia Group WIPO, 2002). In fact, some countries including India, Panama, Peru, and Venezuela document TK in the form of databases or registries (Twarog and Kapoor, 2004). In accordance with the international situation, there are efforts to document TMK, and make it a database in Korea (Cultural Heritage Administration [CHA], 1996; Munhwa Broadcasting Corporation [MBC], 1987). However, there is no widely accepted template in data file format that is specific for TMK and helpful for classifying and organizing TMK recorded in natural language. When documenting TMK, various elements are collected such as disease, materials, and procedure. This documentation departs from the standard database. Developing a template for the classification of TMK is urgently needed for understanding various elements of TMK and for classifying the practical usage of the TMK data as a knowledge resource.

The present study was conducted to develop a template for the classification of TMK in Korea. In the template, we established the constituents of TMK, and we developed a classification of TMK constituents to make knowledge easily accessible to academic researchers and to provide legal protection for TMK.

2. Materials and methods

The workflow contained the following specific steps: (1) focus group discussion and a literature review of articles, books, and existing health-related classification systems, (2) developing the initial template, (3) applying the initial version to the documented data, (4) revising the template, and (5) reapplying the revised version template to the documented data (Fig. 1). Each of the steps is described in more detail below.

2.1. Initial development of the template for the classification of TMK

2.1.1. Focus group discussion and literature reviews

Five groups provided focus group discussions on the cognition of TMK. Each group consisted of eight to nine people who lived in Seoul, Daejeon, Daegu, Gwangju, and Jeju Island. The discussion was approved by the Ethics Committee of the Korea Institute of Oriental Medicine (KIOM; approval number I-1106/001-001) (Ahn et al. 2012; KIOM, 2012). The literature was reviewed in three areas: articles, related books, and health-related classification system. First, a systematic review was performed to establish the scope and definition of TMK (Kim et al., 2012; Seo et al., 2013). Second, to examine the constituents of TMK, we reviewed books related to documenting TMK such as *Korea Folk Comprehensive Research Report* (CHA, 1996), *A Statute of Traditional Korean Medical Knowledge* (MBC, 1987), *Research and Utilization of Rural Orally Transmitted Traditional Knowledge Resources* (Rural Development Administration (RDA), 2007), and *Folk Plants in the Korean Peninsula* (Korea National Arboretum, 2012). Third, we analyzed existing health-related classification system such as the *International Classification of Diseases,* 10th edition (ICD-10), *Systematized Nomenclature of Medicine* (SNOMED), *Medical Subject Headings* (MeSH), and *Unified Medical Language System* (UMLS). This analysis was performed to explore the applicability of the pre-existing system for TMK and to identify the characteristics of the representative standardized classification system.

2.1.2. Template development

We discussed the constitutional elements and key elements with 10 Korean medical doctors (KMDs). Based on the literature

review and discussion, we designed the initial version of the template for the classification of TMK in Korea.

2.1.3. Application to documented data

To confirm the practical applicability of the initial version of the template, we applied it to the TMK data surveyed in Gyeonggi/Chungbuk Province in Korea by KIOM. The KIOM is a government-funded research institute for Korean Medicine. Since 2011, the KIOM has conducted an annual in-person household survey on the use of TMK. In-depth interviews, collection of specimens, and video recording were performed.

2.2. Revision of the template for the classification of TMK

2.2.1. Revision of the template

The application experiences of the first version template were shared among researchers. The researchers were specialists in Korean medicine, herb medicine, IP, and Korean linguistics. We revised the template after taking the advice of the TMK researchers and panels.

2.2.2. Reapplication to documented data

We applied the revised template to the TMK data in Korea to detect improvements.

3. Results and discussion

3.1. Initial development of the template for the classification of TMK

3.1.1. Focus group discussion and literature review

The focus group discussions revealed that people regarded TMK as remedies using ingredients easily obtained in everyday life, as remedies handed down from ancestors, or as treatments or diets based on folk beliefs (Ahn et al. 2012; KIOM, 2012). The systematic review revealed no standardized definition of TMK, and the previous classification criteria do not fit into the Korean healthcare system (Kim et al., 2012; Seo et al., 2013). Unlike in Western countries, the provision of traditional forms of medicine and medical treatment is an accepted part of conventional health care and is covered by the national medical healthcare system in some countries including Korea, China, and India (Park et al., 2012). Accordingly, we drew the line between TMK and conventional health care by practitioners. TMK in Korea is defined as a form of TK associated with Korean medicine that is handed down orally or by written material. It includes all actions conducted for the purposes of health, generation, prevention of disease, and treatment, etc. by folk healers or by the general public. The common constituents of TMK among the reviewed books and articles were indications, materials, preparation, and application.

Table 1 shows the results of the analysis of representative health-related classification systems, namely ICD-10, SNOMED, MeSH, and UMLS. Common characteristics of the classification systems are the completeness of expression, the accuracy of meaning, and the explicit relationship of hierarchy. None of the classifications does not seem to be in perfect accordance with TMK characteristics. However, several constituents of SNOMED are similar to those of TMK. SNOMED has 19 top-level concepts and 55 constituents that cover the broad scope of real clinical practice. Accordingly, we established the goal of designing a template that expresses the concept, relationship, and hierarchy of TMK, and applied the advantages of SNOMED.

3.1.2. Template development

Ten KMDs analyzed the constitutional elements of TMK and selected the key elements, which were ingredients, application, and