

Development of an adverse events reporting form for Korean folk medicine

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ABSTRACT

Purpose We developed an adverse events (AEs) reporting form for Korean folk medicine.

Methods The first version of the form was developed and tested in the clinical setting for spontaneous reporting of AEs. Additional revisions to the reporting form were made based on collected data and expert input.

Results We developed an AEs reporting form for Korean folk medicine. The items of this form were based on patient information, folk medicine properties, and AEs. For causality assessment, folk medicine properties such as classification, common and vernacular names, scientific name, part used, harvesting time, storage conditions, purchasing route, product licensing, prescription, persons with similar exposure, any remnant of raw natural products collected from the patient, and cautions or contraindications were added.

Conclusions This is the first reporting form for AEs that incorporates important characteristics of Korean folk medicine. This form would have an important role in reporting adverse events for Korean folk medicine. © 2016 The Authors. *Pharmacoepidemiology and Drug Safety* Published by John Wiley & Sons Ltd.

KEY WORDS—adverse events; folk medicine; pharmacovigilance; herbal medicine; Korea; pharmacoepidemiology

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INTRODUCTION

The Korean healthcare system is characterized by the presence of doctors of Korean Medicine (KMD) as mainstream providers of health service who rely on traditional East Asian medicine therapies such as acupuncture, moxibustion, and prescriptions of herbal medicine as their main therapeutic resources.¹ The provision of traditional forms of medicine and medical treatment is accepted as part of conventional healthcare among the general Korean population and is covered by the national medical healthcare system.² In short, Korea has

a parallel medical system in which traditional and conventional Western medical doctors coexist.³

In contrast to conventional medicine, there is Korean folk medicine (KFM) transmitted orally across generations.⁴ Consumers, usually older people, typically use one or two folk medicine substances, such as plants and animal products, based on their reputed effect. The percentage of KFM users is over 70%; among the users, the prevalence of natural product use is 82.5%.⁵

In one study, folk medicine was used most frequently by patients who stay in university hospitals, with adverse events (AEs) associated with folk medicine use reported at 23.9% of all AEs.⁶ Even when serious adverse events (SAEs) were suspected to result from folk medicine use, such users were less likely to consult their doctors compared with those with similar AEs associated with drugs.⁷ SAEs may occur more

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frequently with the use of folk medicine than with herbal medicine; folk medicine users typically do not consult KMDs or other physicians prior to use and underreport its effect, presumably because of the lack of interest by medical professionals in that area.⁸

Korea reports AEs associated with drugs and herbal medicines to the World Health Organization-Uppsala Monitoring Centre.⁹ According to statistics on reporting to the World Health Organization (WHO) global Individual Case Safety Reports database, Korea is the top country for reporting rate relative to population size.¹⁰ However, lack of systematic reporting of AEs for folk medicine is a weakness in its drug monitoring system. At present, SAEs associated with folk medicine are identified either as isolated sporadic incidents or as medical content.^{11–13}

The materials and processes used in folk medicine represent multiple risk factors for AEs. The characteristics of folk medicine make it difficult to understand the causality between folk medicine and suspected AEs. To better assess causality, an AE reporting system is needed to more clearly define the relationship between folk medicine properties and AEs. At present, there is no adequate standardized reporting form for experts to use in reporting AEs arising from folk medicine use. A well-developed reporting form is needed to assess causality and detect safety signals between suspected folk medicine products and AEs.¹⁴ The objective of this study was to develop an AE reporting form on Korean folk medicine that can be used by physicians.

METHODS

The workflow contained the following specific steps (Figure 1).

Literature review and focus group discussion

We reviewed safety data management and causality assessment guidelines published by national and international agencies.^{15,16} We adapted terms relating to AEs and assessment of causality for folk medicine from the *Provision for Safety Information Management of Drugs*, a publication of the Korean Ministry of Food and Drug Safety.¹⁵ We also drew from *Clinical Safety Data Management: Definitions and Standards for Expedited Reporting*, guidelines published by the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use, WHO guidelines on safety monitoring of herbal medicines in pharmacovigilance systems, and criteria provided by the WHO.^{17–19} In developing our reporting form, we consulted the following documents: *Suspect Adverse Reaction Report Form* (CIOMS Form I) from the Council for International Organizations of Medical Sciences (CIOMS)²⁰; *Example of Reporting Form for Suspected Adverse Reaction to Medicines, Including Herbal Medicines* from the WHO (WHO Ex-form: labeled by our study group)¹⁷; *2012 Year Report Form of Suspected Adverse Drug Events (off-line)* published by the Korea Food and Drug Administration²¹; and *Adverse Drug Reactions Report Form and Supplementary Form*

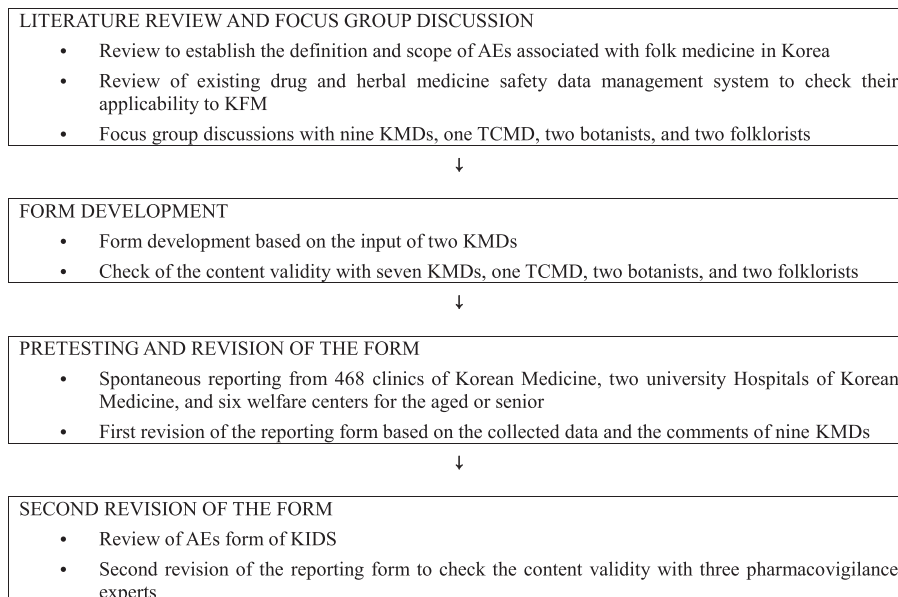


Figure 1. Overview of the flow chart

for Reporting Chinese Medicine-related AEs (HK form) from Hong Kong, which is one of the members of the Forum on Harmonization of Herbal Medicines.^{22,23} In addition to these, we referenced other related papers.^{24–28}

We reviewed the forms in one focus group discussion with nine KMDs who were considered experts. The KMDs were encouraged to discuss their experiences with reporting AEs using existing forms and procedures. Another focus group consisted of one traditional Chinese medicine doctors (TCMD), two botanists, and two folklorists with a range of experience and qualifications. The TCMDs described experiences with folk medicine in China historically similar to Korea, the two botanists noted folk medicine properties related to AEs, and the two folklorists revealed AEs of folk medicine and mixed folk beliefs.

Initial development of an adverse event reporting form for folk medicine

Two KMDs developed a reporting form for AEs related to folk medicine. A KMD-pharmacovigilance expert and six other KMDs, one TCMD, two botanists, and two folklorists checked the content validity of the first version of the reporting form.

Spontaneous reporting of adverse events for pretesting and first revision of the reporting form

Adverse events associated with folk medicine were reported spontaneously, using the first version of the reporting form, by patients or older adults who visited 468 clinics of Korean Medicine, two university Hospitals of Korean Medicine, and six welfare centers for the aged or senior (visited by an average of more than 500 elderly people daily) in Daejeon. We sent e-mails and pamphlets to 468 clinic KMDs and two KMDs based at university hospitals, who are members of the Association of Korean Medicine, to publicize the spontaneous reporting of AEs associated with folk medicine. Association of Korean Medicine is a national organization representing KMDs. Further, we called and sent official documents for six senior welfare centers to publicize the spontaneous reporting of AEs associated with folk medicine. We personally called or visited about 30 KMDs as well as all of the welfare centers mentioned to promote the reporting. The reporting period was 6 months, from September 1, 2012 to February 28, 2013. Of the 476 institutes, 48 (10.1%) agreed to participate in the study. During the reporting period, 20 cases of AEs associated with folk remedies by report of nine KMDs were collected. Of these, 11 cases were reported as AEs associated with folk medicine; nine AEs were not natural product

use-related but were related to practices by unlicensed practitioners such as bee sting acupuncture and wet cupping. The Institutional Review Board of the Korea Institute of Oriental Medicine approved this stage (No: I-1210/002-003). We prepared the first revision of the reporting form based on the comments of nine experts participating in reporting and the data collected from spontaneous reports of AEs collected as described.

Second revision of adverse event reporting form for folk medicine

For the second revision, we referred to the *2013 Year Report Form of Suspected Adverse Drug Events* from the Korea Institute of Drug Safety & Risk Management (KIDS) that reported an integrated management system for drug and herbal medicine (KIDS form).^{9,29}

We then asked two pharmacovigilance experts (medical doctor (MD) and KMD) and one KIDS senior researcher to confirm content validity.

RESULTS

Literature review and focus group discussion

Korean folk medicine is a remedy using natural products easily obtained in daily life or the diets based on folk beliefs.³⁰ Folk medicine excludes over-the-counter and health functional foods (products claiming to enhance and preserve health with one or more functional ingredients) containing herbal substances. The focus group discussions defined AEs associated with folk medicine as any untoward medical occurrence that may present during treatment with natural products but that does not necessarily have a causal relationship with this treatment.¹⁷ Table 1 lists the items used to construct the AE reporting form for folk medicine and provides a comparison with four other forms (CIOMS Form I, WHO Ex-form, HK form, and KIDS form). The items on this form were carefully selected to reflect the properties of folk medicine materials based on four other forms and focus group discussion.

Items included in an initial reporting form for adverse events associated with folk medicine

The initial reporting form included items for report date, report type (initial or follow-up), report source (spontaneous, study, literature, or other), and record number. Information about name (initials), date of birth, age at the time of the event, sex, weight, and ethnicity of the patient was also required. Information pertinent to understanding the case was requested, such as pregnancy status at the time of the event, medical history, and disease factors (e.g., hypertension, liver

Table 1. Information to consider when reporting adverse event and comparison of four forms

Category	Information	CIOMS Form I ^c	WHO Ex-form ^c	Hong Kong form ^c	KIDS form ^c
Report	Report date ^a	0	0	0	0
	Report type (initial or follow-up)	0	X	X	0
	Report source ^a (spontaneous study, literature, other)	0	X	X	0
	Record number	X	0	0	0
Patient	–	–	–	–	–
Demographics	Name (initials)	0	0	0	0
	Date of birth ^a	0	0	0	0
	Age ^a (at time of event)	X	X	0	0
	Sex ^a	0	0	0	0
	Weight	X	X	0	0
	Height ^b	X	X	X	X
	Ethnicity	X	0	0	X
History	Pregnancy ^a (at time of event)	0	X	0	X
	History ^a (hypertension, diabetes, allergies, etc.)	0	0	0	X
	Any people with same exposure? (If yes, please provide name and telephone.)	X	X	0	X
Folk medicine	–	–	–	–	–
Suspected folk medicine	Classification (plants, animals, fungi, minerals) ^a	X	X	X	X
	Common name (product name) ^a	0	0	0	0
	Scientific name ^b	X	X	X	X
	Vernacular name ^b	X	X	X	X
	Active ingredients (if known)	X	0	0	X
	Part used ^a	X	X	X	X
	Harvesting time ^b	X	X	X	X
	Storage condition ^b	X	X	X	X
	Preparation ^a	X	X	0	X
	Purchasing route	X	0	X	X
	Licensed product ^b	X	X	X	X
	Name and address of the manufacturer	0	0	0	X
	Cautions or contraindications ^a	X	X	X	X
	Remnant of raw natural product(s) collected from the patient	X	X	0	X
	Reason for use ^a	0	0	0	0
Administration	Date started and stopped	0	0	0	0
	Duration of administration ^a	0	X	0	0
	Frequency of administration ^a	X	X	0	0
	Route of administration ^a	0	0	X	0
	Daily dose ^a	0	0	0	0
Adverse event	–	–	–	–	–
	Description of event ^a	0	0	0	0
	Date event started and stopped	0	0	0	0
	Severity	X	0	0	X
	Serious adverse event (SAE) ^a	0	0	0	0
	Ongoing treatment with folk medicines	X	X	0	0
	Recovery ^a	0	0	0	0
	Rechallenge and result of rechallenge ^a	0	0	X	0
Relevant tests	X	0	0	0	
Concomitant drugs	0	0	0	0	
Assessment of causality	Causality assessment between adverse event and suspected folk medicines ^a	X	X	X	0
Summary comments	Summary comments ^b	X	X	X	0
Reporter	Reporter identification (type, name of organization, name, telephone, e-mail)	X	0	0	0

^aRequired information for the developed reporting form.

^bInformation added to the initial and revised forms (initial form: classification, vernacular name, part used, harvesting time, and licensed product; first revision: scientific name, cautions or contraindications; second revision: height, assessment of causality, and summary comments).

^cCIOMS Form I: Suspect adverse reaction report form (CIOMS, Council for International Organizations of Medical Sciences); WHO Ex-form: Example of reporting form for suspected adverse reaction to medicines, including herbal medicines (WHO, World Health Organization); Hong Kong form: Adverse drug reactions report form and supplementary form for reporting Chinese medicine-related adverse events (HK); KIDS form: Report form of suspected adverse drug events (KIDS, Korea Institute of Drug Safety & Risk Management).

0 indicates that form contains the information.

X indicates that form does not contain the information.

disease, and allergies). If other people had the same exposure, their names and telephone numbers were collected. If similar AEs are reported by individuals exposed to the same folk medicine materials, their data can provide additional information about AEs associated with folk medicine.

Folk medicine materials were categorized as plants, animals, fungi, or minerals. Living things, such as plants, animals, and fungi, were reported by their common and vernacular names, along with their active ingredients if known by the reporter. Common and vernacular names of folk medicine materials may be the same, while in fact referring to different substances.

For plants, the part used was categorized as whole, root, root bark, leaf, aerial part, fruit, or seed. For animals, categories included whole, bone, larva, feces, meat, or fat.^{24,31} Time of harvest was categorized according to season. Folk medicine materials underwent various preparations in indigenous communities and were categorized according to storage conditions (fresh, dried, and fermented) and type of prescription (e.g., decoction, boiled, infusion, direct application, juice, tincture, and poultice). The route of purchase was recorded (direct collection, market, internet mall, and health food store), as well as the name and address of the manufacturer, and whether the product was licensed. Most of the SAEs reported were related to problems of product quality or adulteration.³² When identifying folk medicine materials, many of which are directly collected from the natural environment, the purchasing route and licensed or unlicensed status of the product can provide information about the likelihood of product adulteration, toxicity, and mistaken identity. Whether any remnants of raw natural products were collected from the patient was noted. If there were no remnants, whether the patient could collect the same kind of folk medicine materials again was recorded. This information may help investigators determine whether the suspected products were mistaken for other folk medicine substances. Data about the active ingredients (if known), part used medicinally, time of harvest, storage conditions, prescribed form, and any remnants of raw natural products collected from the patient can be used to create a detailed profile of harmful ingredients.²⁴ The reason for using folk medicine, such as health promotion, disease treatment, and symptom improvement, was also reported.

Data regarding administration of folk medicine included the date started and stopped, duration of administration, frequency of administration, and daily dose. Inclusion of this data can provide information regarding overdoses and whether AEs are dose-dependent. The route of administration was reported as oral, cutaneous,

inhalation, eye drops, rectal, or vaginal. The AE was described and the date the event started and stopped was noted, along with its severity. SAEs, ongoing treatment with folk medicine, recovery from AEs, rechallenge (if any), and the results of rechallenge were all reported. If tests relevant to the AE were conducted, the type of test and results were reported. Drugs taken concurrently with folk medicine were reported. Folk medicine, when used alone, is relatively safe; however, the risk for adverse effects may increase concomitantly with the use of other drugs.³³ Finally, information identifying the reporter was noted (type, name of organization, name, telephone, and e-mail).

Spontaneous reports of adverse events and first revision of the reporting form

Nine KMDs reported 11 cases of AEs associated with use of folk medicine using the initial reporting form. One KMD reported two separate cases and another KMD reported an initial and follow-up report as two cases.

Data were analyzed, including information collected from the new items on the initial reporting form. The average age at the time of the AE of the patients experiencing them was 67.3 years. Women represented 55.6% of the respondents. The suspected folk medicine materials were as follows: seven cases involving plants (elm root bark, onion, *achyranthes*, and *caragana* root), three cases involving fungi (unknown mushrooms), and one case involving animals (red ants). AEs were coded by World Health Organization-Adverse Reaction Terminology codes.³⁴ According to World Health Organization-Adverse Reaction Terminology coding, the most frequently reported system-organ class was skin and appendages disorders with 15 events (41.7%) followed by body as a whole general disorders of five events (13.9%). Most frequently reported AE terms were fever, itching, rash, skin peeling, hair loss, and leukopenia. There were three SAEs (27.3%).

We collected remnants of elm root bark that were suspected of causing an AE from one patient. In this case, it was not possible to identify the species owing to poor storage conditions and damage to the remnants. There are several species of elm so that we could not identify the used sample of elm root bark. If the reporter had known the scientific name, we would have been able to classify the sample of elm root bark.^{27,35} Consequently, we added the scientific name to the reporting form to aid in future classifications. In all three cases with SAEs, the patients ingested unknown mushrooms prior to hospitalization. One patient died after follow-up. We were not able to identify the mushrooms and their active ingredients

because we failed to obtain remnants. As a result of these reports and KMD expert comments, we added information about cautions (risk of confusion with similar folk medicine materials, toxicity of consumed folk medicine materials, interactions with other medicines and foods) and contraindications (children, elderly, and pregnant women).¹⁴ This data will help experts determine whether folk medicine users are adequately informed of the risks.

Second revision of the reporting form for adverse events associated with folk medicine

Three pharmacovigilance experts emphasized reporting the precise information of suspected material of causing an AE for causality and commented on data processing and management of AEs according to national guidelines. Information about participant height was added in the second revision of the reporting form from the comments of three pharmacovigilance experts. Body mass index can be calculated from height and weight and is helpful in understanding the dose-response relationship for folk medicine substances. We also added information about assessing causality between the suspected folk medicine products and AEs. The pharmacovigilance experts that we consulted recommended using existing assessment criteria even though causality assessment is more difficult for folk medicine properties than for drugs.^{15,16} We also added an item for summary comments by the reporter. Finally, we prepared an AE reporting form for Korean folk medicine (Figure 2).

DISCUSSION

This study was designed to develop a reporting form that includes essential information that should be considered when reporting AEs associated with folk medicine use. Because of the materials and processes used for folk medicines, various risk factors for AE exist.^{24,25} These characteristics can create difficulty in understanding causality between suspected folk medicines and AE. Thus, items measuring the relationship of folk medicine properties and AE are required. First, common or vernacular names of folk medicines may be the same but, in fact, can mean different kinds of folk medicines. The common, scientific, and vernacular names accurately confirm the used folk medicines. The active ingredients (if known), part used, harvesting time, storage condition, prescription, and any remnant of raw natural products collected from the patient can be used for a detailed profile about harmful ingredients.²⁴ Second, most of the SAE reported relate to

problems of product quality or adulteration.³² In folk medicines that are mostly directly collected from nature, purchasing route and licensed or unlicensed products can provide information on the likelihood of product adulterations, toxicity, and confusion between different folk medicines. Third, date started and stopped, duration of administration, frequency of administration, and daily dose are important details to identify dosage of folk medicine. Patients' reported weight and height help understand dose-response relationships of folk medicines through BMI. These can provide overdose or dose-dependent AE information. Fourth, it is important to record concurrent drugs because folk medicines used alone are relatively safe, but risk for AE may increase when folk medicines and drugs are taken concurrently.³³ Fifth, people with similar exposure and similar AE on follow-up provide information about AE. Sixth, AE prevention can be based on users' knowledge of the toxicity, cautions, or contraindications of the used folk medicines.

A well-designed reporting form for AEs associated with folk medicine use has the advantage of improving the quality of spontaneous reports for analysis by experts or for reporting in journals.³⁶ Quality reporting of AEs alerts experts and consumers and increases awareness of potential risks associated with use of folk medicine products.²⁶ Data collected may prevent AEs induced by inappropriate use of folk medicine by patients lacking information about cautions and contraindications. Moreover, national health regulators and experts who must carefully evaluate reports of AEs will be able to use the data collected to help identify possible risk factors and differential diagnoses for AEs.³⁶ Furthermore, there is consensus among Forum on Harmonization of Herbal Medicines members with unified reporting systems for drugs and herbal medicine that revision of the AE reporting form to include folk medicine properties will improve the quality and quantity of AE information.^{37,38} Ultimately, these attempts will be able to reduce harm from AEs caused by suspected folk medicine materials.

To transmit reports about AEs caused by folk medicine to the World Health Organization-Uppsala Monitoring Centre, we recommend that AE terms and indications (reasons for use) be classified according to the WHO Adverse Reactions Terminology,³⁴ or the Medical Dictionary for Regulatory Activities³⁹ and the 10th revision of the International Statistical Classification of Diseases and Related Health Problems.⁴⁰ In addition, classification and identification of folk medicine using the Herbal Anatomical Therapeutic Chemical system is desirable.^{27,41}

Report	
Report date: day_month_year	Record number_
Report type: <input type="checkbox"/> Initial <input type="checkbox"/> Follow-up (date of initial: day month_year)	
Report source: <input type="checkbox"/> Spontaneous <input type="checkbox"/> Study <input type="checkbox"/> Literature <input type="checkbox"/> Other (complete)	

Patient			
Name: (Initials)	Date of birth: day_month_year Age (at time of event):_	Sex <input type="checkbox"/> male <input type="checkbox"/> female	Weight Kg Height Cm
Ethnicity:	Pregnancy (at time of event) <input type="checkbox"/> Yes <input type="checkbox"/> No	Medical history and other factors: <input type="checkbox"/> Hypertension <input type="checkbox"/> Diabetes <input type="checkbox"/> Liver disease <input type="checkbox"/> Kidney disease <input type="checkbox"/> Allergies (specifically:) <input type="checkbox"/> Other ()	

Folk medicine				
1. Suspected folk medicine				
Suspected folk medicine	1	2	3	4
1) Classification				
Common name				
Scientific name				
Vernacular name				
Active ingredients (if known)				
Any people with same exposure: Yes/No (If yes, please provide name and telephone.)				
2) Part used				
3) Harvesting time				
4) Storage condition				
5) Preparation				
6) Purchasing route				
7) Licensed product				
Name of the manufacturer				
Address of the manufacturer				
Cautions or contraindications				
8) Any remnant of raw natural products collected from the patient?				
9) Reason for use				

1) ① plants ② animals ③ fungi ④ minerals
 2) Plants: ① whole ② root ③ root bark ④ leaf ⑤ aerial part ⑥ fruit ⑦ resin ⑧ seed ⑨ other;
 Animals: ① whole ② bone ③ larva ④ feces ⑤ meat ⑥ fat ⑦ other; Fungi: ① aerial part ② other
 3) ① spring ② summer ③ fall ④ winter ⑤ all year ⑥ other
 4) ① fresh ② dried ③ fermented ④ other
 5) ① decoction ② boiled ③ infusion ④ direct ⑤ juice ⑥ tinctures ⑦ poultice ⑧ other
 6) ① direct collection ② market ③ internet mall ④ health food store ⑤ other
 7) ① yes ② no ③ unknown
 8) ① yes ② no ③ no but patient can collect folk medicines of the same kind
 9) ① health promotion (specifically) ② Disease treatment (specifically) ③ Symptom improvement (specifically) ④ other

Figure 2. Reporting form for suspected adverse events associated with folk medicine

2. Administration

Date started_day_month_year Date stopped_day_month_year Continuing

Duration of administration	Frequency of administration	Daily dose	Route of administration *
Day(s)	_times/week	mL	

* ① oral ② cutaneous ③ inhalation ④ eye drops ⑤ rectal ⑥ vaginal ⑦ other

Adverse events

1. Description of event

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2. Adverse event and treatment

	1) Adverse event terms	Date event started	Date event stopped	2) Severity	3) Serious adverse event (SAE)	4) Ongoing treatment with folk medicines	5) Recovery	6) Rechallenge	7) Result of rechallenge
1		_day month _year	_day month _year						
2		_day month _year	_day month _year						
3		_day month _year	_day month _year						
4		_day month _year	_day month _year						
5		_day month _year	_day month _year						

1) Fever, jaundice, etc.

2) ① mild ② moderate ③ severe

3) ① yes (patient died due to reaction, life-threatening, involved or prolonged inpatient hospitalization, involved persistent or significant disability or incapacity, congenital abnormality, or medically significant) ② no

4) ① no (maintenance) ② dosage decreased ③ stopped ④ dosage increased ⑤ not applicable

Figure 2. Continued

5) ① recovered ② recovering ③ continuing ④ unknown ⑤ other
 6) ① yes ② no ③ unknown
 7) ① yes with similar signs or symptoms ② no similar signs or symptoms ③ unknown ④ not applicable

3. Tests (related to adverse event)

Date of test	Test items	Test results	Details

4. Concurrent drugs

Drug	Daily dose	Frequency of administration	Date started	Date stopped
			Day_month_year	Day_month_year
			Day_month_year	Day_month_year
			Day_month_year	Day_month_year
			Day_month_year	Day_month_year

5. Assessment of causality*

Suspected folk medicine name	Adverse event name	Causality*

* ① certain ② probable ③ possible ④ unlikely ⑤ conditional/unclassified ⑥ unassessable/unclassifiable

6. Summary comments

Reporter

Type MD · KMD · Dentist Pharmacist · KM Pharmacist
 Nurse Other: ()

Name of organization:

Name:	Telephone:	E-mail:
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*The information in this report is strictly protected and private.

Figure 2. Continued

Traditional medicines are generally considered safe because of their long history of use and users tend to believe that traditional medicines are safe because they originate from natural sources.^{7,42} Beliefs about folk medicine would be similar. Wrong information and mistaken beliefs about folk medicine substances promote tolerance of AEs. We looked for reasons for underreporting of AEs from the viewpoint of users, while we were collecting spontaneous reports of AEs using our initial reporting form. First, we found that users of folk medicine tended to believe that problems are unlikely to occur, even with long-term administration, because folk medicine substances originate from nature. When AEs occurred during long-term administration, users did not associate the AEs with folk medicine use. For example, a participant who took a water decoction of elm root bark daily for about 240 days regarded her itchy eyes as a symptom of allergies and did not believe that they were an AE caused by elm root bark. She recovered without any treatment 20 days after discontinuing the elm bark root decoction. Second, users believed that long-term administration was required for folk medicine to be effective, even though there was some associated discomfort. Consequently, if an AE occurred while taking folk medicine, the users endured the associated discomfort in order to allow enough time for the folk medicine to become effective. For example, in early stage therapy, patients did not seek treatment for AEs or toxicity caused by folk medicine because they believed that the discomfort they were experiencing was part of the treatment process or the expected reaction before the medication took effect.⁴³ Third, users believed that AEs must be severe or serious in nature, rather than mild. The harm was increased when early mild symptoms were ignored, and an AE became severe or serious. For example, a user who took decocted onion water thought that the moderate rash she developed was not an AE because she did not require hospitalization, even though she received clinical treatment. Wrong beliefs of folk medicine users can lead to increased frequency of AEs and are important reasons for underreporting the risks associated with folk medicine.²⁴

Limitations of this study are as follows: Information about various folk medicine properties did not reflect all elements because the number of AEs on the first developed AE reporting form was fewer. The second revision of the reporting form was required to investigate and upgrade data received about AEs associated with folk medicine. In this study, we developed a form intended for use by experts; however, a reporting form for consumers is also required.⁴³

We plan to develop a KFM digital library linked to the Korean traditional knowledge portal run by the Korean IP Office. The KFM digital library will be accessible to patents and experts throughout Korea under an access agreement. We will equip the KFM digital library with the AEs reporting form for spontaneous reporting of KFM AEs by health experts. In this step, we will implement the AE reporting form for KFM through feedback by healthcare experts.

This study is significant because it presents the first reporting form for AEs associated with Korean folk medicine, developed using criteria that distinguish it from the guidelines for AEs reporting for other traditional medicines.

CONCLUSIONS

This is the first reporting form for adverse events that incorporates important characteristics of KFM. This form has an important role in reporting adverse events for KFM.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

Key points

- Folk medicine is popular and widely used in Korea and apt to misuse and abuse without the guidance of healthcare experts.
- In this study, we developed an adverse events spontaneous reporting form to improve safety of Korean folk medicine by healthcare experts through a multiple-step coordinated approach.
- This novel approach may be the first step to activate adverse events spontaneous reporting systems for Korean folk medicine.

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