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A Comparative Analysis of the Institution and Market of Health Functional Food Between Korea and Japan

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Abstract The aim of this study was to forecast the future Health Functional Food (HFF) market trends of Korea by studied about policies and market situation in Japan. The HFF is a food that is given an additional health function. In contrast with traditional foods, the HFF has unique characteristics in that it can be produced under the political regulations. The market size of the HFF was growing gradually due to the increased of an aging population and consumer need for high quality and diversified foods. The reason why the HFF market in Japan grew up earlier than other countries, Japan was the first country that institutionalized the HFF policies. Therefore, in this paper, by examining the policies and the market situation of Japan through literatures, we forecasted upcoming political and market situational changes of Korea's HFF market. We noticed that consumers needs about the HFFs which diversified, confidently ensured safety and ingredients will increase. In this regard, the government will reorganize legislation in order to increase the confidence of the safety of HFFs. In addition, the market size of domestic HFFs which are produced by major food companies will grow.

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1 Introduction

Eating habits of the people is gradually changing due to the increases of the national income, income level of women and needs for high-quality food (Kim et al, 2010). In addition, the needs for health related food are also increasing as the elderly population increases. Increased needs for health related food influenced the HFF market, and the size of it in 2015 was 1.54 trillion won. It shows that it was grown by 3.39% comparing to that of 2014 (1.49 trillion won). (Food & Drug Statistical Yearbook, 2016)

HFF means "The food manufactured by using the nutrients which cannot be ingested from everyday meals, or the materials or ingredients (Hereinafter refer to 'functional materials') which have a useful function for human body, and helps to maintain the health of people." (Ministry of Food and Drug Safety, 2013)

The difference of HFF comparing to others is the fact that it can be sold after acquiring an accreditation from the authority. In other words, as HFF is the product manufactured and sold based on the institution, the changes in market can be forecasted through it. Therefore, this paper aims to forecast the changes of consumption trend in the domestic market by comparing the current state and institution of Korean HFF market with that of Japan where the HFF market was developed earlier. We hope that this research can be used as a reference material for developing new products of HFF.

2 Definition of HFF and research methods

In this paper, we have researched on the trends and institutional status of domestic HFF market based on diverse documents including that of the Ministry of Food and Drug Safety, which controls the domestic health functional food industry, that of the Consumer Affairs Agency controlling the food with health claims industry in Japan, other report materials, reports and websites. HFF tends to be strictly manufactured and sold based on the institution. Thus market forecast of HFF should be executed based on it. In case of Japan, HFF market was established and developed ahead of Korea. The purpose of researching on the HFF market of Japan, which we have a closer relationship among the East Asian countries, is because there is a possibility that the domestic HFF market will be developed in the same way in terms of the institution and consumption tendency. Therefore, with regard to the domestic HFF market, if the research is executed based on the Japanese system and market cases, it will be possible to forecast the desirable market of the domestic HFF industry.

HFF, the target of this research, used to be called the dietary supplement in the past, and it was beginning to be referred to 'Health Functional Food' since the enactment of 'Health Functional Food Act', No. 6727, on August 26, 2002. HFF, which is controlled by the Ministry of Food and Drug Safety, is defined as "The food manufactured by using the nutrients which cannot be ingested from everyday meals, or the materials or ingredients (Hereinafter refer to 'functional materials') which have a useful function for human body, and helps to maintain the health of people." (Ministry of Food and Drug Safety, 2013) Before 2007, there were only 6 types of HFF such as pills, capsules, powders, granules, liquid and pellets, however, they can be produced in diverse types due to the regulatory reform (Ministry of Food and Drug Safety 2008).

Food with health claims of Japan is a HFF satisfying a certain condition among the ones called healthy food which is sold in diverse types and forms (Ministry of Health, Labour and Welfare, 2016), and it is similar to HFF of Korea. At present, food with health claims is controlled by the Consumer Affairs Agency, and it is classified into the food for specified health uses, food with nutrient claims and Food with functional claims depending on the criteria of permission, necessity of the food, consumption purposes, functions and recognition forms which is shown in <Figure 1>

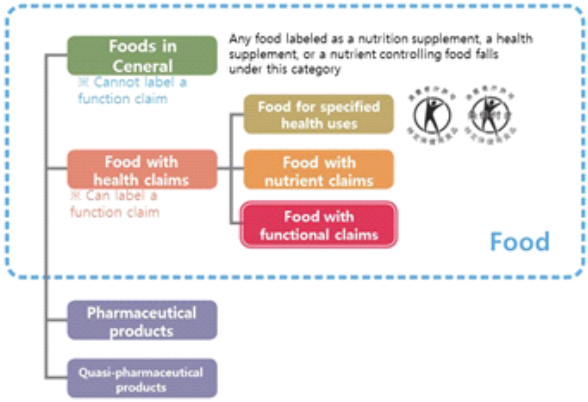

Figure 1 Classification of medicine and food in Japan
Source: Consumer Affairs Agency, 2015

Food for specified health uses has the individual permission-type recognition form, and food with nutrient claims has that of the standard criteria-type. Food for specified health is classified into 4 types shown in the <Figure 2>. To prevent confusion, we will call the food for specified health uses of the detailed category 'Detailed food for specified health uses."

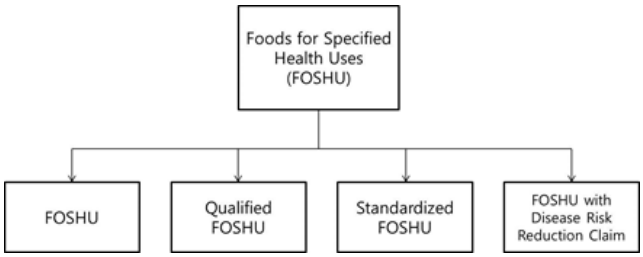

Figure 2 Categories of foods for specified health uses
Source: Dr Joëlle Sambuc Bloise, 2014

Food for specified health uses is defined as 'The food having an efficacy which would help to fulfill the related purpose when it is ingested by people for a specific health goal in their dietary life, and a kind of food for special purposes,' based on the section 1 of the article 26 of the Health Promotion Act. The status of the food for specific health in the institution is positioned in the border of medicines and general food (Consumer Affairs Agency, 2010). Food with nutrient claims is the one of which the functionality of its related nutrients can be specified based on the criteria prescribed by the Minister of Consumer Affairs Agency (except for fresh foods (egg)), and the one containing the nutrients, such as vitamins and minerals, within the upper and lower limit of daily standard usage. Food with nutrient claims

is pill or capsule-type ones, and it could not be approved as it was not fulfilling the criteria for food with health claims, however, it was approved in 2001, and has been controlled based on the section 1, article 19 of the Food Sanitation Act (Consumer Affairs Agency, 2016). Lastly, food with functional claims is the one approved as the food with health claims since April, 2015, and it is the food of which the functionality is not approved by the Consumer Affairs Agency, being different from that of the food for specified health uses. According to the Consumer Affairs Agency, the functionally of food with functional claims, which is sold under the responsibility of business operators, should be scientifically proven by the business operators, and the proving methods should include a clinical test for human body and systematic review. If reporting and registering the results of clinical test and systematic review at the Consumer Affairs Agency, it is possible to indicate and sell the product as a food with functional claims. Almost all types of foods, including fresh food, can be registered as the food with functional claims, however, it is not possible for the food for special purposes (including the ones for a specific health), nutrient supplements, alcoholic beverages, and the food which may cause excessive intake of fat, cholesterol, sugar (monosaccharide and disaccharide which are not alcoholic) and sodium (Consumer Affairs Agency, 2015).

As above, we have found that the HFF and food with health claims have a characteristic that they can be sold after being approved by the controlling organizations based on the definition prescribed by the law. Therefore, we have researched on the institution based on the materials notified by the Ministry of Food and Drug Safety of Korea and the Consumer Affairs Agency of Japan, related law and reports. In addition, since the forecast of domestic institution for HFF and market trend can be realized based on the flow of consumption changes in the market from the past to the present, we have researched on the institution and market by utilizing the materials of Korea Health Supplements Association, the enterprises related to HFF products and related research papers.

3 Comparison of cases & consideration

3.1 Current status and institution for domestic HFF market

1) Domestic HFF market and consumption trend

The scale of domestic HFF market is 1.54 trillion won as of 2015, and it was increased by 3.39% comparing to that of 2014 (1.49 trillion won) (Food & Drug Statistical Yearbook, 2016). Domestic HFF is manufactured and distributed by small-scale businesses except for the top 5%. The product of the largest sales among HFFs is red ginseng (694.3 billion won as of 2015), and the 2nd and 3rd largest ones are individual recognition-type HFF (319.5billionwon, 2015) and vitamins & minerals (207.9 billion won, 2015) while taking 17.5% and 11.4% of the HFF market, respectively(Food & Drug Statistical Yearbook, 2016).

With regard to the percentages of each distribution channel, direct sales such as pyramid selling and door-to-door sales takes approximately 60% of the whole market (Nam et al. 2014). In addition, there are a growing number of customers who are purchasing HFF online as it is easy to compare the prices (Yoo et al. 2007). With regard to the types of food, a total of 89 individual permission-type HFFs are sold in 2015, and it means that diverse individual permission-type products are produced and sold comparing to 77 kinds in 2014, and 78 kinds in 2013. Especially, we have found that compound-type products such as angelica extract and milk vetch extract are included in the top 10 products in 2015 (Analysis of Korea Health Functional Food Markets Trends, 2016). This means that the customers demand diverse kinds of HFFs.

In addition, we also could find that the enterprises are trying to cope with the increasing demand of the customers for these diverse HFFs. The most frequent dosage forms of domestic HFF are pills and pallets, however, some of the products are produced in general food type, recently. We can take the chocolate with flavanol ingredients of Lotte Confectionary as an example. It means that the major food companies are trying to expand to HFF market. However, the ratio of HFF products, which are manufactured by them, is still small, and as it is mentioned above, most of the HFFs in the market are made in pill or pallet form.

2) Institution for domestic HFF

① Classification of HFF

Domestic HFF is classified based on the materials (Korea Agro-Fisheries & Food Trade Corporation, 2013). The materials are classified into notification-type and individual permission-type based on ‘the laws of HFF’ (Hereinafter referred to ‘the laws’). The notification-type materials registered in the law are approximately 95 kinds. Individual permission-type materials are the ones accredited by the Minister of Food and Drug Safety,

and there are more than 175 kinds at present. 95 notification-type materials are shown in <Table 1>.

Table 1 Available items of health functional food's functional ingredient

Sort	Ingredients
28 kinds of nutrient ingredients	Vitamin A, beta-carotene, Vitamin D, Vitamin E, Vitamin K, Vitamin B_1, Vitamin B_2, Niacin, Pantothenic acid, Vitamin B_6, Folic acid, Vitamin B_{12}, Biotin, Vitamin C, Calcium, Magnesium, Iron, Zinc, Copper, Selenium, Iodine, Manganese, Molybdenum, Potassium, Chromium, Dietary fiber, Protein, Essential fatty acids,
67 kinds of available functional ingredients	Ginseng, Red ginseng, Plants containing chlorophyll, Chlorella, Spirulina
	Green tea extract, Aloe leaves, Propolis extract, Coenzyme Q10, Soybean isoflavone, Guava leaf extract, Banaba leaf extract, Ginko leaf extract, Evening primrose seed extract, Milk thistle extract
	Fats containing omega-3, Fats containing gamma-linolenic acid, Lecithin, Squalene, Plant sterol/Plant sterol ester, Shark liver-oil containing alkoxygly cerol, Fat containing octacosanol, Maesil (apricot) extract, Conjugated linoleic acid, Garcinia cambogia husk extract, Lutein, Haematococcus extract, Saw palmetto fruit extract, phosPhatidylserine
	Glucosamine, N-acetylglucsamine, Muco polysac charide-protein, Aloe gel, Yongji-mushroom fruit-body extract, Chitosan/Chito-oligosaccharide, Fructo-oligosaccaride
	Dietary fiber : Guar gum/Guar gum bydrolysate, Glucomannan (Devil's tongue jelly), Oat, Nondi gestable maltodextrin, Soybean dietary fiber, Mogi mushroom, Wheat dietary fiber, Barely dietary fiber, Arabic gum(acacia gum), Corn, Inulin/Chicory extract, Plantain-seed envelope, Polydextrose, Fenugreek seed
	Probiotics, Red koji
	Soybean protein, L-theanine
	Garlic, Bilberry extract, Rhodiola sachalinensis extract, Hyaluronic acid, Poly-γ-glutamic acid, Dimethyl sulfone(Methyl sulfonylmethane, MSM), raffinose, agar powder, creatine, milk protein hydrolysate, sanghwang mushroom extract, tomato extract, Amorphophallus konjac extract

Source: Ministry of Food and Drug Safety(2016), Notification No. 2016-63

② Functionality of HFF

To take a functionality test of domestic HFF, functionality data should be submitted based on the regulations for functional ingredients and standard criteria. The functionality data includes human body test, animal test and systematic review. According to the amended regulations for functional material and standard criteria of HFF (Notification No. 2012-107, October 30, 2012), the data published in the academic journals registered in the Science Citation Index or academic journal citation index can be approved as the functionality data.

The functionality of HFF can be classified into 3 kinds such as the reduction of disease risk functionality, bioactivity functionality and nutrient functionality. The function of reducing disease risk includes 2 kinds such as that of reducing the risk of osteoporosis and cavity. Nutrient functionality means "the physiological action of nutrients for the growth, improvement and function of human body', and it includes 32 functions shown in <Table 2>

Table 2 32 Types of physiological function activity

1	memory improvement	12	skin health	23	Endurance exercise performance ability
2	blood circulation improvement	13	Cholesterol improvement	24	Dental-health improvement
3	liver health	14	blood pressure regulation	25	urinary function improvement
4	liver health	15	ease tension	26	skin condition improvement by immune overreaction
5	climacteric women health	16	intestinal health	27	climacteric men health
6	regulation of blood glucose	17	calcium absorption improvement	28	dysmenorrhea improvement
7	eye health	18	urinary tract health	29	sperm motility improvement
8	Immune-function improvement	19	digestive functions	30	women vagina health by growth of lactic acid bacteria
9	joint/bone health	20	antioxidativity	31	growth in height of children improvement
10	prostate health	21	blood triglycerides improvement	32	Quality of sleep improvement
11	fatigue improvement	22	cognitive capability	33	

Source: Ministry of Food and Drug Safety(2016), Notification No. 2016-63

3) Trend of institutional change for domestic HFF

According to the major contents notified by the Ministry of Food and Drug Safety notification No. 2016-63, which was amended on June 30, 2016, the standard and specifications of raffinose, agar powder, creatine, hydrolyzed milk protein, Phellinus linteus extract, tomato extract and konjac & potato extract were newly established. In addition, according to the article 43 of the Functional Food for Health Act which was amended after the incident of using fake Cynanchum wilfordii of Naturalendo Tech in 2015, people who manufacture and sell HFF by using banned material will be punished with less than 10-year imprisonment or less than 100 million won fine which used to be 5-year imprisonment or less than 50 million won fine before.

3.2. Current status and institution for Japanese health food market

1) Japanese health food market and consumption trend

The size of Japanese health food market in 2015 is estimated to be 746 billion won which is increased by 103.5% comparing to the maker enterprises shipment of the previous year, and it is expected to be 780.4 billion won in 2016 which is increased by 104.6% due to the regularized sales of the food with functional claims (Yano Research Institution, 2016). Food for specified health uses is taking the majority of Japanese health food market, and according to Nakagawa(1998), the majority of foods for specific health uses in 1991, when the institution for food for specific health uses was established, were concentrated on the products containing oligosaccharide, and most of them were beverages and table sugar products, however, diverse types of food are selling in the present day market. <Table 3> and <Table 4> show the data of market survey for food for specified health use from 1998 to 2015 which is provided by Japan Health and Nutrition Food Association (2016)

Table 3 Market trends of health functional food components (JPY, million)

Year/Functions and composition		1997	1999	2001	2003	2005	2007	2009	2011	2013	2014	2015
Gastrointestinal condition	Oligosaccharide	104	91	56	67	59	72	34	30	69	84	81
	Lactobacillus	979	1,863	3,171	3,421	3,517	3,249	2,926	2,764	3,562	2,875	3,154
	Vegetable fiber	119	116	128	142	130	153	105	107	165	197	182
	Total	1,202	2,070	3,355	3,629	3,706	3,474	3,064	2,901	3,796	3,156	3,417
Cholesterol		0	4	28	114	228	230	234	249	224	218	226
Blood pressure		14	72	100	88	148	251	208	245	241	232	205
Bone · Mineral		92	45	114	120	143	73	193	167	160	154	149
Dental		0	4	187	805	961	854	512	326	272	289	305
Blood glucose		7	5	184	277	233	211	216	181	177	154	182
triglyceride, body fat		0	70	152	635	881	1,606	1,067	1,107	1,405	1,932	1,908
Total		1,314	2,269	4,121	5,669	6,299	6,698	5,494	5,175	6,275	6,135	6,391

Source: Japan Health and Nutrition Food Association, 2016

Table 4 Market trends of health functional food products

Year/ Product type	2007 (sales/%)		2009 (sales/%)		2011 (sales/%)		2013 (sales/%)		2014 (sales/%)		2015 (sales/%)	
Soft drink	1,665	24.5	1,315	23.9	1,247	24.1	1,797	28.6	2,315	37.7	2,290	35.8
dairy product	3,285	48.3	3,012	54.8	2,840	54.9	3,635	57.9	2,927	47.7	3,198	50
Processed food/Seasoning	879	12.9	599	10.9	636	12.3	428	6.8	410	6.7	402	6.2
Snacks and other	969	14.3	568	10.4	452	8.7	416	6.7	484	7.9	502	8
Total	6,798	100	5,494	100	5,175	100	6,276	100	6,136	100	6,392	100

Source: Japan Health and Nutrition Food Association, 2016

Considering the related market data, we can find out that the products related to intestinal regulation are sharing most of the market. However, the number of the products related to intestinal regulation is decreasing lately. From 1997, when they were beginning to authenticate the products, until 2003, the products related to intestinal regulation shared more than 60% of the overall food for specified health uses market, however, it went down to 50% as the number of other products for specified health uses increased. Considering the market trend of recent years, we can find out that the market size of the products related to neutral and body fats was rapidly grown. The market of the products related to neutral and body fats formed a size of 63.5 billion yen in 2003, 4 times larger than that of 1999 when they were released for the first time.

Since then, its market has been growing consistently, and reached 190.8 billion yen in 2015. Apart from this, the market of HFF for dental health was grown to that of 80.5 billion yen in 2003, and the sales went down gradually after forming the largest market in 2005. It formed the market of 30.5 billion yen as it was recovered since 2015. Besides, the number of the products related to cholesterol and blood pressure is increasing consistently. With regard to the types of products, dairy goods shared 50% of the market since 2007, and soft drinks shared 35.8% of it in 2015 as its ratio had been increasing gradually. The market share of other processed foods, food additives and cookies is decreasing. The food for specified health uses is mainly sold in convenient stores, small and medium marts and drug stores.

Overall, we can find that HFF for intestinal regulation and diverse functional HFFs have been sold in Japan since 2003. The representative food for specified health uses is Metz Cola of Kirin Co. 600 cases (1 case: 24 bottles) of Metz Cola, 6 times more than the sales target when it was launched for the first time, were sold in 2012 (Korea Trade-Investment Promotion Agency, 2015). Apart from this, diverse products such as 'Tea making the body healthy' of Coca Cola Co, 'Iemon's special green tea', 'Rebita Gluco-care powdered green tea' of Taisho Pharmaceutical Co. and 'All-bran' cereal of Kellogg's are the examples of it.

Chiba et al. (2014) researched on the consumers' awareness for Japanese food with health claims. Chiba et al. (2014) conducted a survey of 1,957 monitors on the food for specified health uses, and found out that more than 80% of the consumers recognized the food for specified health uses as an 'expensive and safe food.' They also found out that 70% of the respondents thought 'HFF could have an efficacy', 40% of them thought 'It can be used together with medicine,' and 15% of them thought 'HFF can replace the medicine.'

40.8% of the respondents of the survey were taking the food for specified health uses 'which prevents the increase of neutral fat and body fat,' 34.4% of them were using that of 'easing the stomach,' and 24.4% of them were using the food for the people whose cholesterol level is high. As a result, we can realize that the majority of the Japanese consumers were using the food for specified health uses to control their weight increase.

2) Institution for Japanese food with healthy claims

① Classification of food for specified health uses and functionality

Detailed food for specified health uses means the one providing the users, who intake the food for the specific health purpose, with the related health function. More than 100 permissions for individual permission-type food for specified health uses were granted, and if 6 years have passed since the initial permission date of the functional ingredient, or the permitted functional ingredient is produced and sold by more than 2 manufacturing businesses, it can be registered as the standard criteria-type food for specified health uses. The engaged components and standard criteria of the standard criteria-type food for specified health uses are shown in <Table 5>.

Table 5 Types of standard criteria for Foods for specified health uses' engaged components and standard criteria

Sort	Engaged components	Daily intake guide	Sort	Engaged components	Daily intake guide
Dietary fiber	Indigestible Dextrin	3-8g	Oligosaccharides	Lactosucrose	2-8g
	Polydextrose	7-8g			
	Partially Hydrolyzed Guar Gum	5-12g		Galactooligosaccharide	2-5g
Oligosaccharides	Soybean-oligosaccharides	2-6g		Xyloloigosacchar ide	1-3g
	Fructooligosac-charide	3-8g		Isomaltooligosaccharide	10g

Source: Consumer Affairs Agency. (2006)

The food for specified health uses marked with disease risk reduction can be approved if the reduction of disease risk functionality of engaged components is proven medically and nutritionally, and the presently approved engaged components are calcium and folic acid. Condition-type food for specified health uses is the one of which the functionality is approved conditionally if the scientific value of the product is between 5%~10% among the foods which cannot reach the scientific basis level (5%) demanded for evaluating food for specified health uses (Food Labeling Division of Consumer Affairs Agency, 2010). 8 functionalities of food for specified health uses are shown in <Table 6>.

Table 6 8 Functionality of Foods for specified health uses

1	Modulation of blood pressure	5	Modulation of blood sugar level
2	Modulation of serum cholesterol level	6	Modulation of serum triacylglycerol and cholesterol lovels and of body fat percentage
3	Gastrointestinal condition	7	Acceleration of mineral absorption
4	Maintenance of healthy teeth	8	Promotion of bone health

Source: Japan Health and Nutrition Food Association. (2014)

② Classification of food with nutrient claims and functionality

The nutrients of food with nutrient claims are classified into 12 vitamins and 5 minerals. The related nutrients and acceptable daily intake guide are shown in <Table 7>

Table 7 Standard criteria of Foods with nutrient function claims

1	Zinc (3mg~15mg)	2	Calcium (250mg~600mg)	3	Iron (4mg~10mg)
4	Copper (0.5mg~5mg)	5	Magnesium (80mg~300mg)	6	Vitamin B_6 (0.5mg~10mg)
7	Vitamin B12 (0.8μg~60μg)	8	Vitamin C (35mg~1,000mg)	9	Vitamin D (0.9μg~5.0μg)
10	Vitamin E (3mg~150mg)	11	Folic acid (70μg~200μg)	12	Niacin (5mg~15mg)
13	Pantothenic acid (2mg~30mg)	14	Biotin (10μg~500μg)	15	Vitamin A (180μg~600μg)
16	Vitamin B1 (0.3mg~25mg)	17	Vitamin B2 (0.4mg~12mg)		

Source: Consumer Affairs Agency. (2012)

③ Functional ingredients of food with health claims

Being different from domestic HFF, there are no regulations on the materials for Japanese food with health claims, and products are manufactured by using the above mentioned ingredients.

3) Trends of institutional change for Japanese HFF

In Japan, there are products called 'Health food' and 'Health supplement' in the market except for the food with health claims. The ingredients of health supplement are indicated, but not its content, and the component of each raw material is not clear. In addition, there are the products containing the ingredients which are not indicated. Since there isn't any legal limitation for HFF, it is not illegal to manufacture and sell HFF, however, the credibility and status of HFF are deteriorated by the HFF without legal limitations, and the majority of people think that there should be legal limitations. In addition, to compensate the blind point of institution for HFF which does not demand individual certification and permission for sales, it seems that the authority is trying to adopt a permission system for food with nutrient claims.

3.3 Comparison of the institutions for Korean and Japanese HFF and market statuses

1) Comparison of the institutions for Korean and Japanese HFF

When we compare the institutions for Korean HFF and Japanese Food with health claims, we will use the same term HFF to prevent confusion if mentioning the part except for the contents of the table. The institutions of Korean and Japanese HFF are shown in <Table 8>.

Table 8 Comparison of health functional food regulation in Korea and Japan

	Korea	Japan
Official name	Health functional food	Food with health claims (保健機能食品)
Jurisdiction	Ministry of Food and Drug Safety	Consumer Affairs Agency(消費者庁)
Target food	Processed food	Food which consumed in daily lives

	Korea	Japan
Health functional food (HFF) product class classification standard	Classification by ingredients -Notification ingredients -Individual notification ingredients	classification by functionality -Foods with nutrient function claims -Foods for specified health uses -Foods for special dietary use
HFF ingredients classification standard	- functionality classification - available/unavailable classification - functionality authenti cate classification	Do not sate ingredients due to classified engaged components
HFF functional classification standard	-functionality of decreasing occurrence of diseases (2) -Physiological activation functionality(31) -Nutrient functionality(28)	-Functionality of specified health uses(8) -Nutrient functionality(17)
HFF functional experiment	experiments can be skippable when manufactured by notification ingredients	-Foods with nutrient functional claims can be omitted -animal tests, clinical tests were processed in case of Foods for specified health uses

The differences of the institutions for Korean and Japanese HFF are as follows. The criteria for accrediting HFF in Korea are based on the usable and unusable raw materials. The usable raw material is classified into notification-type registered in the law, and individual permission-type is accredited by the Minister of Food and Drug Safety. On the other hand, Japanese criteria are based on the functionality, not the raw materials. To receive an evaluation for functionality of domestic HFF, the functionality data or that of published in academic journals should be submitted based on 'the functional ingredient and standard criteria.' In Japan, however, the accreditation processes are different depending on the kinds of HFF, and in case of the food for specified health uses, the functionality data including vitro examination, animal test and human body test should be submitted to take a functionality evaluation. On the other hand, food with nutrient claims and food with functional claims can be manufactured and sold simply by reporting it under the responsibility of the business operator.

According to the definition above, as most of the domestic HFF is processed ones, agricultural products cannot be included in this category, and its functionality cannot be indicated as well. On the other hand, we could find an institutional difference since the Japanese authority allows the indication of functionality of processed food or agricultural product with health function, apart from HFF.

2) Comparison of Korean and Japanese HFF markets

As the institutional difference is applied to the market, diverse types of HFFs, including the supplement-type ones and general food-type ones such as beverages, cereal and agricultural products, are sold in the Japanese HFF market. In the domestic market, however, there are lots of pill and pallet-type HFFs, and the red ginseng products are sharing most of the market. 243 HFF manufacturing businesses out of 2,249 are manufacturing and selling HFF related to red ginseng.

Most of Japanese HFFs are produced by the major companies. In Korea, however, most of them are produced by small and medium enterprises. Recently, the major enterprises such as CJ, Dongwon F&B and Lotte Confectionary are beginning to enter the HFF market (Jang et al. 2003), however, approximately 75% of the HFF manufacturers are small enterprises with the annual sales of less than 10 billion won, as of 2015, and this shows that the Korean HFF market is largely relying on them.

In Japan, diverse general food-type HFFs are produced, and they are sold in retail stores such as convenient stores, small and medium marts and drug stores. In Korea, however, 80% of them are sold by direct sales, pyramid selling or door-to-door sales. Since 2003, however, as a few major companies entered the HFF market, the sales in HFF special shops and discount stores are increasing (Lee and Do. 2005).

4 Conclusion and summary

Since HFF market has characteristics of changing its trend depending on the institution, we need to examine the domestic institution before forecasting the future trends of domestic HFF market. By comparing the institutions for Korean and Japanese markets, we could find out that there are differences in management and operation systems of both markets. One of the reasons why the Japanese HFF market could be grown earlier was because it was becoming an aging society rapidly.

Similar to that, Korean HFF market is also growing since the adoption of the institution for HFF due to the diffusion of habit diseases which are caused by aging and westernized food life.

In Japan, the safety of HFF once was a social issue as the side effect such as liver failure was caused by the food for diet, in 2002 (Shiba, 2005). The medicine and food bureau and food sanitation research center of the Ministry of Health, Labor and Welfare, Japan, have been consistently monitoring and inspecting the improper materials of HFF food to dispel such mistrust (Jang et al. 2014). In Korea as well, there was an incident which triggered the problems of functionality and safety of HFF, similar to the Japanese case.

In 2015, a company well-known for producing Cynanchum wilfordii products used Cynanchum auriculatum Royle ex Wight instead, and it caused the distrust of the customers for the functionality and safety of HFF. Therefore, people began to distrust not only the manufacturer but also the cultivators of Cynanchum wilfordii, and eventually, it influenced the whole domestic HFF market. After the incident, the customers'demand for the safety of domestic HFF has been increasing, and it will increase the consumption of the products of which the safety is assured. Therefore, the safety of the products needs to be managed by the government just like in Japan. In addition, as the government amended the related law into that people who manufacture and sell HFF by using banned material will be punished with less than 10-year imprisonment or less than 100 million won fine which used to be 5-year imprisonment or less than 50 million won fine before, safety management for HFF by the government will become more strict.

Demand for the safety will lead the expansion of consuming the products made by the trustworthy manufacturers, and it seems that the consumption of the HFF produced by the major enterprises will increase. Korean consumers tend to trust the major food companies more than small and medium-sized ones. It is because the major enterprises can positively invest in R&D with their advanced technology and funding power comparing to that of small and medium enterprises, and most of them are equipped with the facilities where they can produce the products safely. Although most of the HFFs are produced by small and medium enterprises at present, however, consumption of the products made by the major food companies will increase as the customers' demand for safety increases.

People of the world are pretty much interested in Japanese HFF market. It is because the HFF products are distributed as a general food that we take in everyday life. We can take 'Metz Cola' of Kirin Company as an example of popular HFF, and it was made by adding a functional ingredient called indigestible dextrin to the existing carbonate drink. In addition, there are diverse types of HFFs such as green tea and cereal. Being different from the Japanese situation, although the regulation for producing domestic HFF was abolished in 2007, which was confined to 6 types such as pills, capsules, powder, granules, liquid and palates, most of the products are still produced in those types. However, just like the recent release of a chocolate-type HFF with flavanol produced by Lotte Confectionary, the manufactures of HFF is beginning to produce diverse types of HFF, just like the case of Japan. As we can see the tendency of producing diverse types of HFF, and that there are growing number of people who try to keep their health in busy everyday life, it seems that diverse types of products will be developed and released in the market.

Recently, the Japanese government adopted the functionality indication system which allows all the food products (except for alcoholic beverages, the food which may cause excessive intake of and sodium, and a few others), including agricultural products, can be marked with its functionality just by reporting it under the responsibility of the manufacturers, since 2015. It seems that the adoption of the institution was to increase the consumption of agricultural products. Since the consumption of domestic agricultural products is decreasing, it will be possible to promote the growth of the related food market, including that of fresh food, by relaxing regulations for domestic HFF, just like the case of Japan.

This paper was to forecast the desirable consumption trends of domestic HFF based on the advanced examples of Japan. It is hoped that the consumption of high-quality HFF produced by the major enterprises will be increased as people want to use safe products which are manufactured according to the institution and criteria. As the government is relaxing regulations for HFF, diverse types of HFF made by adding functional ingredients to the existing food products are expected to be released in the market.

Reference

S.H Kim, J.H Han, W.Y Kim (2010) Health Functional Food use and Related Variables Among the Middle-Aged in Korea. Journal of nutirition and

health, 43(3), 294-303.
M.Y Nam, S Yoon, H.Y Lee, H.K Chung (2014) Influencing Factors of Sales Process and Task Education on Sales of Health Functional Food in Door-to-door Saleswomen. Journal of Korean Society of Food Culture, 29(4), 326-335.
H.J Yoo, B.J Gu, H.W Kwon, H.J Kim (2007) Consumers' Awareness and Information Needs for Health-Functional Foods. Journal of Human Ecology, 11(1), 107-126
Chiba, T., Sato, Y., Nakanishi, T., Yokotani, K., Karion, T., Suzuki, S., Umegaki, K, (2014) Inappropriate Application of Food for Specified Health Uses. Journal of Japan Society of Nutrition and Food Science, 67(4), 177-184
K.W Jang, S.H Park, S.D Ha (2003) Market Trends in Functional Foods. Food Science and Industry, 36(1), 8-16
J.W Lee, J.H Do (2005) Market Trend of Health Functional Food and the Prospect of Ginseng Market. Journal of Ginseng Research, 29(4), 206-214
M.R Jang, H.S Chun, H.R Chung, G.H Kim (2014) Actual Condition of Illegal Adulterants in Health Functional Foods in Circulation. Food Science and Industry, 47(2), 54-60
Nakagawa, K (1998) Current Status of Food for Specified Health Use. Journal of Japan Dietary, 9(1), 2-8
Shiba, K (2005) The basic knowledge of health food. Japan: Ji hou, pp 129-139
Ministry of Food and Drug Safety (2013) Guide book of Health Functional Food Regulation for Business Manager. Ministry of Food and Drug Safety, pp 1-56
Ministry of Food and Drug Safety (2008) Past • Present • Future of Health Functional Food Assessment. Ministry of Food and Drug Safety, pp 13-82
Korea Institute Food Safety Management Accreditation (2016) Analysis of Korea Health Functional Food Markets Trends. pp 21
Korea Agro-Fisheries & Food Trade Corporation (2013) Segmented Market Trends of Processed Foods - For Health Functional Food, pp 116-119
Ministry of Health, Labour and Welfare. What are health functional food, Available from: http://www.mhlw.go.jp/stf/seisakunitsuite/bunya/kenkou_iryou/shokuhin/hokenkinou/ ,[accessed 2017.10.11]
Consumer Affairs Agency. (2010) What are Foods for specified health uses, Available from: http://www.caa.go.jp/foods/pdf/syokuhin86.pdf, [accessed 2017.10.11]
Consumer Affairs Agency. (2016) What are Foods with nutrient function claims. Available from: http://www.caa.go.jp/foods/pdf/foods_161004_0004.pdf, [accessed 2017.10.11]
Consumer Affairs Agency. (2015) What are Foods for special dietary use. Available from: http://www.caa.go.jp/foods/pdf/150810_1.pdf, [accessed 2017.10.11]
The Ministry of Food and Drug Safety. 2016 Food & Drug Statistical Yearbook. Available from: http://mfds.go.kr/index.do?mid=690&pageNo=1&seq=24878&cmd=v, [accessed 2017.10.11]
Japan Health and Nutrition Food Association. (2016) 1275 items which admitted indication of Foods for specified health uses. Available from: http://www.jhnfa.org/tokuho-0.html, [accessed 2017.10.11]
Consumer Affairs Agency, Standard Criteria of Foods for specified health uses. Available from: https://hfnet.nih.go.jp/usr/kiso/pdf/sa0701007b.pdf, [accessed 2017.10.11]
Japan Health and Nutrition Food Association. (2014) Guidance of Foods for specified health uses. Available from: http://www.jhnfa.org/tokuho2015/_SWF_Window.html, [accessed 2017.10.11]
Consumer Affairs Agency. (2012) About Foods with nutrient function claims. Available from: http://www.caa.go.jp/foods/pdf/syokuhin829.pdf, [accessed 2017.10.11]