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DISCUSSION PAPER ON THE DEVELOPMENT OF A REGIONAL STANDARD FOR *MAKGEOLLI*

Prepared by Republic of Korea

Background

1. The 19th session of CCASIA (CCASIA19) agreed that a revised discussion paper on the development of a regional standard for *Makgeolli* addressing the two questions raised by the Representative of WHO and providing information on the production and trade of similar products in the region would be a good basis for CCASIA to start consideration on new work on this commodity (see paras 104-111, REP 15/ASIA).
2. The two questions raised by the Representative of WHO were as follows,
 - (i) If Codex decides to conduct new work on this commodity, would this trigger other proposals for standards on alcoholic beverages?
 - (ii) Would Codex standards currently being worked on as well as future standards support resolutions¹ of the World Health Assembly (WHA) in protecting and promoting public health, hinder the implementation of such resolutions, or stand neutral to the implementation of such resolutions?

Review on the WHO's comments

3. In reference to the second question raised by the Representative of WHO during the last session of CCASIA, the Republic of Korea views that the development of standard for this commodity supports resolutions of the WHA in protecting and promoting public health.
4. The development of standard for this commodity will certainly contribute to 'reducing the public health impact of illicit alcohol and informally produced alcohol' as described in article (i) of 10 target areas for policy options and interventions recommended in the WHO Global Strategy to Reduce the Harmful Use of Alcohol. Illicit or informal production of *Makgeolli* is easy because, as a rice-fermented alcoholic beverage that has developed as a type of home-brewed liquor for a long time, it is highly popular and its brewing methods are rather simple. In addition, sanitary management for *Makgeolli* is necessary for the protection of public health since its alcohol content is relatively lower than other alcoholic beverages and it also contains solid matters originating from the ingredients.
5. A variety of national policies and interventions are being implemented in the Republic of Korea to reduce the harmful use of alcohol. One of the actions taken in 2012 by the Korean government is the realignment of related laws by regulating alcoholic beverages under Food Sanitation Act in addition to Liquor Tax Act. The Liquor Tax Act stipulated the definition, alcohol content and ingredient application standard of all kinds of alcoholic beverage but not the standards related to sanitation. With the Food Sanitation Act applied to alcoholic beverages, every manufacturer of alcoholic beverages has to produce and distribute alcohol products in accordance with the standards stipulated in the Food Sanitation Act. These actions include matters related to sanitary quality criteria, additives, labelling, management of foreign matters, prohibition of false indication and excess advertisement.

¹ In May 2010, WHA, which is the highest governing body of WHO, had adopted Resolution 63.13 "Global Strategy to Reduce the Harmful Use of Alcohol" and WHO member states had committed to implement the Strategy, which could include, among others, many activities such as limitation of marketing and advertisement, legislation to prevent consumption of alcohol by young people; policy to prevent dependency, etc.(see para. 105, REP 15/ASIA) http://www.who.int/entity/substance_abuse/alcstratenglishfinal.pdf?ua=1

6. In most countries, alcoholic beverages are an important source of taxation. Accordingly, matters related to the production and sale of alcoholic beverages have been managed by government authority handling tax (National Tax Service). Consequently, the enforcement of sanitary control over alcoholic beverages has been considerably loose. However, with increased interest for food safety among consumers, governments are imposing more strict regulations for alcoholic beverages. The application of Food Sanitation Act on alcoholic beverages in the Republic of Korea is part of this global change. Thus, the development of Codex standard for alcoholic beverage products will be an action that protects the health of consumers through the provision of sanitary and high-quality product.

7. It is difficult to give a definitive answer to the first question raised by the Representative of WHO about whether conducting a new work on this commodity will trigger other proposals for standards on alcoholic beverages. However, like the Codex documents already developed in reference to alcoholic beverages,² new works for the provision of safe commodities and the protection of consumer health should be conducted continuously.

Review on the similar products in the region

8. *Makgeolli* is a fermented beverage that contains a small amount of alcohol (3-8%). It is made from rice, which is mixed with fermentation starter culture. After adding potable water, the mixture is fermented for a certain amount of time at an optimal temperature through a simultaneous two-step fermentation process. *Makgeolli* has characteristic of its cloudy form resulting from the solid matters which come from the main ingredients.

9. CCASIA19 requested the Republic of Korea to submit a revised discussion paper providing information on the production and trade of similar products in the region. In response to this request, the Republic of Korea made written requests to all CCASIA member countries to provide relevant information. Unfortunately, we did not receive any response from the member countries. As a result, we conducted an investigation on products similar to *Makgeolli*, visiting manufacturers and vendors of alcoholic beverages as well as related organizations in China, Japan, and Thailand from April to June this year. Findings from the investigation are as follows, and the component analysis results of rice-based products from each country are attached as an appendix to this discussion paper.

China: *Mijiu* is a product comparable to *Makgeolli* because it is a rice-fermented product. However, its form and use are completely different from *Makgeolli*. *Mijiu* contains a lot of steamed rice, which is the main ingredient. With this solid matter composing most of the product, *Mijiu* is consumed rather as a meal replacement than a beverage. Based on the analysis results of products distributed in China, the alcohol content of *Mijiu* is less than 3%. Hence, *Mijiu* is assumed to be a product which lies on the boundary between alcoholic beverage and general food.

Japan: Unlike *Makgeolli*, which is categorized as a cloudy type of rice-fermented beverage in the Republic of Korea, *Nigorizake* in Japan is categorized just like Sake and as a clear type of rice-fermented beverage. For *Makgeolli*, the filtering process is controlled so that solid matters originating from the main ingredients remain in the product. *Nigorizake*, on the other hand, involves a very fine filtering process which produces a clear type of Sake, to which solid matters are added separately afterwards. Due to this difference in manufacturing process, these two products differ in alcohol content, taste, flavour and components. We are unable to confirm the exact production or trade volume of *Nigorizake*, but the production is estimated to be only about 1~2% of the total output of sake (539,263 kℓ, Euromonitor 2015).

Thailand: A product similar to *Makgeolli* could not be identified in Thailand. No relevant information was obtained from neighbouring countries such as Myanmar, Cambodia, Lao PDR, etc.

10. Through this visiting investigation, we confirmed that there are considerable differences in terms of ingredient, manufacturing method, fermentation microorganism, alcohol content, and quality factor among alcohol beverages made from rice or grains in different countries. All the people concerned of each country whom we interviewed uniformly expressed very negative opinions about adopting a single standard for rice or grain-based alcoholic beverages that were developed differently according to respective tradition of each country, but rather asked back whether it would be possible at all to apply a single standard to grape wines or cheese that has characteristics indigenous to each region.

² The Code of Practice for the Prevention and Reduction of Ochratoxin A Contamination in Wine (CAC/RCP 63-2007) and provisions related to pesticide residues and food additives in alcoholic beverages.

Conclusion

11. Makgeolli is being traded mainly in the Asian region and also in nearly 50 countries around the world. Since each rice or grain-based product produced in respective country has distinctive manufacturing method, alcohol content, solid matters and usage, it is inadequate to develop an inclusive standard for all rice or grain-based alcoholic beverages.

12. Considering *Makgeolli's* characteristics including its easy manufacturing method, high popularity, low alcohol content, and quality changeability due to the solid matters, we believe that developing a regional standard for *Makgeolli* will greatly contribute to implementing the WHO Global Strategy on the harmful use of alcohol on a regional level and to developing works on alcoholic beverages in the Codex system in the future.

Recommendation

13. The Committee is invited to consider the issue raised in this discussion paper and recommend that next Session of the Codex Alimentarius Commission approve new work on the development of a Codex regional standard for *Makgeolli*. The proposal for new work is attached as Annex.

PROJECT DOCUMENT

Proposal for the Development of a Regional Standard for *Makgeolli*

1. Purpose and the scope of the standard

Makgeolli is a fermented beverage that contains a small amount of alcohol (3-8%). It is made from rice, which is mixed with fermentation starter culture. Added with potable water, the mixture is fermented for a certain amount of time at an optimal temperature through a simultaneous two-step fermentation process.¹ *Makgeolli* features a cloudy appearance due to the remaining solid matters originating from the ingredients. It is usually milky, but may show a variety of colour depending on the other grains or fruits used for optional ingredients. *Makgeolli* includes a small amount of carbon dioxide produced during the 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 has not been sterilized, allowing slow and continuous fermentation even after the bottling process and thereby containing considerable amount of fermentation microorganism.

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

2. Relevance and timeliness

Makgeolli has been produced and consumed for hundreds of years and is recently being traded throughout the world. In the past ten years, the trade volume of *Makgeolli* worldwide is consistently on the rise, and the number of trading countries has dramatically increased to nearly 50 countries including China, Japan, Republic of Korea, Australia, Canada, USA, etc. As shown in Figure 1, *Makgeolli* is bottled in PET, can, or glass containers for distribution.

Nevertheless, there have been various impediments to trading *Makgeolli* due to lack of understanding between trading countries and the absence of international standard.

First, some *Makgeolli* products are being distributed under names such as rice wine and rice beer for commercial purposes. Considering the manufacturing process and alcohol content of typical *Makgeolli*, these names are inappropriate and may cause confusion among consumers.

Second, the components and flavour of *Makgeolli* are prone to change during manufacturing process or distribution because *Makgeolli* has low alcohol content and contains considerable amount of solid matter originating from the main ingredient. Therefore, it is necessary to establish a quality criteria that can be applied in the international market.

Third, although two different types of *Makgeolli* products (sterilized and non-sterilized (i.e. draft)) are being distributed and sold, the same criteria are applied to both types in some countries. Such a practice causes trade conflicts. Therefore, in order to resolve obstacles in trade, it is necessary to clearly stipulate the definition, characteristics, quality factors, and sanitary requirements of each type of *Makgeolli*.

Fourth, *Makgeolli* was historically used as a nutritious thirst quencher for farmers. Developed over a long time satisfying this purpose, *Makgeolli* has established itself as a beverage that has relatively low alcohol content. In recent years, however, products that have gone through abnormal manufacturing process or have high alcohol content are being distributed in the market under the name of *Makgeolli*. This inappropriate practice can cause serious problems to consumers in relation to the harmful use of alcohol. Therefore, considering the sharp increase of international trade volume of *Makgeolli*, it is necessary to provide accurate information about *Makgeolli* products to consumers worldwide.

With such cases of disorderly practice that are causing confusion among consumers and can possibly become factors of health impediments increasing within the global market, it has become necessary to develop a Codex standard for *Makgeolli* products.

¹ In this process, saccharification process through which starch is degraded into its simple sugars, and alcohol fermentation, by which the simple sugars are converted to ethanol and carbon dioxide, occur simultaneously.



Figure 1. Exported *Makgeolli* by type of container
 Source: <http://www.google.com>

3. The Main aspects to be covered

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

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

General criterion

The new draft 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 commodity

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

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

The trade volume of *Makgeolli* has been increasing since 2005. As shown in table 1, the number of trading countries has increased from 8 in 2005 to 48 in 2015. The trade volume of respective continent by countries is indicated in Table 2.

Table 1. Number of trading countries of *Makgeolli* by year

Year	2005	~	2010	2011	2012	2013	2014	2015
Number of countries	8	~	38	38	35	44	44	48

Source: Korea Agro-Fisheries Trade Corporation (2015)

Table 2. Trade volume of *Makgeolli* (USD)

Continent	Country	2010	2011	2012	2013	2014	2015
Asia	China	930,141	1,311,024	1,519,341	1,764,909	2,804,513	2,448,425

	Japan	15,584,926	48,419,311	31,990,089	13,624,537	9,148,442	6,681,959
	Malaysia	6,918	23,585	112,239	172,532	146,936	115,221
	Singapore	40,177	63,918	177,646	194,997	192,131	177,966
	Thailand	41,093	65,839	79,984	130,849	79,958	73,600
	Vietnam	274,540	244,555	275,754	337,984	314,801	392,251
	Other	89,366	89,997	158,322	196,844	177,493	238,631
	Total	16,967,161	50,218,229	34,313,575	16,422,652	12,864,274	10,128,053
Europe	Germany	2,436	12,416	13,988	39,259	22,901	24,803
	Netherlands	3,466	51,021	38,651	27,571	28,840	50,347
	UK	12,949	26,198	16,677	27,276	20,335	29,388
	Other	17,640	21,551	8,501	55,366	36,711	48,970
	Total	36,491	111,186	77,817	149,472	108,787	153,508
Oceania	Australia	135,236	396,295	320,927	304,055	416,838	400,521
	New Zealand	61,131	63,509	69,684	32,607	44,559	35,297
	Other	1,179	-	4,094	11,947	11,441	11,814
	Total	197,546	396,295	394,705	348,609	472,838	447,632
North America	Canada	50,043	40,227	66,900	104,410	101,894	123,187
	USA	1,757,409	1,883,328	1,886,488	1,761,704	1,686,029	1,951,469
	Other	4,174	9,586	11,476	4,246	4,298	7,704
	Total	1,811,626	1,933,141	1,964,864	1,870,360	1,792,221	2,082,360
Latin America	Argentina	9,602	17,857	20,690	16,862	7,385	26,118
	Mexico	10,508	11,112	35,677	12,415	14,920	22,442
	Other	36,537	5,101	5,980	26,337	45,693	23,490
	Total	56,647	34,070	62,347	55,614	67,998	72,050

Source: Korea Agro-fisheries Trade Corporation (2015)

(b) Diversity of national legislations and its apparent impact or potential impediments to international trade

Without an international standard, *Makgeolli* is currently being distributed and consumed in 48 countries worldwide under various names such as *Makgeolli*, Rice wine, and Rice beer, causing confusion among consumers. The main characteristics of *Makgeolli* are its refreshing taste, sparkling sensation, sweetness and low alcohol content (3~8%). However, low quality products that do not satisfy these characteristics or use low grade ingredients can deceive and mislead the consumers. In addition, applying different microorganism criteria to all *Makgeolli* products can work as impediments in international trade.

For example, unlike sterilized *Makgeolli*, wherein the microorganisms used for fermentation are sterilized before bottling, draft *Makgeolli*, has significant amount of microorganisms even after the bottling process. It is apprehended that this property of draft *Makgeolli* might be distorted when different criteria from respective countries are applied to import quarantine and sanitary inspection.

(c) International or regional market potential

According to the international trade volume of *Makgeolli* tallied in recent years, the global demand for *Makgeolli* is increasing. The trade volume in most countries indicates an upward trend. The total 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 total trade volume in Asian region decreased during the last couple of years mainly because there has been a significant drop in the trade volume of Japan, which is the largest trading country. The cause to Japan's drop is presumed to be a change of preference for alcoholic beverages among the main *Makgeolli* consumers. Except for Japan, however, the trade volume of *Makgeolli* in other Asian countries, as well as countries in Oceania, North America and Latin America has been consistently increasing since 2010. In particular, the trade volume nearly doubled or tripled over the same period in countries such as Australia, Canada, Argentina, and Mexico.

In addition, sterilized *Makgeolli* has a shelf-life of 6 to 12 months, and draft *Makgeolli* has a shelf-life of 60 to 90 days when distributed under a cold chain system. Because of this advantage of having relatively long shelf life despite the low alcohol content, *Makgeolli* products are regarded as promising commodities in the international market.

(d) Amenability of the commodity to standardization

The main ingredients (rice, starter culture, and potable water) used in manufacturing *Makgeolli* are simple; so are the additives which are limited to a few kinds. Thus, it is relatively easy to develop a Codex standard for *Makgeolli*.

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

A commodity standard has not been established for alcoholic beverages in the current Codex standards. The only existing Codex document related to alcoholic beverages is *the Code of Practice for the Prevention and Reduction of Ochratoxin A Contamination in Wine* (CAC/RCP 63-2007). This document, however, involves mycotoxins in wine and is irrelevant to the new work proposal for alcoholic beverage made from rice.

Alcoholic beverages made from grains including rice are categorized under wine (other than grape) in the GSFA Food Category System. However, alcoholic beverages manufactured from grains should be precisely distinguished from wine, which are made from fruits. This is because there is a big difference in the fermentation process of these two kinds of product.

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

The proposed standard will be for *Makgeolli* products.

(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 1.2 (Proactively identify emerging issues and Member needs and, where appropriate, develop relevant food standards) of Strategic Goal 1 (Establish international food standards that address current and emerging food issues) under the Strategic Plan 2014-2019 of the Codex Alimentarius Commission.

6. Information on the relation between the proposal and other existing Codex documents

Food additive provisions relevant to *Makgeolli* are listed in F.C. 14.2 "Alcoholic beverages" of the *General Standard for Food Additives* (GSFA).

In addition, *General Principles of Food Hygiene* (CAC/RCP 1-1969) and *Standard for the Labelling of Prepackaged Food* (CODEX STAN 1-1985) 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.

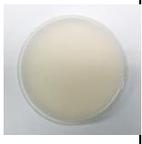
9. The proposed time-line for completion of the new work

Date	Advance and procedures
Jul 2017	Approval of the new work by the Commission
Sep. 2018	Consideration of the proposed Draft standard by CCASIA
Jul 2019	Adoption by the Commission at Step 5
Sep. 2020	Consideration of the Draft Standard by CCASIA
Jul 2021	Final Adoption by the Commission as a Regional Standard

Appendix

Comparative Table of Cloudy-Type Alcoholic Beverages made from Rice of China, Japan and Republic of Korea

Type	Image		Alcohol Contents (v/v %)	pH	Acidity (0.1N NaOH ml)	Total Acid (mg/100ml as acetic acid)	Brix Scale (Brix)	Solid Contents (% w/v)	Colour			Turbidity (NTU)
	Whole	Surface							L	a	b	
Miju (China)			0.3	4.02	2.1	0.13	11.9	53.55	59.3	0.69	13.43	5653
			1.5	3.86	4.0	0.24	33.5	59.83	64.61	1.07	11.71	3751
			2.5	4.25	4.1	0.25	33.4	65.73	59.86	-0.07	13.39	5089
			2.1	4.04	5.1	0.31	34.2	71.75	80.23	2.02	14.29	1153
Nigorizake (Japan)			10.4	4.03	2.5	0.15	14.5	9.05	51.65	0.32	16.09	99999

Type	Image		Alcohol Contents (v/v %)	pH	Acidity (0.1N NaOH ml)	Total Acid (mg/100ml as acetic)	Brix Scale (Brix)	Solid Contents (% w/v)	Colour			Turbidity (NTU)
									L	a	b	
			10.3	3.97	2.4	0.14	14.2	8.96	53.24	0.21	15.72	99999
			19.3	4.22	2.8	0.17	20.5	8.70	49.27	1.01	22.2	99999
			17.4	4.36	2.2	0.13	13.2	9.14	99.87	0.12	3.02	50.9
Makgeolli (Korea)			6.79	3.44	5	0.30	5.4	9.32	51.98	0.94	17.28	99999
			6.16	3.96	4.6	0.28	4.9	8.47	49.94	2.72	17.98	99999
			6.27	3.88	4.5	0.27	4.5	8.92	51.28	2.48	17.32	99999

Type	Image		Alcohol Contents (v/v %)	pH	Acidity (0.1N NaOH ml)	Total Acid (mg/100ml as acetic)	Brix Scale (Brix)	Solid Contents (% w/v)	Colour			Turbidity (NTU)
									L	a	b	
			6.39	4.35	3.8	0.23	3.8	9.32	43.44	4.09	30.79	99999