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National Food Safety Standards

Standard for the use of nutritional fortification substances in foods

(Draft)

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Preface

This standard referred to the standards of Codex Alimentarius Commission (CAC) 'Codex Stan CAC/GL 09-1987 (amended 1989, 1991) General Principles for the Addition of Essential Nutrients to Foods' and CAC/GL 10 – 1979 (revised 2008) Advisory Lists of Nutrient Compounds for Use in Foods for Special Dietary Uses for Infants and Young Children. This standard also referred to the regulation of European Union 'No. 1925/2006 Regulation on the Addition of Vitamins and Minerals and of Certain other Substances to Foods'.

This standard replaced the previous version: the standard GB 14880-1994 < Hygienic Standard for the use of nutritional fortification substances in foods> Compared to the standard GB 14880-1994, this standard has some changes as follows:

- More technical terms and definitions are added.
- The principles of nutritional fortification, the principles of using nutritional fortification substances and the principles of selecting carriers for nutritional fortification substances are added.
- Based on the risk assessment, the food classification system is combined into this standard. The application of varieties, scope and amount of nutritional fortification substances are adjusted and integrated. Some food categories which are not suitable for nutritional fortification are deleted.
- The allowed sources of nutritional fortification substances are increased.
- The sources of nutritional fortification substances for food for special dietary uses are increased and the application amounts of some of the nutrients are increased.
- The food classification system is added.
- The Appendix A 'Rules for implementation of health standards for nutritional fortification substances' is deleted. (The Appendix A, Appendix B and Appendix C are standardized appendices. Appendix D is information appendix).

The previous issued version replaced by this standard is

—GB 14880-1994

National food safety standards

Standard for the use of nutritional fortification substances in foods

1 Scope

This standard stipulates the principles for the fortification of nutritional fortification substances in food, the principles for the use of nutritional fortification substances and the principles for selecting carrier of nutritional fortification substances. This standard also stipulates the application of varieties, scope and amount of the nutritional fortification substances.

This standard is applicable to all nutritional fortification substances.

2 Terminology and definitions

2.1 Nutritional fortification substances

Nutritional fortification substances are natural, synthetic nutrients and other nutritional components which are added into food to increase the nutritional value of food.

2.2 Nutrients

A nutrient is a substance that an organism needs to live, grow, develop, reproduce and metabolize. It has special physiological functions. Nutrients include proteins and amino acids, fats and fatty acids, carbohydrates, minerals, vitamins, and etc..

2.3 Other nutritional components (excluding nutrients mentioned in 2.2)

Nutritional components are food ingredients which have nutritional and physiological functions.

2.4 Fortified food

Fortified foods are those foodstuffs in which a certain amount of nutritional fortification substances are added.

2.5 Food for special dietary uses

These foods must supply a special dietary need that exists by reason of a physical or

physiological condition or by reason of a specific disease or disorder. The ingredients of these foods should be significantly different from those of conventional or natural foods.

3 Principles of nutritional fortification

Nutritional fortification substances can be used in the following situations:

- 3.1 Nutritional fortification substances can be used to compensate the nutrient loss during food processing or storage.
- 3.2 There is sufficient evidence to show that a certain type of nutrient deficiency exists in a specific group of people with a population of considerable size in a certain geographical area; and the low intake level of the nutrients and adverse health effects caused by the nutrient deficiency can be improved by nutritional fortification; and the nutrients can be provided to the people with the nutrient deficiency through fortified foods.
- 3.3 There is sufficient evidence to show that in certain geographic areas, the low intake of certain/some nutrients or nutrient deficiencies are caused by dietary habits or other factors; and the low intake level of the nutrients and adverse health effects caused by the nutrient deficiency can be improved by nutritional fortification; and can be can be improved by nutritional fortification; and the nutrients can be provided to the people with the nutrient deficiency through fortified foods
- 3.4 To increase the nutritional content of substitutes for traditional food.
- 3.5 Supplement and modify the nutrients and the content of other nutritional substances in food for special dietary uses

4. Principles for the use of nutritional fortification substances.

The use of nutritional fortification substances should comply with the following principles:

- 4.1 The use of nutritional fortification substances must not lead to excessive intake of the nutrients or/and nutrient imbalance; and must not lead to metabolic disorders.

- 4.2 Nutritional fortification substances should remain stable (in terms of quality) in foods during storage, transport, and consumption.
- 4.3 Addition of nutritional fortification substances must not lead to undesirable changes of foods in terms of colours, taste, flavour, cooking property etc.
- 4.4 The use of nutritional fortification substances should not cause misleading information and misconception to consumers through exaggerating the content of a certain nutritional ingredient.
- 4.5 The use of nutritional fortification substances should not encourage or lead to food consumption models that are contrary to the country's nutrition regulations.

5. The principles of selecting carriers for nutritional fortification substances

The selection of carriers for nutritional fortification substances should comply with the following principles:

- 5.1 Should select foods that are easy to purchase and obtain by the target population.
- 5.2 The consumption of food carriers should be stable, thus to help calculate the additive amount of nutritional fortification substances, and should be able to avoid excessive levels of nutrients and other nutritional substances in the human body due to excessive intake of the food carriers.
- 5.3 The natural foods which are already good source of a certain nutrient should not be used as carriers of this nutrient.

6. The regulation of the use of nutritional fortification substances

- 6.1 The application scope, application amount of nutritional fortification substances should comply with the requirement of Appendix A, the sources of chemicals should comply with the regulation of Appendix B;
- 6.2 The contents of nutrients and other nutritional substances used in foods for special dietary uses should comply with the National Food Safety Regulation, the allowed sources of nutritional fortification substances should comply with the requirement of Appendix C.

7. Food classification system

The food class system is used to define the application scope of nutritional fortification substances. It is only applicable for this standard, please refer to Appendix D. If a certain nutritional fortification substance is allowed to use in a certain food category, then this substance can be used in all foodstuffs under this category, except as otherwise provided.

8. The standard of quality specification

The uses of nutritional fortification substances should comply with the standard of quality specification and corresponding regulations.

Appendix A
Standardized appendix

The regulation of the use of nutritional fortification substances in food

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name	
Vitamin A	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	1200-8000 μ g
	02.01.01.01	Vegetable oils	4000-8000 μ g
	02.02.01.02	Margarine and similar products	4000-8000 μ g
	03.01	Ice cream and ice confectionery	600-1200 μ g
	06.02.01	Rice	600-1200 μ g
	06.03.01	Wheat flour	600-1200 μ g
	06.04	Grain flour (soybean flour only) and derived products	3000-7000 μ g
	06.06	Ready-to-eat cereals, including	2000-6000 μ g

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name	
Vitamin D		oats and rolled oats	
	07.02.02	Foreign pastry	2330-4000 μ g
	07.03	Biscuits	2330-4000 μ g
	14.03	Milk containing drinks	600-1000 μ g
	14.06	Solid beverage	4000-8000 μ g
	16.01	Jelly	600-1000 μ g
	16.06	Puffing food	600-1500 μ g
Vitamin E	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	20-125 μ g
	02.02.01.02	Margarine and similar products	125-156 μ g
	03.01	Ice cream and ice confectionery	10-20 μ g
	06.04	Grain flour (including soybean flour) and derived products (soybean flour only)	15-60 μ g
	06.05.02.03	Lotus root starch	50-100 μ g
	06.06	Ready-to-eat cereals, including oats and rolled oats	12.5-37.5 μ g
	07.03	Biscuits	16.7-33.3 μ g
	14.02	Fruit and vegetable juices	2-10 μ g
	14.03	Protein containing drinks	3-40 μ g
	14.04.02.02	Flavoured beverages	2-10 μ g
	14.06	Solid beverages	10-20 μ g
	16.01	Jelly	10-40 μ g
	16.06	Puffing food	10-60 μ g
Vitamin E	01.03.02	Modified milk	15-150 mg α -TE

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name	
		powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	
	02.01.01.01	Vegetable oils	100-180mg α -TE
	02.02.01.02	Margarine and similar products	100-180mg α -TE
	06.04	Grain flour (including soybean flour) and derived products (soybean flour only)	30-70mg α -TE
	06.06	Ready-to-eat cereals, including oats and rolled oats	50-125mg α -TE
	14.03	Protein containing drinks	5-20mg α -TE
Vitamin E	14.06.02	Protein containing solid beverages	30-70mg α -TE
	16.01	Jelly	10-70mg α -TE
Vitamin K	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	300-750 μ g
Vitamin B1	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	1.5-15mg
	06.02	Rice and derived products (rice, rice vermicelli, rice cake)	3-5mg

Nutrients	Classification of food		Application amount/kg	
	Food codes	Classification/Name		
Nutrients	06.03	Wheat flour and derived products	3-5mg	
	06.04	Grain flour (soybean flour only)	6-15mg	
	06.06	Ready-to-eat cereals, including oats and rolled oats	7.5-17.5mg	
	07.02.02	Foreign pastry	3-6 mg	
	07.03	Biscuits	3-6 mg	
	14.02	Fruit and vegetable juices	2-3mg	
	14.03	Protein containing drinks	1-3mg	
	14.04.02.02	Flavoured beverages	2-3mg	
	14.06.02	Protein containing solid beverages	6-15mg	
	16.01	Jelly	1-7mg	
	Vitamin B2	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	4-22mg
		06.02	Rice and derived products (rice, rice vermicelli, rice cake)	3-5mg
06.03		Wheat flour and derived products	3-5mg	
06.04		Grain flour (including soybean flour) and derived products (soybean flour only)	6-15mg	
06.06		Ready-to-eat cereals, including oats and rolled oats	7.5-17.5mg	
07.02.02		Foreign pastry	3.3-7.0 mg	
07.03		Biscuits	3.3-7.0 mg	
14.03.01		Milk containing	1-2mg	

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name	
		drinks	
	14.06	Solid beverages	10-17mg
	14.06.02	Protein containing solid beverages	6-15mg
	16.01	Jelly	1-7mg
Vitamin B6	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	2-20mg/kg
	06.06	Ready-to-eat cereals, including oats and rolled oats	10-25mg
	07.03	Biscuits	2-5mg
	14.0	Beverages (excluding the foodstuffs mentioned in 14.01 and 14.06)	0.4-1.2mg
	14.06	Solid beverages	7-10mg
	16.01	Jelly	1-7mg
Vitamin B12	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	10-66µg
	06.06	Ready-to-eat cereals, including oats and rolled oats	5-10µg
	14.0	Beverages (excluding the products mentioned in 14.01 and 14.06)	0.6-1.8µg
Vitamin B12	14.06.02	Protein containing solid beverages	10-66µg
	16.01	Jelly	2-6µg
Vitamin C	01.02	Fermented milk	120-240mg

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name	
	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	150-1500mg
	04.01.02.04	Canned fruits	200-400mg
	04.01.02.06	Puree	50-100mg
	05.02	Candy	1000-6000mg
	06.04	Grain flour (soybean flour only)	400-700 mg
	06.06	Ready-to-eat cereals, including oats and rolled oats	300-750mg
	14.02.03	Fruit and vegetable (pulp) juices	250-500mg
	14.03.01	Milk containing drinks	120-240 mg
	14.04	Water-based flavoured beverages	250-500mg
	14.06.02	Protein containing solid beverages	400-700 mg
	16.01	Jelly	120-240 mg
Niacin (or nicotinamide)	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	20-100 mg
	06.02	Rice and derived products (rice, rice vermicelli, rice cake)	40-50mg
	06.03	Wheat flour and derived products	40-50mg
	06.04	Grain flour (including soybean flour) and derived	60-120mg

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name	
		products (soybean flour only)	
	06.06	Ready-to-eat cereals, including oats and rolled oats	75-218mg
	07.03	Biscuits	30-60mg
	14.03	Protein containing drinks	10-40mg
	14.02	Fruit and vegetable juices	3-18mg
	14.04.02.02	Flavoured beverages	3-18mg
	14.06	Solid beverages (excluding soy milk powder)	160-330mg
	14.06.02	Protein containing solid beverages soy milk powder only)	60-120mg
	Folic acid	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)
06.02.01		Rice (washing-free rice only)	1000-3000 μ g
06.03.01		Wheat flour	1000-3000 μ g
06.06		Ready-to-eat cereals, including oats and rolled oats	1000-2500 μ g
07.03		Biscuits	390-780 μ g
14.06		Solid beverages	600-1350 μ g
16.01		Jelly	50-100 μ g
Pantothenic acid	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	8-80 mg/kg

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name	
	06.06	Ready-to-eat cereals, including oats and rolled oats	30-50mg
	14.02.03	Fruit and vegetable (pulp) juices	1.1-2.2mg
	14.04	Water-based flavoured beverages	1.1-2.2mg
	14.05.01	Tea drinks	1.1-2.2mg
Pantothenic acid	14.06	Solid beverages	22-80mg
	16.01	Jelly	2-5mg
Biotin	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	38-76 μ g/kg
Choline	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	800-3000 mg
	16.01	Jelly	50-100mg
Inositol	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	210-250mg
	14.02.03	Fruit and vegetable (pulp) juices	60-120mg
	14.04.02.02	Flavoured beverages	60-120mg
Minerals			
Iron	01.03.02	Modified milk powder and modified cream	25-200mg

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name	
		powder (including flavoured milk powder and flavoured cream powder)	
	05.02	Candy (excluding the food mentioned in 05.02.02)	40mg
	05.02.02	Hard bonbons	600-1200mg
	06.02	Rice and derived products (rice, rice vermicelli, rice cake)	14-26mg
	06.03	Wheat flour and derived products	14-26mg
	06.04	Grain flour (soybean flour only)	46-80mg
	06.06	Ready-to-eat cereals, including oats and rolled oats	35-80mg
	07.02.02	Foreign pastry	40-60mg
	07.03	Biscuits	40-60mg
	12.04	Soy sauce	210-252 mg
	14.06	Solid beverages (excluding the food mentioned in 14.06.02)	110-220mg
	14.06.02	Protein containing solid beverages	46-125mg
	16.01	Jelly	10-20mg
	calcium	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)
01.06		Cheese	10000mg
06.02		Rice and derived products (rice, rice vermicelli, rice cake)	1600-3200mg

Nutrients	Classification of food		Application amount/kg	
	Food codes	Classification/Name		
	06.03	Wheat flour and derived products	1600-3200mg	
	06.04	Grain flour (including soybean flour) and derived products (soybean flour only)	1600-8000mg	
	06.05.02.03	Lotus root starch	2400-3200mg	
	06.06	Ready-to-eat cereals, including oats and rolled oats	2000-7000mg	
	07.02.02	Foreign pastry	2670-5330	
	07.03	Biscuits	2670-5330mg	
	08.03.07.01	Dry meat floss	2500-5000mg	
	10.03.01	Dehydrated egg products	190-650mg	
	12.03	Vinegar	6000-8000mg	
	14.02	Fruit and vegetable juices	1000-1800mg	
	Calcium	14.03.01	Milk containing drinks	400-800mg
		14.06	Solid beverages	1600-10000mg
16.01		Jelly	390-800mg	
Zinc	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	30-180mg	
	06.02	Rice and derived products (rice, rice vermicelli, rice cake)	22.4-44.8mg	
	06.03	Wheat flour and derived products	22.4-44.8mg	
	06.04	Grain flour (soybean flour only)	29-55.5mg	
	06.06	Ready-to-eat cereals, including oats and rolled oats	37.5-112.5mg	
	07.02.02	Foreign pastry	45-80mg	

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name	
	07.03	Biscuits	45-80mg
	14.03.01	Milk containing drinks	5.6-11.2mg
	14.06	Solid beverages (excluding soy milk powder)	30-180mg
	16.01	Jelly	10-20mg
Selenium	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	60-300 μ g
	06.02	Rice and derived products (rice, rice vermicelli, rice cake)	140-280 μ g
	06.03	Wheat flour and derived products	140-280 μ g
	07.03	Biscuits	109 μ g
	14.03.01	Milk containing drinks	50-200 μ g
	16.02	Tea	10000 μ g
Magnesium	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	300-3000mg
	14.0	Beverages (excluding the food mentioned in 14.01 and 14.04.01)	30-60mg
	14.03.01	Milk containing drinks	455-910 mg
	14.06.02	Protein containing solid beverages	1300-2100mg
Copper	01.03.02	Modified milk powder and	2-20mg

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name	
		modified cream powder (including flavoured milk powder and flavoured cream powder)	
Manganese	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	5-30mg
Potassium	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	7000-15000mg
	14.0	Beverages (excluding packaged drinking water mentioned in 14.01)	50-200mg
Phosphorus	06.04	杂粮粉 (仅限豆粉) Grain flour (soybean flour only)	1600-4000mg
	14.06.02	蛋白型固体饮料 Protein containing solid beverages	1960-7040mg
Others			
Lysine	06.02	Rice and derived products (rice, rice vermicelli, rice cake)	1-2g
	06.03	Wheat flour derived products	1-2g
Taurine	01.03.02	Modified milk powder and modified cream	0.3-0.5g

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name	
		powder (including flavoured milk powder and flavoured cream powder)	
	06.02.02	Rice derived products	0.3-0.5g
	06.02.04	Rice vermicelli derived products	0.3-0.5g
	06.03.02	Wheat flour derived products	0.3-0.5g
	06.04	Grain flour (soybean flour only)	0.3-0.5g
	14.02.03	Fruit and vegetable (pulp) juices	0.4-0.6g
	14.03.01	Milk containing drinks	0.1-0.5g
	14.03.02	Vegetable protein containing drinks	0.06-0.1g
	14.04.02.02	Flavoured beverages	0.4-0.6g
	14.06.02	Protein containing solid beverages (soy milk powder only)	0.3-0.5g
	14.06.02	Protein containing solid beverages	1.1-1.4g
	16.01	Jelly	0.3-0.5g
L-carnitine	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	300-1500mg
	14.02.03	Fruit and vegetable (pulp) juices	600-3000mg
	14.03.01	Milk containing drinks	600-3000mg
	14.04.02.02	Flavoured beverages	600-3000mg
	14.04.02.01	Drinks for special uses (sports drinks)	100-1000mg

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name only)	
γ-linolenic acid	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder)	20-50g
	02.01.01. 01	Vegetable oils	20-50g
	14.0	Beverages (excluding packaged drinking water mentioned in 14.01)	20-50g
Lutein	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder) (infant formula only)	1620-2700μg
Fructo-oligosaccharide	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder) (infant formula and pregnant formula only)	≤64.5g
1,3-dioleoyl-2-palmitoyl-glycerol	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder) (infant	24-96g/kg

Nutrients	Classification of food		Application amount/kg
	Food codes	Classification/Name	
		formula only)	
Arachidonic acid	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder) (infant formula only)	≤1% (percentage of total fatty acids)
DHA	01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder) (infant formula only)	≤0.5% (percentage of total fatty acids)
	06.02	Rice and derived products (rice, rice vermicelli, rice cake) (children foods only)	66mg/100g (Source: <i>dinoflagellate</i> and tuna oil, usage amount based on pure DHA)
	06.03	Wheat flour and derived products (children food only)	

Note: this standard only stipulates the usage amount of nutrients in modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream powder). If the nutrients are applied in liquid dairy products (such as modified milk, flavoured fermented milk, modified condensed milk), the usage amount should be calculated based on the corresponding dilution factor.

Appendix B

Standardized appendix

List of allowed source of nutritional fortification substances

Nutrients	The source of nutritional compounds
Vitamin A	Retinol acetate (vitamin A acetate) Retinol palmitate (Vitamin A palmitate) β -carotene
Vitamin D	Ergocalciferol (vitamin D2) Cholecalciferol (vitamin D3)
Vitamin E	d- α tocopherol dl- α tocopherol d- α tocopheryl acetate dl- α tocopheryl acetate
Vitamin K	Phytonadione
Vitamin B1	Thiamine hydrochloride Thiamine mononitrate
Vitamin B2	Riboflavin
Vitamin B6	Pyridoxine phosphate 5-pyridoxine phosphate
Vitamin B12	Cyanocobalamine Cyanocobalamine hydrochloride
Niacin	Niacin Nicotinamide
Folic acid	Folic acid
Pantothenic acid	D-calcium pantothenate D-sodium pantothenate
Vitamin C	Ascorbic acid L-ascorbic acid L-sodium ascorbate Vitamin C phosphate magnesium Sodium ascorbate Potassium ascorbate L-ascorbyl-6-palmitate (ascorbyl palmitate)
Biotin	D-biotin
Potassium	Potassium gluconate Potassium citrate Potassium dihydrogen phosphate Potassium hydrogen phosphate Potassium chloride Potassium carbonate Potassium lactate Potassium glycerophosphate

Nutrients	The source of nutritional compounds
Copper	Copper sulfate Copper gluconate Copper citrate Copper carbonate
Magnesium	Magnesium sulfate Magnesium chloride Magnesium oxide Magnesium carbonate Magnesium hydrogen phosphate Magnesium citrate Magnesium lactate Magnesium phosphate Magnesium glycerophosphate Magnesium gluconate
Iron	Ferrous sulfate Ferrous gluconate Ferric ammonium citrate Ferrous fumarate Ferric citrate Ferrous lactate Hemin Ferric pyrophosphate Ferriporphyrin Ferrous bisglycinate Ferrous carbonate Ferrous citrate Ferrous succinate Heme iron Ferric sodium ethylene diamine tetraacetate
Zinc	Zinc sulfate Zinc gluconate Zinc glycinate Zinc oxide Zinc lactate Zinc citrate Zinc chloride Zinc acetate Zinc carbonate
Manganese	Manganese sulfate Manganese chloride Manganese carbonate Manganese citrate Manganese gluconate
Calcium	Calcium carbonate Calcium gluconate

Nutrients	The source of nutritional compounds
	Calcium citrate L- calcium lactate Calcium hydrogenphosphate L-threonate Calcium glycinate Calcium aspartate Calcium citrate malate Calcium acetate Calcium chloride Tricalcium phosphate Vitamin E calcium succinate Calcium phosphate Calcium glycerophosphate Calcium oxide Calcium sulfate
Phosphorus	Calcium phosphate Calcium hydrogenphosphate
Selenium	Sodium selenite Sodium selenate Selenoprotein Selenium-entiched yeast L-Se-methylselenocysteine (issued in November, 2009)
Choline	Choline chloride Choline bitartrate
Inositol	Inositol
Lutein	Lutein
Fructo-oligosaccharide	Fructo-oligosaccharide
1,3-dioleoyl-2-palmitoyl-glycerol	1,3-dioleoyl-2-palmitoyl-glycerol
Lysine	L-lysinehydrochloride L-lysine-aspartate
Taurine	Aminoethanesulfonic acid
L-carnitine	L-carnitine-L-tartrate L-carnitine
γ-linolenic acid	γ-linolenic acid
DHA	DHA single cell oil (<i>crypthecodinium cohnii</i>) (tuna oil)
Arachidonic acid (AA)	Arochidonic acid oil (source: <i>Mortierella alpine</i>)

Appendix C

Standardized appendix

List of source of nutritional fortification substances for food for special dietary uses

C. 1 List of source of nutritional fortification substances for food for special dietary uses

Nutrients	The source of nutritional compounds
Vitamin A	Retinol acetate (vitamin A acetate) Retinol palmitate (Vitamin A palmitate) β -carotene
Vitamin D	Ergocalciferol (vitamin D2) Cholecalciferol (vitamin D3)
Vitamin E	d- α tocopherol dl- α tocopherol d- α tocopheryl acetate dl- α tocopheryl acetate
Vitamin K1	Phytonadione
Vitamin B1	Thiamine hydrochloride Thiamine mononitrate
Vitamin B2	Riboflavin
Vitamin B6	Pyridoxine phosphate 5-pyridoxine phosphate
Vitamin B12	Cyanocobalamine Cyanocobalamine hydrochloride
Niacin	niacin Nicotinamide
Folic acid	Folic acid
Pantothenic acid	D-calcium pantothenate D-sodium pantothenate
Vitamin C	Ascorbic acid Sodium ascorbate Potassium ascorbate L-ascorbyl-6-palmitate (ascorbyl palmitate)
Biotin	D-biotin
Sodium	Sodium bicarbonate sodium dihydrogen phosphate

Potassium	Potassium gluconate Potassium citrate Potassium dihydrogen phosphate Potassium hydrogen phosphate Potassium chloride Potassium carbonate Potassium lactate
Copper	Copper sulfate Copper gluconate Copper citrate Copper carbonate
Magnesium	Magnesium sulfate Magnesium chloride Magnesium oxide Magnesium carbonate Magnesium hydrogen phosphate Magnesium gluconate
Iron	Ferrous sulfate Ferrous gluconate Ferric ammonium citrate Ferrous fumarate Ferric citrate Ferrous lactate Ferric pyrophosphate Ferrous citrate Ferrous succinate
Zinc	Zinc sulfate Zinc gluconate Zinc oxide Zinc lactate Zinc citrate Zinc chloride Zinc acetate
Manganese	Manganese sulfate Manganese chloride Manganese carbonate Manganese citrate Manganese gluconate
Calcium	Calcium carbonate Calcium gluconate Calcium citrate L- calcium lactate Calcium hydrogenphosphate Calcium chloride Tricalcium phosphate

	Calcium phosphate Calcium glycerophosphate Calcium oxide Calcium sulfate
Phosphorus	Calcium phosphate Calcium hydrogenphosphate
Iodine	Potassium iodate <i>we use iodide!!</i>
Selenium	Sodium selenate Sodium selenite
Chromium	Chromium sulfate Chromic chloride
Molybdenum	Sodium molybdate Ammonium molybdate
Choline	Choline chloride Choline bitartrate
Inositol	Inositol
Taurine	Taurine
L-methioine (L-methionine)	Non-animal origin
L-tyrosine	Non-animal origin
L-tryptophane	Non-animal origin
L-carnitine	L-carnitine
	L-carnitine- tartrate
DHA	DHA oil (<i>cryptocodium cohnii</i>) (tuna oil)
Arochidonic acid	Arochidonic acid oil (source: <i>Mortierella alpine</i>)

C. 2 Other nutrients and their application amount used in formula for infants and young children

Name	Application amount
Galacto-Oligosaccharides	Used alone or in combination, the total amount of these substances cannot exceed 64.5g/kg
Fructo-oligosaccharide	
Polyfructose (contain Fructo-oligosaccharide)	
Raffinose	
1,3-dioleoyl-2-palmitoyl-glycerol	Infant formula 32-96g/kg Formula for order infants and young children 24-96g/kg
Lutein	Infant formula 300-2000µg/kg Formula for order infants and young children 1620-4230µg/kg

Nucleotide Sources including the following compounds: Adenosine-5'-monophosphate Adenosine-5'-monophosphate disodium salt Cytidine-5'-monophosphate Cytidine-5'-monophosphate disodium salt Guanosine-5'-Monophosphate Guanosine-5'-Monophosphate Disodium Salt Inosine-5'-monophosphate Inosine-5'-diphosphoric acid disodium salt Uridine-5'-monophosphate Uridine-5'-monophosphate disodium salt	0.12-0.58g/kg (In terms of total nucleotides)
Lactoferrin	0.3-1.0g/kg
Casein calcium peptide	3.0g/kg
Casein phosphopeptides	3.0g/kg
a. The application amount shown above is limited in powdered infant formula. In the liquid infant formula, the amount should be calculated based on the corresponding dilution factor.	

Appendix D

Information appendix

Classification of food as carriers of nutritional fortification substances

Food codes	Classification/name
01.0	Milk and dairy products (excluding the food for special dietary uses mentioned in 13.0)
01.01	Milk and modified milk
01.01.01	Pure Milk (whole milk, partly skimmed, skimmed), including the reconstituted milk
01.01.02	Modified milk
01.01.02.01	Flavoured milk
01.02	Fermented milk
01.02.01	Plain fermented milk (whole milk, partly skimmed, skimmed)

Food codes	Classification/name
01.02.02	Flavoured fermented milk and fruit fermented milk
01.03	Milk powder (including milk powder with sugar added), cream powder and its modified products
01.03.01	Milk powder (whole milk, skimmed, partly skimmed) and cream powder
01.03.02	Modified milk powder and modified cream powder (including flavoured milk powder and flavoured cream)
01.04	Condensed milk and its modified products
01.04.01	Condensed milk (Plain)
01.04.02	Modified condensed milk (including sweet condensed milk, flavoured sweet condensed milk and other modified condensed milk manufactured by non-milk ingredients)
01.05	Cream (cream) and similar products
01.05.01	Cream
01.05.02	Solidified cream
01.05.03	Flavoured cream
01.05.04	Cream similar products
01.06	Cheese
01.06.01	Unripened cheese
01.06.02	Ripened cheese
01.06.03	ricotta
01.06.04	Processed cheese
01.06.04.01	Conventional processed cheese
01.06.04.02	Flavoured processed cheese
01.06.05	Cheese similar products
01.06.06	Whey protein cheese
01.07	Ready-to-eat flavoured desserts or their pre-made products manufactured by using milk as the main ingredient (excluding ice cream and flavoured yoghurt)
01.08	Other milk derived products (whey powder, casein powder etc.)
02.0	Fats, oils and emulsified fat products
02.01	Anhydrous fats and oils
02.01.01	Vegetable oils
02.01.01.01	Vegetable oils
02.01.01.02	Hydrogenated vegetable oils
02.01.02	Animal fats (lard, butter, fish oil and other animal fats)
02.01.03	Anhydrous butter, anhydrous cream
02.02	Water-in-oil or oil-in-water emulsified product
02.02.01	Emulsified products with fat content more than 80%
02.02.01.01	Butter and condensed butter
02.02.01.02	Margarine and similar products (e.g. mixture of butter and margarine)
02.02.02	Emulsified products with fat content less than 80%
02.03	Emulsified products, including the mixed and/or flavoured emulsified products (excluding the products mentioned in

Food codes	Classification/name
	02.02)
02.04	Fat-based desserts
02.05	Other fats for fat-based products
03.0	Frozen drinks
03.01	Ice cream
03.02	Ice cream
03.03	Flavoured ice, popsicles
03.04	Edible ice
03.05	Other frozen drinks
04.0	Fruits, vegetables (including root vegetable), beans, edible mushrooms, algae, nuts, seeds etc.
04.01	Fruits
04.01.01	Fresh fruits
04.01.01.01	Raw fresh fruits
04.01.01.02	Surface treated fresh fruits
04.01.01.03	Peeled or pre-cut fresh fruits
04.01.02	Processed fruits
04.01.02.01	Frozen fruits
04.01.02.02	Dry fruits
04.01.02.03	Acetic, oily or salted fruits
04.01.02.04	Canned fruits
04.01.02.05	Jams
04.01.02.06	Puree
04.01.02.07	Jams (e.g. Indian chutney), excluding jams mentioned in 04.01.02.05
04.01.02.08	Dry and preserved fruits
04.01.02.08.01	Candied fruits
04.01.02.08.02	Candied fruits
04.01.02.08.03	Preserved fruits
04.01.02.08.04	Salted dry fruits (liquorice flavoured)
04.01.02.08.05	Sweetened or salted minced fruits
04.01.02.08.06	Sweetened or salted minced fruit cake
04.01.02.09	Decorative fruits and vegetables
04.01.02.10	Fruit desserts, including liquid fruity desserts
04.01.02.11	Fermented fruit products
04.01.02.12	Cooked or deep-fried fruits
04.01.02.13	Other processed fruits
04.02	Vegetables
04.02.01	Fresh vegetables
04.02.01.01	Raw vegetables
04.02.01.02	Surface treated fresh vegetables
04.02.01.03	Peeled, diced or shredded vegetables
04.02.01.04	Bean sprouts
04.02.02	Processed vegetables

Food codes	Classification/name
04.02.02.01	Frozen vegetables
04.02.02.02	Dried vegetables
04.02.02.03	Pickled vegetables
04.02.02.03.01	Sauce pickled vegetables
04.02.02.03.02	Salt vegetables
04.02.02.03.03	Sugar and vinegar pickled vegetables
04.02.02.03.04	Other pickled vegetables
04.02.02.04	Canned vegetables
04.02.02.05	Vegetable puree (jam), except for the ketchup
04.02.02.06	Fermented vegetable products
04.02.02.07	Boiled or deep-fried vegetables
04.02.02.08	Other processed vegetables
04.03	Edible mushroom and algae
04.03.01	Fresh edible mushroom and algae
04.03.01.01	Raw fresh edible mushroom and algae
04.03.01.02	Surface treated fresh edible mushroom and algae
04.03.01.03	Peeled, diced or shredded edible mushroom and algae
04.03.02	Processed edible mushroom and algae
04.03.02.01	Frozen edible mushroom and algae
04.03.02.02	Dried edible mushroom and algae
04.03.02.03	Pickled edible mushroom and algae
04.03.02.03.01	Sauce pickle edible mushroom and algae
04.03.02.03.02	Salt pickled edible mushroom and algae
04.03.02.03.03	Sugar and vinegar pickled edible mushroom and algae
04.03.02.03.04	Other pickled edible mushroom and algae
04.03.02.04	Canned edible mushroom and algae
04.03.02.05	Boiled or deep-fried algae
04.03.02.06	Other processed edible mushroom and algae
04.04	Bean products
04.04.01	Non-fermented bean products
04.04.01.01	Tofu (north tofu, south tofu, lactone tofu, frozen tofu)
04.04.01.02	Dried tofu
04.04.01.03	Processed dried tofu
04.04.01.03.01	Deep-fried semi-dried tofu
04.04.01.03.02	Soy sauce marinated semi-dried tofu
04.04.01.03.03	Smoked semi-dried tofu
04.04.01.03.04	Other semi-dried tofu
04.04.01.04	Bean curd sticks (bean curd sticks, oily bean curd sheets)
04.04.01.05	New-type bean products (puffed food made from, vegi-meat)
04.04.01.06	Cooked bean products
04.04.02	Fermented bean products
04.04.02.01	Pickled bean curd
04.04.02.02	Fermented soya beans and derived products (including natto)
04.05	Nuts and seeds
04.05.01	Fresh nuts and seeds

Food codes	Classification/name
04.05.02	Processed nuts and seeds
04.05.02.01	Roast/ fried nuts and seeds
04.05.02.01.01	Roast/ fried nuts and seeds with shell
04.05.02.01.02	Roast/ fried nuts and seeds without shell
04.05.02.02	Nuts and seeds with skin
04.05.02.03	Canned nuts and seeds
04.05.02.04	Nut butter and seed butter, including peanut butter
04.05.02.05	Other nuts and seeds products (e.g. pickled nuts)
05.0	Cocoa products, chocolate and derived products (chocolate substitutes) and candy
05.01	Cocoa products, chocolate and derived products , including chocolate substitutes
05.01.01	Cocoa products using cocoa as the main ingredient (cocoa butter, powder, spread, paste, filling)
05.01.02	Chocolate and derived products, cocoa products (excluding cocoa products mentioned in 05.01.01)
05.01.03	Chocolate substitutes and chocolate similar products made from cocoa substitutes
05.02	Candy
05.02.01	Hard candy
05.02.02	Hard bonbons
05.02.03	Fudge
05.02.04	Pressed candy
05.02.05	Gummy candy
05.02.06	Coated candy
05.02.07	Aerated candy
05.02.08	Chewing gum
05.02.08.01	Sugarless chewing gum
05.02.08.02	Sugar chewing gum
05.02.09	Other candy
05.03	Coating of candy and chocolate products
05.04	Decorative candy (e.g. garnish, cake decoration), topping (non-fruit materials) and syrup
06.0	Cereals and derived products, including rice, flour, coarse grain, root crops, pulse and corn starch (excluding the Bakery products mentioned in 07.0)
06.01	Cereals
06.02	Rice and derived products (rice, rice vermicelli, rice cake)
06.02.01	Rice
06.02.02	Rice products
06.02.03	Rice flour (including glutinous rice flour)
06.02.04	Rice vermicelli
06.03	Wheat flour and derived products
06.03.01	Wheat flour

Food codes	Classification/name
06.03.01.01	Self-rising flour
06.03.01.02	Dumpling flour
06.03.01.03	Cake mix
06.03.01.04	Other special-purpose flour
06.03.02	Wheat flour derived products
06.03.02.01	Dough derived products (noodle, dumpling wrapper, wonton wrapper, steamed dumpling wrapper)
06.03.02.02	Dough derived products
06.03.02.03	Fermented dough products
06.03.02.04	Batter (e.g. batter used in cooking fish and poultry), fried coating powder, frying powder
06.04	Coarse grain flour (including soya bean flour) and derived products
06.04.01	Coarse grain flour
06.04.02	Coarse grain flour derived products
06.04.02.01	Canned mixed congee
06.04.02.02	Other coarse grain derived products
06.05	Starch and derived products
06.05.01	Edible starch
06.05.02	Starch derived products
06.05.02.01	Vermicelli, rice noodle
06.05.02.02	Prawn chips
06.05.02.03	Lotus root starch
06.06	Ready-to-eat cereals, including oats and rolled oats
06.07	Instant rice or instant noodle
06.08	Frozen rice or noodle
06.09	Cereal and starch dessert (e.g. rice pudding, cassava pudding)
06.10	Fillings made from cereals
07.0	Bakery products
07.01	Bread
07.02	Pastry
07.02.01	Chinese pastry
07.02.02	Western pastry
07.02.03	Moon cake
07.02.04	Topping
07.03	Biscuit
07.03.01	Sandwich and decorative crackers
07.03.02	Waffles
07.03.03	Egg rolls
07.03.04	Other biscuits
07.04	Fillings of bakery products
07.05	Other bakery products
08.0	Meat and meat products
08.01	Raw, fresh meat
08.01.01	Raw fresh meat

Food codes	Classification/name
08.01.02	Cooled meat (chilled meat, frozen fresh meat, chilled fresh meat)
08.01.03	Frozen meat
08.02	Pre-made meat products
08.02.01	Flavoured meat products (flavoured raw meat)
08.02.02	Cured meat products (e.g. bacon, cured pork, cured duck, Chinese ham, Chinese sausages)
08.03	Cooked meat products
08.03.01	Stewed meat products
08.03.01.01	Boiled meat
08.03.01.02	Sauce-stewed meat
08.03.01.03	Wine sauce stewed meat
08.03.02	Smoked, barbecued, roasted meat
08.03.03	Deep-fried meat
08.03.04	Western ham (roasted, smoked, steamed ham)
08.03.05	Sausages
08.03.05.01	High-temperature steamed sausages
08.03.05.02	Low-temperature steamed sausages
08.03.05.03	Other kinds of sausages
08.03.06	Fermented meat products
08.03.07	Cooked dried meat products
08.03.07.01	Dried meat floss
08.03.07.02	Dried meat
08.03.07.03	Fried meat crisps
08.03.08	Canned meat
08.03.09	Edible sausage casings
08.03.10	Other meat and derived products
09.0	Aquatic products and derived products (including fish, crustacean, shellfish, mollusc, echinoderms and derived products)
09.01	Fresh aquatic products
09.02	Frozen aquatic and derived products
09.02.01	Frozen aquatic products
09.02.02	Frozen coated aquatic products
09.02.03	Frozen surimi products (including fish balls)
09.03	Pre-made aquatic products (semi-manufactured products)
09.03.01	Vinegar marinated or frozen aquatic products
09.03.02	Marinated aquatic products
09.03.03	Fish roe products
09.03.04	Air-dried, oven-dried, pressed-dried aquatic products
09.03.05	Other pre-made aquatic products (dumpling wrapper made from fish)
09.04	Cooked aquatic products (ready-to-eat)
09.04.01	Cooked dried aquatic products

Food codes	Classification/name
09.04.02	Cooked or deep-fried aquatic products
09.04.03	Smoked, roasted aquatic products
09.04.04	Fermented aquatic products
09.05	Canned aquatic products
09.06	Other aquatic and derived products
10.0	Eggs and derived products
10.01	Fresh eggs
10.02	Processed eggs (the physical properties are not changed)
10.02.01	Soy sauce marinated eggs
10.02.02	Wine sauce marinated eggs
10.02.03	Preserved eggs
10.02.04	Salted eggs
10.02.05	Other processed eggs
10.03	Egg products (the physical properties are changed)
10.03.01	Dehydrated egg products (e.g. egg white powder, egg yolk powder, egg white tablet)
10.03.02	Thermo-coagulated egg products (egg cheese, thousand-year egg sausages)
10.03.03	Frozen egg products (e.g. frozen eggs)
10.03.04	Liquid eggs
10.04	Other egg products
11.0	Sugar, including honey
11.01	Sugar
11.01.01	Sugar and sugar products (e.g. sucrose, beet sugar, crystal sugar, fructose etc.)
11.01.02	Other sugar and syrup (brown sugar, brown granulated sugar, maple syrup)
11.02	Starch sugar (fructose, glucose, maltose; partially invert sugar, including molasses)
11.03	Honey and pollen
11.03.01	Honey
11.03.02	Pollen
11.04	Table sugar
11.05	Flavoured syrup
11.05.01	Fruity flavoured syrup
11.05.02	Other flavoured syrup
11.06	Other sweetener
12.0	Condiment
12.01	Salt and salt substitutes
12.02	Flavour enhancer
12.03	Vinegar
12.03.01	Fermented vinegar
12.03.02	Blended vinegar
12.04	Soy sauce
12.04.01	Fermented soy sauce

Food codes	Classification/name
12.04.02	Blended soy sauce
12.05	Sauces and derived products
12.05.01	Fermented sauces
12.05.02	Blended sauces
12.06	
12.07	Cooking wine and derived products
12.08	
12.09	Spices
12.09.01	Spice powder
12.09.02	Spice oil
12.09.03	Spice sauce (e.g. mustard sauce, wasabi)
12.09.04	Other processed spice products
12.10	Mixed seasonings
12.10.01	Solid mixed seasonings
12.10.01.01	Solid seasoning powder
12.10.01.02	Chicken essence, chicken flavour powder
12.10.01.03	Other solid mixed seasonings
12.10.02	Semi-solid mixed seasonings
12.10.02.01	Mayonnaise, salad dressing
12.10.02.02	Sauces using animal-origin products as basis ingredients
12.10.02.03	Sauces using vegetables as basis ingredients
12.10.02.04	Others
12.10.03	Liquid mixed seasoning (excluding 12.03, 12.04)
12.10.03.01	Condensed soup (canned, bottled)
12.10.03.02	Broth
12.10.03.03	Diluted soy sauce
12.10.03.04	Oyster sauce, shrimp sauce, fish sauce
12.11	Other seasonings
13.0	Food for special dietary uses
13.01	Formula for infant and young children
13.01.01	Infant formula
13.01.02	Formula for older infant and young children
13.01.03	Infant formula for special medical purpose
13.02	Complementary foods for infants and young children
13.03	Formula for special medical purpose (excluding the products mentioned in 13.01)
13.04	Other foods for special dietary uses except for the products mentioned in 13.01-13.03
13.04.01	Sports nutrition food (excluding sports drinks)
13.04.02	Other foods for special dietary uses
14.0	Beverages
14.01	Packaged drinking water
14.01.01	Natural mineral water
14.01.02	Natural drinking water

Food codes	Classification/name
14.01.03	Purified drinking water
14.01.04	Mineral water
14.01.05	Other drinking water
14.02	Fruit and vegetable juices
14.02.01	Fruit and vegetable juices (squash)
14.02.02	Condensed fruit and vegetable juice (squash)
14.02.03	Fruit and vegetable (pulp) juices
14.03	Protein containing drinks
14.03.01	Milk containing drinks
14.03.02	Vegetable protein containing drinks
14.04	Water-based flavoured beverages
14.04.01	Carbonated drinks
14.04.01.01	Coke
14.04.01.02	Other carbonated drinks
14.04.02	Non-carbonated beverages
14.04.02.01	Beverages for special purpose (including sports drinks, nutritional drinks etc.)
14.04.02.02	Flavoured beverages (fruit flavoured drinks, flavoured milk, tea flavoured drinks and other flavoured beverages)
14.05	Tea, coffee, botanical beverages
14.05.01	Tea
14.05.02	coffee
14.05.03	Botanical beverages (excluding fruit and vegetable juices)
14.06	Solid beverages
14.06.01	Fruit flavoured solid beverages
14.06.02	Protein containing solid beverages
14.06.03	Instant coffee
14.06.04	Other kinds of solid beverages
14.07	Lactobacillus drinks
14.08	Other beverages
15.0	Liquors
15.01	Distilled Spirits
15.01.01	Chinese distilled spirits
15.01.02	Flavoured distilled spirits
15.01.03	Brandy
15.01.04	Whisky
15.01.05	Vodka
15.01.06	Rum
15.01.07	Other distilled spirits
15.02	Mixed liquors
15.03	Fermented liquors
15.03.01	Wine
15.03.01.01	Natural still wine
15.03.01.02	Sparkling wine
15.03.01.03	Flavoured wine

Food codes	Classification/name
15.03.01.04	Special wine (wine produced by special processing, for instance, adding brandy or condensed grape juice into the original wine)
15.03.02	Millet wine
15.03.03	Fruit wine
15.03.04	Mead
15.03.05	Beer and malt beverages
15.03.06	Other fermented wines (sparkling)
16.0	Others (excluding those mentioned in 01.0-15.0)
16.01	Jelly
16.02	Tea, coffee
16.03	Collagen casings
16.04	Yeast products
16.04.01	Dry yeast
16.04.02	Other yeast products
16.05	Fried food
16.05.01	Fried snacks
16.05.02	Other fried foods
16.06	Puffing foods
16.07	Others