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Discussion Paper on Development of a Regional Standard for *Makgeolli*

(Presented by the Republic of Korea)

Introduction

1. *Makgeolli* is a fermented beverage that contains a small amount of alcohol. It is made with a mixture of rice, the main ingredient, and *Nuruk* used as a starter culture, to which potable water is added and then fermented for a certain amount of time at an optimal temperature through a simultaneous two-step fermentation process. There are two different types of *Makgeolli* being distributed; sterilized *Makgeolli*, which has been sterilized before the bottling process, and draft *Makgeolli*, which is left to ferment slowly even after the bottling process without sterilization.

2. *Makgeolli* contains various nutrients including Vitamin B and C, essential amino acids, dietary fiber and other useful physiologically active substances. It has been reported that the physiologically active substances contained in *Makgeolli* has functional properties such as improving blood circulation by lowering the cholesterol level and suppressing adipocytic differentiation.

Necessity to develop the standard

3. *Makgeolli* has been produced and consumed for hundreds of years and is recently traded throughout the world. Recently, the trade volume of *Makgeolli* worldwide dramatically increased and the number of trading countries has increased to more than 40 countries across the world including Korea, Japan, China, USA, Australia etc.

4. In addition, with two types of *Makgeolli* being distributed depending on whether or not the product is sterilized, sterilized *Makgeolli* has a shelf life of 6 to 12 months, while draft *Makgeolli* a shelf-life of 60 to 90 days when distributed under a cold chain system. Because of this advantage of having a long shelf-life, *Makgeolli* is regarded as a promising product in the international market.

5. However, there have been various impediments to trading *Makgeolli* due to the absence of an regional standard related to the definition and quality standards of the product. Many products are being distributed in inappropriate names (rice wine, rice beer, etc.) instead of '*Makgeolli*', while some products that have high alcohol content and are low in quality are being distributed as *Makgeolli*. A lot of confusion is taking place in the international market because most of the countries are not equipped with a classification system or systematic legislations for *Makgeolli* products.

6. Therefore, the establishment of an international standard for *Makgeolli* will foster the provision of high-quality *Makgeolli* products while ensuring consumer's health and fair trade practices.

Recommendation

7. The Republic of Korea invites the Committee to support the proposal for the development of a Codex regional standard for *Makgeolli* and to consider the attached project document (Annex).

The Republic of Korea also invites the Committee to provide additional information such as the scale of production and consumption volume, and trade volume to complete the project document before submitting it to the Executive Committee for critical review.

PROJECT DOCUMENT

A Regional Standard for *Makgeolli*

1. The Purpose and the scope of the standard

Makgeolli is a fermented beverage that contains a small amount of alcohol. It is made with a mixture of rice, the main ingredient, and *Nuruk*¹ used as a starter culture, to which potable water is added and then fermented for a certain amount of time at an optimal temperature through a simultaneous two-step fermentation² process. *Makgeolli*, hence, shows a milky color, which comes from the main ingredient of rice, and includes a small amount of carbon dioxide produced during the fermentation process.

The purpose of this proposal is to develop a regional standard that reflects information for safe and high-quality *Makgeolli* that is commercially distributed in accordance with the objective of Codex Alimentarius Commission to protect consumers' health and ensure fair trade practices.

2. Its relevance and timeliness

Makgeolli is made with a mixture of rice, *Nuruk*, and water that is fermented for a certain period of time and finally added with water to be suitable for drinking. There are two different types of *Makgeolli* being distributed; sterilized *Makgeolli*, which has been sterilized before the bottling process, and draft *Makgeolli*, which is left to ferment slowly even after the bottling process without sterilization. In the case of draft *Makgeolli*, after-fermentation of the products in distribution is delayed through rapid refrigeration and cold chain system. As shown in Figure 1, *Makgeolli* is bottled in PET, can, or glass containers for distribution.



Figure1. Exported *Makgeolli* by type of container

Source: <http://www.google.com>

Makgeolli contains various nutrients including Vitamin B and C, essential amino acids, dietary fiber and other useful physiologically active substances. Dietary fiber, in particular, has been reported to be effective for

¹ A starter culture mixed with microorganisms that decompose starch and microorganisms involved with alcohol fermentation

² A fermentation process in which saccharification process of starch decomposing to generate sugars and alcohol fermentation process that uses the generated sugars occur simultaneously.

losing weight and improving blood circulation by lowering the cholesterol level³. In addition, it has been reported that *Makgeolli* contains Farnesol⁴, a physiologically active substance known to suppress the growth of cancer cells, and has functional properties such as reducing fat accumulation within cells and suppressing adipocytic differentiation, which increases with an oversupply of nutrients in the system.

Makgeolli has been produced and consumed for hundreds of years and is recently traded throughout the world. In recent years, the trade volume of *Makgeolli* worldwide dramatically increased, and the number of trading countries has increased to more than 40 countries across the world including Korea, Japan, China, USA, Australia, etc.

Nevertheless, there have been various impediments to trading *Makgeolli* due to lack of understanding between trading countries and the absence of regional standard. First, many products are being distributed with inappropriate names (rice wine, rice beer, etc.) instead of '*Makgeolli*', resulting in considerable confusion among consumers. Second, there have been concerns over the distribution of low-quality products that have high alcohol content and are less refreshing. Third, there have been increased cases where liquor products with high alcohol content are being distributed as *Makgeolli*. Due to such disorderly practice within the market and increased cases that are causing confusion among the consumers and can possibly become factors of health impediments, it has become necessary to develop a Codex regional standard for *Makgeolli* products.

Therefore, the establishment of a well-defined regional standard for *Makgeolli* that will foster sound regional trade of relevant products is urgently called for.

3. Main aspects to be covered

The main aspects of the product covered in this proposed standard are related to quality and safety requirements aimed for the protection of consumers' health and promotion of fair trade. Hence, this proposed regional standard shall deal with items including product definition, essential components and quality factors, food additives, contaminants, hygiene, weights and measures, and labeling, along with method of analysis and sampling.

4. An assessment against the Criteria for the Establishment of Work Priorities

General criterion

The new draft regional standard will meet the criteria by providing the following contents.

- Facilitating consumer protection and preventing fraudulent practices.
- Providing quality assurance of the product to meet consumer needs and the minimum requirements of food safety.

Criteria applied to the commodities

(a) Volume of production and consumption in individual countries and volume and pattern of trade between countries

Various types of alcoholic beverage made with grain have existed in many countries, but the countries that commercially produce grain-based alcoholic beverages in factories for sale comprise China, Japan, and Korea. It is hard to figure out the accurate scale of trade since the sub-codes of HS Code differ by country.

The trade volume of Korea has been increasing dramatically since 2005, and so has the number of trading partners which are expanding worldwide. Japan, China, USA, Australia, etc. show a striking increase of trade volume, while other countries show a steady increase in trade volume since 2009. The number of trading partners has increased from 28 in 2009 to more than 44 in 2013. The number of trading partners with Korea is shown in Table 1 and the trade volume of respective continent by countries is indicated in Table 2.

Table1. Number of countries trading *Makgeolli* with Korea by year

Year	2009	2010	2011	2012	2013
Number of countries	28	38	38	35	44

Source: Korea Agro-Fisheries Trade Corporation (2013)

³ Katie M. Queenan, Maria L. Stewart, Kristen N. Smith, Willian Thomas, R Gary Fulcher and Joanne L. Slavin, Concentrated oat β -glucan, a fermentable fiber lowers serum cholesterol in hypercholesterolemic adults in a randomized controlled trial, *Nutrition Journal* 2007,6;6

⁴ Joung Hyuck Joo and Anton M. Jetten, Molecular Mechanisms involved in Farnesol-Induced Apoptosis, *Cancer Letters*, Jan 28, 2010; 287(2):123-135

Table2. Volume of Korea's export of *Makgeolli* (USD)

Continent	Country(Region)	2009	2010	2011	2012
Asia	Japan	5,556,160	15,584,926	48,419,311	31,990,089
	China	138,862	912,104	1,272,070	1,417,585
	Vietnam	108,921	274,540	244,555	275,754
	(Hong Kong)	19,680	18,037	38,954	101,756
	Singapore	20,819	40,177	63,918	177,646
	Malaysia	1,231	6,918	23,585	112,239
	Thailand	15,573	41,093	65,839	79,984
	Philippines	-	79,683	65,050	87,893
	Other	9,836	9,683	24,947	70,429
	Total	5,871,082	16,967,161	50,218,229	34,313,575
Europe	Germany	2,536	2,436	12,416	13,988
	Netherlands	-	3,466	51,021	38,651
	UK	3,391	12,949	26,198	16,677
	Other	1,544	17,640	21,551	8,501
	Total	7,471	36,491	111,186	77,817
Oceania	New Zealand	12,321	61,131	63,509	69,684
	Australia	36,874	135,236	332,786	320,927
	Total	49,195	196,367	396,295	390,611
North American	USA	463,028	1,757,409	1,883,328	1,886,488
	Canada	2,310	50,043	40,227	66,900
	Other	1,937	4,174	9,586	11,476
	Total	467,275	1,811,626	1,933,141	1,964,864
Latin American	Argentina	8,166	9,602	17,857	20,690
	Mexico	6,817	10,508	11,112	35,677
	Other	1,100	36,537	5,101	5,980
	Total	16,083	56,647	34,070	62,347
Middle East	UAE	19,700	0	12,705	6,503
	Other	840	1,516	0	0
	Total	20,540	1,516	12,705	6,503

Source: Korea Agro-fisheries Trade Corporation (2013)

(b) Diversification of national legislations and apparent resultant or potential impediments to international trade

Without an regional standard, *Makgeolli* is currently being distributed and consumed in 44 countries worldwide with various names such as *Makgeolli*, Rice wine, and Rice beer, causing confusion among consumers. In addition, although the key properties of *Makgeolli* come from its refreshing taste that includes carbon dioxide and its low alcohol content bearing a sweet taste, there have been concerns over the distribution of low quality products that have high alcohol content and are less refreshing. Importantly, matters related to high alcohol content and microbial content of products are recognized as affecting impact and potential impediments to regional trade because there are cases in which different standards from

respective countries are applied. For example, sterilized *Makgeolli* belongs to the type of alcoholic beverage wherein the microorganisms used for fermentation have been sterilized. Draft *Makgeolli*, on the other hand, is distributed as a beverage containing microorganisms even after the bottling process without sterilization. It is apprehended that the properties of draft *Makgeolli* might be distorted when different standards from respective countries are applied to import quarantine and sanitary inspection.

The international trade volume of *Makgeolli* products is currently on the rise. However, there is a lot of confusion because most of the countries are not equipped with a classification system or systematic legislations for *Makgeolli* products. Hence, this work is expected to bring outcomes meeting to the objective of Codex Alimentarius Commission, which is to protect consumer's health and ensure fair trade through the development of an official international standard.

(c) International or regional market potential

Examining the global demand for *Makgeolli* in terms of the international trade volume tallied in recent years, most of the countries show the tendency of an increase. The trade volume may fluctuate depending on the total number of trading countries, but is expected to increase steadily in the future.

According to statistics from Korea, the import amount has increased in most of the countries in the Asian region. In fact, the amount of *Makgeolli imported* to countries such as Hong Kong and Malaysia strikingly increased since 2009. In Europe, *Makgeolli* import countries such as Germany, the Netherlands, and UK increased by about 4.8 times in 2011 compared to 2010. Since 2011, Australia, New Zealand, USA, and Canada have maintained or showed a slight increase of import amount. Countries in Latin America also showed an increase of 200% in between 2011 and 2012. Moreover, compared to 2009, the number of trading countries increased by 16 countries in 2013.

In addition, while there are two types of *Makgeolli*, sterilized *Makgeolli* and draft *Makgeolli*, the former type has a shelf life of 6 to 12 months. On the other hand, draft *Makgeolli*, which still contains yeast in the beverage has a shelf-life of 60 to 90 days when distributed under a cold chain system. Because of this advantage of having a long shelf-life, *Makgeolli* is regarded as a promising product with rich potential in the international market.

(d) Amenability of the commodity to standardization

The main ingredients (rice, *Nuruk*, and potable water) used in manufacturing *Makgeolli* are simple; so are the additives which are very limited to a few types. Thus, it is relatively easy to develop a Codex regional standard for *Makgeolli*. Furthermore, in terms of product diversity, *Makgeolli* can be produced and classified with great diversity depending on the optional ingredients, and thus, has been judged to be highly adequate for product standardization.

(e) Coverage of the main consumer protection and trade issues by existing or proposed general standards

Makgeolli products belong to section 14.2 Alcoholic beverages, including alcohol-free and low-alcoholic counterparts under section 14.0 Beverages, excluding dairy products, in the Annex II (Food Category System) of Codex General Standard for Food Additives.

However, there are limitations to consumer protection against *Makgeolli* products because a commodity standard has not been established for alcoholic beverages in the current Codex document. Therefore, the present work on a new Codex regional standard for *Makgeolli* is expected to facilitate the establishment of a regionally approved quality standard for alcoholic beverages and further reinforce consumer protection and promote trade.

(f) Number of commodities which would need separate standards indication whether raw, semi-processed or processed

The proposed regional standard will be for *Makgeolli* products. A single standard may be established since *Makgeolli* is a singular processed food.

(g) Work already undertaken by other international organizations in this field and/or suggested by the relevant international intergovernmental body(ies)

There are references to 'Beverage' in ISO 67.160, which includes contents about 'Alcoholic beverages, including beer, wine, spirits etc.' in 67.160.10. Hence, these references may be consulted.

5. Relevance to the CODEX strategic objectives

This proposal meets Objective 1.1 (Establish new and review existing Codex standard, based on priorities of the CAC) of Strategic Goal 1 (Establish international food standards that address current and emerging food issues) under the Strategic Plan of the Codex Alimentarius Commission for 2014-2019.

6. Information on the relation between the proposal and other CODEX documents

Standard for the product that is addressed in this proposal is not available in Codex documents. However, references about alcoholic beverages can be found in section 14.2 "Alcoholic beverages, including alcohol free and low-alcoholic counterpart" under the GSFA food category. In addition, General Principles of Food Hygiene and Standard for the Labeling of Prepackaged Food can be applied to *Makgeolli* products.

7. Identification of any requirement for and availability of expert scientific advice

Provision of scientific advice from experts is not foreseen in the present proposal.

8. Identification of any need for technical input to the standard from external bodies so that this can be planned for

Not applicable.

9. The proposed time-line for completion of the new work

Date	Advance and procedures
Nov 2014	Consideration of the proposal by CCASIA
Jul 2015	Critical review by CCEXEC and approval by the Commission
Jul 2015~Apr. 2016	Circulation of the Proposed Draft Regional Standard for comments
Nov 2016	Consideration of the Proposed draft Regional Standard by CCASIA
Jul 2017	Adoption by the Commission as a Draft Regional Standard
Jul 2017~Apr 2018	Circulation for comments on the Draft Regional Standard
Nov 2018	Consideration of the Draft Regional Standard by CCASIA
Jul 2019	Final Adoption by the Commission as a Codex Regional Standard