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China Publishes Final General Standard for Sports Nutritional Food

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Report Highlights:
On November 13, 2015, China's National Health and Family Planning Commission (NHFPC) released the National Food Safety Standard for General Standard for Sports Nutritional Food (GB 24154-2015). This standard will be implemented on November 13, 2016. A draft of the standard was notified to the WTO as SPS CHN 690 in December 2014. Please note that the comment process has ended and that this standard is considered final. The following report contains an unofficial translation of the final standard.

General Information:

BEGIN TRANSLATION

National Food Safety Standard General Standard for Sports Nutritional Food

Preface

This standard replaces GB/T 24154-2009 "General Standard for Sports Nutritional Food", and integrated the standards of QB/T 2831-2006 "Sport nutritional food and Energy Supplement Food", QB/T 2832-2006 "Sport nutritional food and Protein Supplement Food", QB/T 2833-2006 "Sport nutritional food - Energy Control Food", QB/T 2834-2006 "Sport nutritional food - Creatine for Consumption", QB/T 2895-2007 "Sport nutritional food – Nutrients for Sports Crowd", and relevant contents in the Ministry of Health's No.18 Public Notice [2008] for "Provisions for Use of Food Additives and Food Fortifier in Sport nutritional foods".

In comparison with the GB/T 24154-2009, this standard presents the following changes:

- The standard name was changed to "National Standard On Food Safety – General Standard for Sports Nutritional Food ";
- Clearer "Terms and Definitions";
- Modified the descriptions of "categories", which is classified according to characteristic nutrients and sport types. "Complementary vitamins, minerals type" and "nutrients class to complement restoration sports fatigue" are summarized into "by sports category", deleted the "complex nutrients class", and "other categories";
- Added "sensory requirements";
- Removed the technical specifications of "preparing and consuming of energy supplement food" in "supplement energy class";
- Modified the product classification of "energy control class";
- Combined the technical specifications in "supplement energy class", "control energy class", and "supplement protein class";
- Added provisions on products classified by sport items;
- Added provisions on "contaminant limit";
- Added provisions on "mycotoxin limits";
- Added provisions on "microbiological limit";
- Modified provisions on the use of nutrition fortifier;
- Modified provisions on labeling;
- Modified Appendix A;
- Removed the Appendix B "Amino Acid Score Corrected with Digestibility for Protein from Different Sources (PDCAAS)";
- Added Appendix B "Quality Requirements and Determination Method for Creatine".

National Food Safety Standard General Standard for Sports Nutritional Food

1 Scope

This standard applies to sport nutritional food.

2 Terms and Definitions

2.1 Sport nutritional food

Food processed in order to meet the special needs of physiological metabolic status, athletic ability and certain nutrients of sports people(referring to the crowd that participate in physical exercise for three times a week or more, each time lasting for 30 min and above, and strength of each exercise being above moderate and above).

3 Product Classifications

3.1 Classification According to Characteristic Nutrients

Note: sport nutritional food designed specifically to meet the different needs of energy and protein, which can be divided into three categories.

3.1.1 Supplement energy class

Sport nutritional food that can provide energy quickly and continuously with carbohydrates as main component;

3.1.2 Energy control class

Sport nutritional food that can meet the needs in weight control in sports, including two classes, namely, energy consumption and energy replacement;

3.1.3 Protein supplement class

Sport nutritional food that can meet the needs of body tissue growth and repair with protein and/or protein hydrolyzate as the main components;

3.2 Classification by sports item

Note: sport nutritional foods are designed to meet special needs of different sports activities, which can be divided into three categories.

3.2.1 Speed and strength activities

Sport nutritional food suitable to be used by crowd of sprint, high jump, court games, weightlifting, wrestling, judo, taekwondo, aerobics and strength training and other groups with creatine as the characteristic ingredients

3.2.2 Endurance activities

Sport nutritional food suitable to be used by crowd of middle and long distance race, jogging, brisk walking, cycling, swimming, rowing, aerobics, dancing, outdoor sports and other groups with Vitamin B1 and vitamin B2 as characteristic components

3.2.3 Recovery after exercise

Sport nutritional food suitable to be used by crowd carrying out middle and high intensity or prolonged exercise with peptide class as the characteristic ingredients.

4 Technical Requirements

4.1 General requirements

Raw materials used in sport nutritional food shall conform to the appropriate standards and/or regulations, and WADA banned substances may not be added.

4.2 Organoleptic Requirements

Color, taste, odor, tissue state, and preparation of sport nutritional food shall meet the characteristics of the relevant product, and there shall be without normal visible foreign matters.

4.3 Technical Indexes

4.3.1 The technical specifications to be met by various types of products classified according to characteristic nutrients shall be consistent with the requirements in Table 1. Wherein the proportion of high-quality protein in protein supplement products shall be not less than 50%.

Table 1: The technical specifications for characteristic nutrients of various types of products

Items	Energy supplement class		Energy control class				Protein supplement class		
	Solid	Semi-solid or liquid	Promoting energy consumption		Energy replacement		Solid	Semi-solid or liquid	Powder (needs to be consumed after dissolving in water)
			Solid	Semi-solid or liquid	Partial meal	Complete meal			
Energy	≥1500 kJ/100 g	≥150 kJ/100 g	≤300 kJ/100 g	≤80 kJ/100 g	835 kJ/meal ~ 1670kj/meal	3 350 kJ/d~ 5 020 kJ/d	—	—	—
Proportion of energy provided by carbohydrates in the total energy of the product /%	≥60	≥60	—	—	—	—	—	—	—
Protein [a]/(g/100g)	—	—	—	—	—	—	≥15	≥4	≥50
Proportion of energy provided by protein in the total energy of the product /%	—	—	—	—	25 ~50	25~50	—	—	—
Fat /(g/100g)	—	—	—	—	—	—	≤15	≤1.5	≤6
Proportion of energy provided by fat in the total energy of the product /%	—	—	≤25	≤25	≤25	≤25	—	—	—
[a] Computing of protein content shall be based on nitrogen (N) X6.25.									

4.3.2 Ingredients must be added and recommended to be added in various types of products classified according to sports items shall comply with the requirements in Table 2, and its daily use amount shall comply with the requirements in Table 3.

Table 2 Ingredients must be added and recommended to be added in products

Ingredient	Products class		
	Speed and strength class	Endurance class	Restoration after exercise class
Ingredient must be added	Creatine	Vitamin B1, vitamin B2	Peptides class
Ingredient recommended to be added	Glutamine, β-hydroxy-β-methylbutyrate calcium, 1,6-diphosphate fructose	Peptides class, L-carnitine, caffeine, vitamin B_6	Glutamine, L-leucine, L-isoleucine, L-valine

Table 3 categories and daily using amount of nutrients in each sports item

Composition	Daily using amount [a]	Reference test methods
Caffeine/mg	20 ~100	GB 5009.139
Creatine/g	1~3	Appendix B
Glutamine/g	3.5~15.0	—
Peptides/g	1~6	GB/T 22492
β- hydroxy-β- methylbutyrate calcium/g	1~3	—
1,6-diaphosphate fructose /g ≤	0.3	—
L-leucine/g	1.5~3	—
L-isoleucine/g	0.75~1.5	—
L-valine/g	0.75~1.5	—
[a] Content of other ingredients shall comply with the requirements in Annex ADA.1.		

4.3.3 When it is selected to add or marked in the label one or more ingredients in Table A.1 in 4.3.1 and 4.3.2 product, its content shall meet the requirements in Table A.1.

4.4 Limit of Pollutants

Limit of Pollutants shall comply with provisions in Table 4.

Table 4 Limit of Pollutants

Items	Limit		Analysis Method
	Solid, semi-solid, or powder	Liquid	
Lead/(mg/kg) ≤	0.5	0.05	GB 5009.12
Total arsenic/(mg/kg) ≤	0.5	0.2	GB 5009.11

4.5 Limit of Mycotoxins

Limit of mycotoxins shall comply with provisions in Table 5.

Table 5 Limits of Mycotoxins

Items		Limit	Analysis Method
Aflatoxin M1 [a] (μg/kg)	≤	0.5	GB 5413.37
Aflatoxin B_1 [b](μg/kg)	≤	0.5	GB/T18979
[a] Applies to products with milk and milk protein products as the main raw materials. [b] Only applies to products with beans and soy protein products as the main raw materials.			

4.6 Microbiological limit

Microbial limit shall comply with the provisions in Table 6.

Table 6 Microbiological limit

Items	Sampling programs [a] and its limit (if not specified, they shall be indicated in CFU/g)				Analysis Method
	n	c	m	M	
Salmonella	5	0	0/25 g	—	GB 4789.4
Staphylococcus aureus	5	2	10	100	Plate count method in GB 4789.10
[a] Sampling and processing shall be performed in accordance with GB/T4789.1.					

4.7 Food additives and food nutrition fortifier

4.7.1 Categories and use amount of food additives in products shall be in reference to those allowable in the same or similar food class in GB 2760.

4.7.2 If one or more nutrients in Table A.1 need to be added to the products, the compound sources of nutrients fortifier to be used shall comply with the requirements in Annex C in GB 14880.

4.7.3 Quality specifications of food additives and nutritional supplements shall comply with the relevant standards and/or the relevant provisions.

5 Labels

5.1 Product labels shall comply with the provisions of GB 13432.

5.2 Labels shall be marked with "sport nutritional food" and product category in the main display panel.

5.3 If there are unsuitable crowd, it shall be identified in labels.

5.4 For products that are added with creatine, it shall be marked with "unsuitable for consuming by pregnant women, lactating women, children and infants" in the labels.

Appendix A

Nutrients That Can Be Added and Its Content Requirements

Sport nutritional food can be added with one or more nutrients in Table A.1, and its content (daily basis) shall comply with the requirements in Table A.1.

Table A.1 Nutrients that can be added in the sport nutritional food and their contents

Type	Content(daily basis)	Referred test methods
Vitamin A/μg	120~375	GB 5413.9 or GB/T 5009.82
Vitamin D/μg	1.5~10	GB 5413.9
Vitamin E/(mg α-TE)	2.1~20	GB 5413.9 or GB/T 5009.82
Vitamin B_1/mg	0.2~4	GB 5009.84
Vitamin B_2/mg	0.2~2	GB 5413.12
Vitamin B_6/mg	0.2~2	GB 5413.13 or GB/T 5009.154
Vitamin B_{12}/μg	0.4~4	GB 5413.14
Vitamin C/mg	15~100	GB 5413.18
Folic acid/μg	60~260	GB 5009.211
Niacin/mg	2.1~20	GB 5413.15 or GB/T 5009.89
Biotin/μg	4.5~50	GB 5009.259
Pantothenic acid/mg	0.8~7	GB 5413.17 or GB 5009.210
Calcium/mg	150~800	GB 5413.21 or GB/T 5009.92
Sodium/mg	700~1600	GB 5009.91
Potassium /mg	300~2000	GB 5009.91
Magnesium/mg	53~300	GB 5009.241
Iron/mg	2.3~14	GB 5413.21 or GB/T 5009.90
Zinc/mg	1.7~12	GB 5009.14
Selenium/μg	7.5~52	GB 5009.93
Copper/mg	0.3~1.5	GB 5009.13
Iodine/μg	22.5~75	GB 5413.23
Manganese/mg	0.5~2.5	GB 5009.242
Phosphor/mg	105~1000	GB 5413.22 or GB/T 5009.87
Molybdenum/μg	80~125	—
Chrome/μg	16~32	GB 5009.123
L-carnitine/g	1~2	GB 29989
Taurine/g	0~0.6	GB 5009.169

Appendix B

Quality Requirements and Determination Methods of Creatine

B.1 Quality Requirements for Creatine

Mass fraction of creatine - monohydrate shall not be less than 99.97%.

B.2 Determination of Creatine - monohydrate(HPLC)

B.2.1 Method summary

After separation and purification by high performance liquid chromatography, the creatine – monohydrate in sample shall be measured by a UV detector, and quantified with external standard method.

B.2.2 Reagents and Materials

B.2.2.1 Test water: it shall comply with the requirements in GB/T 6682 – first grade water.

B.2.2.2 Methanol: chromatographically pure.

B.2.2.3 Mobile phase: methanol: water = 40: 60.

B.2.2.4 Standard sample of creatine - monohydrate (α- methyl guanidine acetic acid - monohydrate): with a purity of not less than 99.0%.

B.2.2.5 Standard stock solution: Weigh accurately 0.500g standard sample of creatine - monohydrate (α- methyl guanidine acetic acid - monohydrate), dissolve in water and dilute to 100mL. Concentration of this standard stock solution is 5.0mg/mL, which is stored at 4°C. If there is precipitation or turbidity in the solution, it shall be prepared again.

B.2.2.6 Standard series solution: dilute the standard stock solution into 0, 100μg/mL, 200μg/mL, 400μg/mL, 600μg/mL, 800μg/mL, 1000μg/mL, separately. Prepare on site in use.

B.2.3 Instruments and Equipment

B.2.3.1 High performance liquid chromatograph: with adjustable UV detector.

B.2.3.2 Chromatograph column $ODSC_{18}$ column, particle size 5μm, inner diameter 4.6mm, and column length 250mm.

B.2.4 Analysis Step

B.2.4.1 Preparation of sample solution

Weigh 0.030g sample accurate to 0.0001g. Dissolve in water and dilute to 100mL.

B.2.4.2 Determination

B.2.4.2.1 Chromatographic conditions

Detector wavelength: 220 nm.

Mobile phase: methanol and water (B.2.2.3).

Flow rate: 0.5mL/min.

Injection volume: 5 μL.

B.2.4.2.2 Quantification

Suction 5μL standard series solution (B.2.2.6) with injector, inject to high performance liquid chromatography, measure the response peak area of standard series solution under the above said chromatographic conditions. Plot standard curve or calculate regression equation with the response peak area as vertical ordinate and the concentration of the standard series solution as abscissa.

Suction 5μL sample solution (B.2.4.1) and inject to high performance liquid chromatography, measure the response peak area of sample solution under the above said chromatographic conditions(B.2.4.2.1). According to the measured response peak area, find the concentration of creatine - monohydrate in sample solution on the standard curve(or calculate it with the regression equation).

Under the above said chromatographic conditions (B.2.4.2.1), peak time of creatine - monohydrate (α- methyl guanidine acetic acid - hydrate) is about 4.7min. Liquid chromatographic graph of the standard series solution is as shown in Figure B.1.

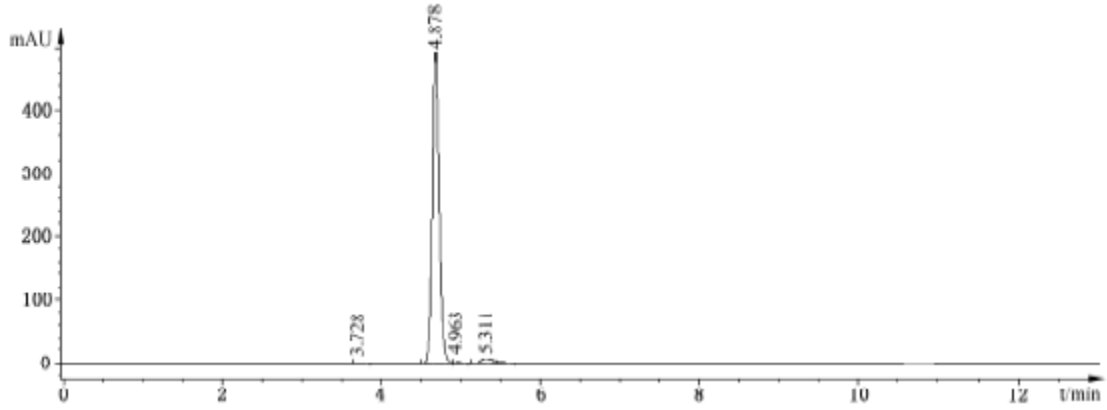

Figure B.1 Liquid chromatographic graph of the standard series solution of creatine - monohydrate (α- methyl guanidine acetic acid - monohydrate)

B.2.5 Calculation Results

Mass fraction W of creatine – monohydrate in sample shall be calculated according to equation (B.1):

$$W = \frac{c \times 100}{m \times 10^6} \times 100\% \qquad \cdots\cdots (B.1)$$

Where:

W-- Mass fraction of creatine - monohydrate,%;

c—Mass concentration of creatine - monohydrate solution that is found from the standard curve (or calculated from the regression equation), in micrograms per milliliter (μg/mL);

100—Mass of diluted volume of the sample, in milliliters (mL);

m-- Sample mass, in grams (g).

The results shall be accurate to one decimal place.

The absolute difference between the results of two independent measurements of the same sample under repeatable conditions shall not exceed 2% of the average value.

END OF TRANSLATION