

## Mapping the Terms of Medicinal Material and Formula Classification to International Standard Terminology

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### ABSTRACT

The current study aims to analyze the acceptance of International Standard Terminology (IST) related to herbs and formulas used in Korea. It also intends to examine limitations of each term source by linking texts for herbal medicine research and formula research used in schools of oriental medicine with medicinal substance-formula classification names within the IST framework. This study examined 64 medicinal classification names of IST, including synonyms, 41 formula classification names, 65 classification names of "Herbal Medicine Study," 89 medicinal classification names of "Shin's Clinical Herbal Medicine Study," and lastly 83 formula classification names of "Formula Study." Data on their chief virtue, efficacy and characteristics as medicinal substances were extracted from their definitions, and such data were used to perform Chinese character-English mapping using the IST. The outcomes of the mapping were then analyzed in terms of both lexical matching and semantic matching. In terms of classification names for medicinal substances, "Herbal Medicine Study" had 60.0% lexical matching, whereas "Shin's Clinical Herbal Medicine Study" had 48.3% lexical matching. When semantic matching was also applied, "Herbal Medicine Study" showed a value of 87.7% and "Shin's Clinical Herbal Medicine Study" 74.2%. In terms of formula classification names, lexical matching was 28.9% of 83 subjects, and when semantic matching was also considered, the value was 30.1%. When the conceptual elements of this study were applied, some IST terms that are classified with other codes were found to be conceptually consistent, and some terms were not accepted due to different depths in the classification systems of each source.

**Keywords:** Medicinal substance-formula classification names, International standard terminology, Oriental medicine

### 1. INTRODUCTION

The Western Pacific Regional Office (WPRO) of the World Health Organization (WHO) is implementing a series of projects in various areas in order to standardize traditional medicine (TM), and WHO International Standard Terminologies on Traditional Medicine in the Western Pacific Region (IST) [1] is an outcome within the standardization framework, produced using an evidence-based approach. The IST initiative aims to unify various English expressions of TM and use standard terminology in education, training, practice and research. The IST was officially published in 2007 after three consultation meetings in 2004 and 2005 involving experts of traditional Korean (TKM), Chinese (TCM), Japanese (Kampo) and Vietnamese medicine (TVM), followed by an additional two years of editorial work [2]-[4].

The IST has a total of 3,259 terms from basic theories, diagnostics, various therapeutics including acupuncture-moxibustion, and classic titles [2],[3]. On the other hand, acupuncture point names and locations were excluded from the IST because there are relevant existing WHO standards [5]. Medicinal materials were excluded from the IST as well,

because each country's domestic standards on pharmacopoeia and provisions [6-8] differ from one another, and formula titles of herbal medicinal prescriptions follow country-specific rules, which presents limitations for a conference of academic bodies to deal with [3],[4]. A separate initiative to standardize nomenclature, standards and experimentation is being pursued by the Forum on Harmonization of Herbal Medicine (FHH), a separate entity under WHO/WPRO [9]. Therefore, while medicinal substance and formula nomenclature are not included in the IST, it still contains 207 terms for medicinal substances and formulas, laying the foundation to introduce standard terms, albeit limited to certain areas of herbal medicine.

An IST such as this serves as a basis for establishing and amending domestic and group standards. For instance, a Korean version [10] of standard acupuncture point locations was published for domestic use, and texts [11],[12] used in colleges of oriental medicine have been amended to be actively utilized in education and research in the fields of point locations and acupuncture in Korea [13]. However, because only a small number of medicinal material- and formula-related terms are listed with the IST and their areas are limited, few terms have been linked to the terms used domestically or reflected in texts for education or research.

Therefore, this study aims to extract classification names

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from medicinal substance-formula terms found in “Herbal Medicine Study” [14] and “Shin's Clinical Herbal Medicine Study” [15], which are texts for herbal medicine used at domestic schools of oriental medicine, and “Formula Study” [16], which is also a text for formula study. This study goes on to link these terms with those listed with the IST in order to analyze how many IST terms are included in the actual education terms for classification names used in the oriental medicine field in Korea and to examine limitations of each source. Ultimately, we hope to devise ways to ensure wider use of herbal medicine-formula texts as part of the IST.

**2. MATERIALS & METHODS**

**2.1. Collection of IST medicinal-formula classification names**

IST consists of a code, an English term, a Chinese term and definitions and descriptions in English. The terms are

distinguished based on a concept, and Chinese terms are used to identify the English terms. The codes used in the IST follow a three-depth classification system, and the first depth is comprised of eight categories - General, Basic Theories, Diagnostics, Disease, Therapeutics, Acupuncture & Moxibustion, Medicinal Treatment, and Classics [2]-[4]. Among these, medicinal substance-formula terms are 207 terms belonging to the Medicinal Treatment category, and 112 of these are medicinal terms, whereas the remaining 95 are formula terms [2],[3]. Among the terms that belong to the third depth (sections) such as medicinal principles, processing and preparation form, 64 medicinal classification names and 41 formula classification names including synonyms were collected and each term was assigned a unique ID to which an IST code was applied as in [IST\_ist code\_H#] or [IST\_ist code\_F#]. From definitions described in English, chief value, efficacy and other information (nature-flavor of a medicine, medicinal ingredients included in the formula) were extracted (Table 1).

Table 1. Examples of medicinal classification data from the IST

ID	Term	Chinese	Chief value	Efficacy	Nature of medicine
IST_6.1.49_H1	exterior-releasing medicinal	解表藥	external pathogen	the effect of dispelling external pathogen sweating	
IST_6.1.50_H2	wind-cold-dispersing medicinal	發散風寒藥	exterior pattern/syndrome	the effect of dispersing wind and cold	
IST_6.1.51_H3	pungent-warm exterior-releasing medicinal	辛溫解表藥	wind-cold exterior pattern/syndrome	treating a wind-cold exterior pattern/syndrome	exterior-releasing medicinal pungent in flavor and warm in property
IST_6.1.52_H4	wind-heat dispersing medicinal	發散風熱藥	exterior pattern/syndrome	the effect of dispersing wind and heat	
IST_6.1.53_H5	pungent-cool exterior releasing medicinal	辛涼解表藥	wind-heat exterior pattern/syndrome	treating a wind-heat exterior pattern/syndrome	exterior-releasing medicinal pungent in flavor and cool in property
IST_6.2.62_F1	exterior-effusing formula	發表劑	exterior patterns/syndromes	diaphoretic, muscle-releasing and eruption-promoting effects	formula that is composed of exterior-releasing medicinals
IST_6.2.63_F2	emetic formula	湧吐劑	phlegm syncope, food accumulation, and ingestion of poisons	formula that induces vomiting	
IST_6.2.63_F3	emetic formula	吐劑	synonym of 湧吐劑		
IST_6.2.64_F4	interior-attacking formula	攻裏劑	interior excess patterns/syndromes	bowel-moving, heat-purgating, accumulation-attacking and water-discharging effects	formula mainly composed of purgatives

**2.2 Collection of medicinal classification**

In general, a medicinal includes herbal, animal and mineral medical substances, but herbal medicinal substances account for most of the medicinal classes and hence is commonly referred to as herbs.

There are several methodologies to classify the medicinal substances. Of these, “Shennongbencaojing” [17] distinguished

them using three grades – top, medium and low – in terms of longevity, life nurturing and disease treating, whereas “Bencaogangmu” [18] presented 17 categories including water, fire, earth, metal and stone based on the medicinal substances natural state – animal, herbal or mineral – and on its origin. Meanwhile, “Yixuerumen” [19] classified the medicinal substances into seven groups depending on its efficacy such as

wind-dispelling, heat-clearing and dampness-draining. Also Hwang has seven categories including tonifying, astringent, dispersing and purgative, whereas Ga's classification includes qi – blood, five viscera, phlegm and fire. Kang's classification centered on viscera-bowels such as heart, liver, spleen, lung and kidney [15].

The subjects of this study, "Herbal Medicine Study" [14] and "Shin's Clinical Herbal Medicine Study" [15], classified the medicinal substances centering on their efficacy. "Herbal Medicine Study" [14] lists 65 classification names including synonyms, whereas "Shin's Clinical Herbal Medicine Study"

[15] contains 89 classification names, and each classification name was assigned a unique set of IDs, [Herbal\_H#] and [Clinical\_H#], consecutively for collection. They all have a two-depth classification system, and considering this, terms for chief virtue and efficacy, which are essential bases for conceptual distinction, were extracted from a classification name's definition, and nature-flavor information of a medicinal substance, where available, was collected additionally in order to utilize it in the mapping of the same yet more sophisticated concepts (table 2).

Table 2. Examples of collected data from "Herbal Medicine Study" and "Shin's Clinical Herbal Medicine Study"

ID	Chinese	Hierarchy	Chief value	Efficacy	Nature of medicine
Herbal_H1	解表藥	supercategory	表證 exterior pattern/syndrome	發汗解表 promote sweating to release the exterior	辛 pungent
Herbal_H2	發散風寒藥	subcategory	表寒證 exterior cold pattern/syndrome	辛溫解表 / 發散風寒 release the exterior with pungent-warm	辛溫 pungent-warm
Herbal_H3	發散風熱藥	subcategory	風熱表證 exterior heat pattern/syndrome	辛涼解表 / 發散風熱 release the exterior with pungent-cool	辛涼 pungent-cool
Clinical_H15	解表藥	supercategory	表證 exterior pattern/syndrome	發汗 and 表邪發散 promote sweating to release the exterior	
Clinical_H16	辛溫解表藥	subcategory	表寒證, 風寒表實證 exterior cold pattern/syndrome	辛溫解表 release the exterior with pungent-warm	辛溫 pungent-warm
Clinical_H17	發散風寒藥	subcategory	synonym of 辛溫解表藥		
Clinical_H18	辛涼解表藥	subcategory	表熱證 exterior heat pattern/syndrome	辛涼解表 release the exterior with pungent-cool	辛涼 pungent-cool
Clinical_H19	發散風熱藥	subcategory	synonym of 辛涼解表藥		

### 2.3 Collection of formula classification

Medical professionals throughout history have attempted to categorize and organize formulas using diverse standards to ensure better understanding of formulas and convenience of use. "Huangdineijing" [20] placed formulas into seven categories including major-minor, relax-tension depending on the seriousness of illness, body part, pace, and number of medicinal substances used, whereas "Shengjizonglu" [21] offers ten categories including diffusion, unblock, tonifying, and heavy-light based on efficacy. Meanwhile, "Jingyuequanshu" [22] and "Yixuexinwu" [23] classified formulas based on eight laws (principles) of treatment, whereas "Yifangjijie" provided 22 categories including tonifying-

nourishing, exterior-effusing, harmonizing-releasing, and regulating qi, similar to today's categorization [24]. From "Formula Study" [16], the study's subject, 83 classification names including synonyms were collected, and they were assigned a unique ID [Formula\_F#] in a consecutive manner. They have a three-depth classification system; considering this, chief virtue and efficacy of a formula, which are essential bases for conceptual differentiation, as well as characteristics of medicinal ingredients, an additional basis for conceptual differentiation, were extracted from the definitions of classification names (table 3).

Table 3. Examples of collected data from "Formula Study"

ID	Chinese	Hierarchy	Chief value	Efficacy	Nature of medicine
Formula_F1	解表劑	supercategory	表證 exterior pattern/syndrome	發散解表 dispel pathogenic factors from the superficialities of the body	解表藥物 exterior-releasing medicinals

Formula_F2	辛溫解表劑	subcategory	表寒證 exterior cold pattern/syndrome	發散風寒 dispel wind and cold	辛溫解表藥物 pungent-warm exterior-releasing medicinal
Formula_F3	辛涼解表劑	subcategory	表熱證 exterior heat pattern/ syndrome	發散風熱 dispel wind and heat	辛涼解表藥物 pungent-cool exteriorreleasing medicinal
Formula_F4	扶正解表劑	subcategory	體虛外感證 pattern/syndrome of qi deficiency with external contraction	補氣 兼 解表 tonify qi with release the exterior	補益藥物 兼 解表藥物 tonifying and replenishing medicinal with exterior-releasing medicinals

2.4 Mapping of classification names of IST and text

In order to map the IST written in English and the classification names written in Chinese in texts, the chief virtue, efficacy and medicinal properties of medicinal substances, which are essential conceptual differentiation factors, were linked to each other. For instance, 發散風寒藥 (Herbal\_H2) has 外感風寒 as its chief virtue and 辛溫解表 as its efficacy and medicinal property. For these elements, their IST equivalents, which are *exterior cold pattern/syndrome* (IST\_2.5.36) and *release the exterior with pungent-warm* (IST\_4.2.8), were identified and linked accordingly. In addition, IST’s classification names for medicinal substances were set to have a two-depth classification system based on the term’s description in the actual mapping process, without distinguishing the depth of the classification names. Based on these results, Chinese terms were mapped with their IST counterparts with the identical chief virtue and/or efficacy, and then the IST’s acceptance of text terms was examined. At this time, the coverage was divided into lexical matching and semantic matching. Lexical matching refers to when two terms not only have matching strings, as in the case of *exterior-releasing medicinal: 解表藥* (IST\_6.1.49) / *解表藥* (Herbal\_H1) / *解表藥* (Clinical\_H15), but they also have an identical chief virtue, as in *exterior pattern/syndrome: 表證* (IST\_2.5.33), or the same efficacy, as in *promote sweating to release the exterior : 辛溫解表* (IST\_4.2.7). Semantic matching, on the contrary, refers to when two terms have different strings, as in *dampness-resolving medicinal: 化濕藥* (IST\_6.1.68) / *芳香化濕藥* (Herbal\_H18) / *芳香化濕藥* (Clinical\_H42), but their conceptual elements such as the chief virtue, as well as the efficacy and medicinal properties match, as in the case of *dampness: 濕* (IST\_1.6.14) and *resolve dampness with aroma: 芳香化濕* (IST\_4.2.107), respectively. Additionally, types of terms that are problematic or unaccepted were also analyzed. However, those that were already defined as synonyms in the IST or in the texts, such as *emetic formula : 湧吐劑* (IST\_6.2.63\_F2) and *emetic formula : 吐劑* (IST\_6.2.63\_F3), were treated as the same concept [2],[14],[15].

3. RESULTS

Regarding classification names of medicinal substances, some of the mapping results involving 64 terms from the IST, 65 terms of “Herbal Medicine Study” and 89 classification names from “Shin’s Clinical Herbal Medicine Study” are shown in the top portion of Table 4. Representative concepts were established using 21 categories and 27 divisions in total, and most of such concepts are based on the IST terms. Lexical matching for “Herbal Medicine Study” and “Shin’s Clinical Herbal Medicine Study” was 60.0% and 48.3% respectively, whereas when semantic matching was also included, the values were 87.7% and 74.2% respectively, for “Herbal Medicine Study” and “Shin’s Clinical Herbal Medicine Study.” Also 29 concepts including 溫化寒痰藥 (Herbal\_H40), 清化熱痰藥 (Herbal\_H41), 止瀉藥 (Clinical\_H81) and 抗癌藥 (Clinical\_H37) could not be mapped to IST terms. On the contrary, three IST terms, *wind-dampness-dispelling and cold dispersing medicinal: 祛風濕散寒藥* (IST\_6.1.66\_H18), *wind-dampness-dispelling and heat clearing medicinal: 祛風濕清熱藥* (IST\_6.1.67\_H19), and *liver-emolliating medicinal: 柔肝藥* (IST\_6.1.104\_H59), were not used in the texts.

For formula classification names, 41 terms were mapped with classification names of “Formula Study,” and the results are shown at the bottom of Table 4. Of the total 83 formula classification names, lexical matching was 28.9%, and was 30.1% when semantic matching was also included. The reason why IST’s coverage is so low is because the IST’s formula classification names use the terms that belong to categories of “Formula Study,” and the sub-terms that belong to sections are rarely listed. 83 classification names consist of 22 categories and 62 sections. Of these 21 category names representing 87.5% of all categories and 3 sections names – altogether 24 terms – were lexically matched.

Table 4. Examples of mapping results

No.	IST concept in supercategory	Mapped concept in supercategory	No.	IST concept in subcategory	Mapped concept in subcategory
1	解表藥_IST_6.1.49_H1	解表藥_Clinical_H15 解表藥_Herbal_H1	1-1	發散風寒藥_IST_6.1.50_H2	辛溫解表藥_IST_6.1.51_H3 辛溫解表藥_Clinical_H16

				發散風寒藥_Clinical_H17
				發散風寒藥_Herbal_H2
		1-2	發散風熱藥_IST_6.1.52_H4	辛涼解表藥_IST_6.1.53_H5
				辛涼解表藥_Clinical_H18
				發散風熱藥_Clinical_H19
				發散風熱藥_Herbal_H3
19	補益劑_IST_6.2.89_F35	補益劑_Fomula_F35	19-1	補氣劑_Fomula_F36
			19-2	補血劑_Fomula_F37
			19-3	氣血雙補劑_Fomula_F38
			19-4	補陰劑_Fomula_F39
			19-5	溫補劑_IST_6.2.71_F13
				補陽劑_Fomula_F40

#### 4. DISCUSSION & CONCLUSIONS

The purpose of this paper is to examine the IST's coverage and limitations of the terms used in the domestic education of oriental medicine by liking classification names found in texts of herbal medicine study and formula study used in Korean schools of oriental medicine with the IST and to suggest ways of improvement based on such examination.

To this end, this study examined the IST's 64 medicinal classification names and 41 formula classification names, 65 medicinal classification names from "Herbal Medicine Study" [14], 89 medicinal classification names from "Shin's Clinical Herbal Medicine Study" [15] and finally, 83 formula classification names from "Formula Study" [16]. From their definitions, data on each material's chief virtue, efficacy and medicinal properties were extracted, and based on this data and using the IST and dictionaries, Chinese-English mapping was performed. The mapping results were then analyzed by dividing them into lexical matching with identical strings and into semantic matching in which the terms have different strings but the same conceptual elements.

In terms of classification names for medicinal substances, lexical matching for "Herbal Medicine Study" [14] and "Shin's Clinical Herbal Medicine Study" [15] was 60.0% and 48.3% respectively, whereas when semantic matching was also included, it was 87.7% and 74.2% respectively, for "Herbal Medicine Study" and "Shin's Clinical Herbal Medicine Study." The mapping rate for "Shin's Clinical Herbal Medicine Study" is somewhat lower than that of "Herbal Medicine Study" because its classification names include various synonyms and section names, and it follows a dual-classification system using

diverse criteria based on efficacy, as in the case of 抗癌藥 (Clinical\_H37), 止渴藥 (Clinical\_H81) and 止嘔藥 (Clinical\_H80).

Some issues that arose from the mapping process of the medicinal substances' classification names are as follows:

First, when semantic matching was attempted by using a medicinal substance's efficacy (including its nature-flavor) or

its chief virtue as conceptual elements, some terms were defined as different concepts in the IST and thus were assigned separate codes but were bound as the same concepts. For instance, *wind-cold-dispersing medicinal*: 發散風寒藥 (IST\_6.1.50\_H2) is defined as "a medicinal that has the effect of dispersing wind and cold in the treatment of an exterior pattern/syndrome," while *pungent-warm exterior-releasing medicinal*: 辛溫解表藥 (IST\_6.1.51\_H3) is defined as "an exterior-releasing medicinal pungent in flavor and warm in property, used for treating a wind-cold exterior pattern/syndrome." Because the two had the same chief virtue (wind-cold exterior pattern/syndrome) and efficacy (dispersing wind and cold), they were classified as the same concept. The same principle was applied to *strangury-relieving diuretic medicinal*: 利尿通淋藥 (IST\_6.1.71\_H24) / *strangury-relieving medicinal*: 通淋藥 (IST\_6.1.72\_H25), *blood-activating and stasis-resolving medicinal*: 活血化瘀藥 (IST\_6.1.84\_H38) / *blood-activating and stasis-resolving medicinal*: 活血祛瘀藥 (IST\_6.1.85\_H39) / *blood-activating medicinal*: 化瘀藥 (IST\_6.1.86\_H40), and *exterior-securing anhidrotic medicinal*: 固表止汗藥 (IST\_6.1.107) / *sweat-constraining exterior-securing medicinal*: 斂汗固表藥 (IST\_6.1.108). While the two texts include definitions of classification names as well as data on the medicinal substances concerned, the IST should depend on the definitions based on conceptual elements of the classification names, and it would be much clearer to define two terms as the same concept if they have an identical chief virtue or efficacy (medicinal properties), which constitute a definition.

Also, there were cases where mapping was impossible because sections had different bases for classification. *Wind-dampness-dispelling medicinal*: 祛風濕藥 (IST\_6.1.65) is classified into *wind-dampness- dispelling and cold-dispersing medicinal*: 祛風濕散寒藥 (IST\_6.1.66\_H18) and *wind-dampness- dispelling and heat-dispersing medicinal*: 祛風濕清熱藥 (IST\_6.1.67\_H19) based on its medicinal properties in IST; both the texts used in Korea categorized it into 止痺藥 (Clinical\_H64) / 祛風濕止痺痛藥

(Clinical\_H65) for diffusing impediment, 通經絡藥 (Clinical\_H66) / 舒筋活絡藥 (Herbal\_H16) for freeing the collateral vessels, and 強筋骨藥 (Clinical\_H68) / 祛風濕強筋骨藥 (Herbal\_H17) for strengthening the sinew-bone. While the Korean texts classify terms based on their specific effects in consideration of clinical use, the IST terms based on medicinal properties can also be considered as new criteria for classification.

Unaccepted terms can be classified largely into two groups – the first is when a concept in question does not exist in each of the sources and the second is when the depths of each source differ from one another. Concepts for nine IST terms including *warm purgative medicinal*: 溫下藥 (IST\_6.1.62\_H14), *wind-dampness- dispelling and cold-dispersing medicinal*: 祛風濕散寒藥 (IST\_6.1.66\_H18), *wind-dampness- dispelling and heat-dispersing medicinal*: 祛風濕清熱藥 (IST\_IST\_6.1.67\_H19), *blood-activating trauma-curing medicinal*: 活血療傷藥 (IST\_6.1.91\_H45), and *liver-emolliating medicinal*: 柔肝藥 (IST\_6.1.104\_H59) were not found in the two texts, whereas 29 concepts such as 外用藥 (Clinical\_H88) / 外用藥 (Herbal\_H63), 清熱明目藥 (Clinical\_H22), 抗癌藥 (Clinical\_H37), and 止渴藥 (Clinical\_H81) could not be mapped to the IST. When the depths were different from one another, as in the case with 止咳平喘藥, the IST had *cough-suppressing and panting-calming medicinal*: 止咳平喘藥 (IST\_6.1.93\_H47) as a category only, whereas the two texts had a more specific classification of it as 溫化寒痰藥 (Herbal\_H40) / 溫化寒痰藥 (Clinical\_H70), 清化熱痰藥 (Herbal\_H41) / 清化熱痰藥 (Clinical\_H71) based on its properties. Most classification names could be distinguished by using a two-depth classification system, and it is believed that it is adequate to make a maximally specific classification by reflecting all of these.

As for the formula classification names, lexical matching was 28.9% for 83 formula terms of “Formula Study,” and it was 30.1% when semantic matching was included as well. The reason why the IST’s coverage is low is because most of the IST’s formula classification names use the categories of “Formula Study,” and the sub-terms equivalent to its sections are rarely noted. Of the 24 categories, 21 categories exclusive of *vision-improving formula*: 明目劑 (IST\_6.2.92\_F38), *formula for menstruation and childbirth*: 經產劑 (IST\_6.2.94\_F40), and *emergency formula*: 救急劑 (IST\_6.2.95\_F41) were mapped to their IST counterparts. Of the sections, only *cold purgative formula*: 寒下劑 (IST\_6.2.73\_F16), *warm purgative formula*: 溫下劑 (IST\_6.2.74\_F17), and *lubricant laxative formula*: 潤下劑 (IST\_6.2.75\_F18), which are sub-concepts under *purgative formula*: 瀉下劑 (IST\_6.2.72\_F14), were listed. Moreover, in the case of semantic matching, sections of *tonifying and replenishing formula*: 補益劑, which are 補陽劑 (Fomula\_F40) and *warm-tonifying formula*: 溫補劑 (IST\_6.2.71\_F13), were linked as the same concept.

Moreover, while some IST terms include synonyms, the formula classification names in the two texts had no information on synonyms. Building synonyms is an important part of terminology-related studies as it allows a wider use of terms and they serve as useful data in securing interoperability among terms through conceptual linkage with other sources. Therefore, it is necessary to establish synonym data for the classification names that serve as titles of formulas contained in “Formula Study,” the representative formula study educational material in Korea, in order to allow the use of more diverse and rich terminology.

When semantic matching was attempted for the formulas as well, some concepts were defined as different in the IST yet bound as identical, as in the case of *purgative formula*: 瀉下劑 (IST\_6.2.72\_F14) / *interior-attacking formula*: 攻裏劑 (IST\_6.2.64\_F4), *exterior-releasing formula*: 解表劑 (IST\_6.2.76\_F19) / *exterior-effusing formula*: 發表劑 (IST\_6.2.62\_F1), *dampness-draining formula*: 利濕劑 (IST\_6.2.78\_F22) / *dampness-dispelling formula*: 祛濕劑 (IST\_6.2.79\_F23) and *heat-clearing formula*: 清熱劑 (IST\_6.2.82\_F26) / *fire-draining formula*: 瀉火劑 (IST\_6.2.83\_F27). As with the medicinal material’s classification names, when conceptual distinction depends only on definitions without any data on relevant formulas, it is necessary to specify the difference between efficacy and the chief virtue of a medicine, which are elements of a description, in a clearer manner.

We hope that this pilot study will serve as a starting point to spread the use of the IST terms related to herbal medicine study and formula study, not only in education but also in clinical settings. Also, efforts should be made in the future to find effective measures to address the issues examined in this study.

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