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Technical Standard of International Seabuckthorn Association

团体标准

T/ISA006-2022

沙棘果粉

(Seabuckthorn fruit powder)

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前言

本标准按照 GB/T 1.1—2020《标准化工作导则 第一部分：标准结构和编写》的规则起草。

本标准由国际沙棘协会归口。

本标准起草单位：水利部沙棘开发管理中心（水利部水土保持植物开发管理中心）、高原圣果沙棘制品有限公司、宝得瑞（湖北）健康产业有限公司、新疆吉萃元农业科技有限公司、河北神兴沙棘研究院、澜湄水资源合作中心、黑龙江圣宝泰农业有限公司、内蒙古宇航人高技术产业有限责任公司、青海高原珍果沙棘资源开发有限公司、阿勒泰太阳石健康产业发展有限公司、青海康普生物科技股份有限公司。

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本标准为首次起草。

Preface

This standard is drafted in accordance with the rules of GB/T 1.1-2020 Standardization Guidelines Part I: Standard Structure and Preparation.

This standard is compiled by the International Sea Buckthorn Association.

The drafting unit of this standard: Sea Buckthorn Development and Management Center of Ministry of Water Resources (Soil and Water Conservation Plant Development and Management Center of Ministry of Water Resources), CONSECO Sea Buckthorn Products Co., LTD., Powery (Hubei) Health Industry Co., LTD., Xinjiang Jichuiyuan Agricultural Science and Technology Co., LTD., Hebei Shenxing Sea Buckthorn Research Institute, Lancang-Mekong Water Resources Cooperation Center, Heilongjiang Shengbaotai Agriculture Co., LTD., Inner Mongolia Yuhangren High-tech Industry Co., LTD, Qinghai Gaoyuan Zhenguo Seabuckthorn Resources Development Co., LTD., Xinjiang Altay Sunstone Health Industry Development Co., LTD., Qinghai Kompu Biotechnology Co., LTD.

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This standard is drafted for the first time.

沙棘果粉

1 范围

本标准规定了沙棘果粉的术语和定义、技术要求、生产加工工艺流程、质量要求、检验方法及规则、标签标识、包装、贮存和运输。

本标准适用于以沙棘(*Hippophae* L.) 果(冻果、干果、鲜果)、果汁(浆)为原料加工而成的沙棘果粉。

Sea buckthorn fruit powder

1 Range

This standard specifies the terms and definitions, technical requirements, production and processing processes, quality requirements, inspection methods and rules, labeling, packaging, storage and transportation of seabuckthorn fruit powder.

This standard applies to *Hippophae* L. fruit (frozen fruit, dried fruit, fresh fruit) and juice (pulp) as raw materials.

2 规范性引用文件

下列文件对于本文件的应用是必不可少的。凡是注日期的引用文件,仅所注日期的版本适用本文件。凡是不注日期的引用文件,其最新版本(包括所有修改单)适用于本文件。

- GB 2760 食品安全国家标准 食品添加剂使用标准
- GB 2761 食品安全国家标准 食品中真菌毒素的限量
- GB 2762 食品安全国家标准 食品中污染物限量
- GB 2763 食品安全国家标准 食品中农药残留最大限量
- GB 4789.1 食品安全国家标准 食品微生物学检验 总则
- GB 4789.2 食品安全国家标准 食品微生物学检验 菌落总数测定
- GB 4789.3 食品安全国家标准 食品微生物学检验 大肠菌群计数
- GB 4789.4 食品安全国家标准 食品微生物学检验 沙门氏菌检验
- GB 4789.10 食品安全国家标准 食品微生物学检验 金黄色葡萄球菌检验
- GB 4789.15 食品安全国家标准 食品微生物学检验 霉菌和酵母计数
- GB/T4789.21 食品卫生微生物学检验 冷冻饮品、饮料检验
- GB 4789.26 食品安全国家标准 食品微生物学检验 商业无菌检验
- GB 5009.3 食品安全国家标准 食品中水分的测定

GB 5009.4 食品安全国家标准 食品中灰分的测定
GB 5009.5 食品安全国家标准 食品中蛋白质的测定
GB 5009.6 食品安全国家标准 食品中总脂肪的测定
GB 5009.11 食品安全国家标准 食品中总砷及无机砷的测定
GB 5009.12 食品安全国家标准 食品中铅的测定
GB 5009.83 食品安全国家标准 食品中胡萝卜素的测定
GB 5009.86 食品安全国家标准 食品中抗坏血酸的测定
GB 5009.168 食品安全国家标准 食品中脂肪酸的测定
GB 5009.227 食品安全国家标准 食品中过氧化值的测定
GB 5009.229 食品安全国家标准 食品中酸价的测定
GB 5749 生活饮用水卫生标准
GB 7101 食品安全国家标准 饮料
GB 7718 食品安全国家标准 预包装食品标签通则
GB/T 12456 食品安全国家标准 食品中总酸的测定
GB 28050 食品安全国家标准 预包装食品营养标签通则
GB/Z21922 食品营养成分基本术语
GB/T 191 包装储运图示标志
GB/T 29602 固体饮料
国家质量监督检验检疫总局第 75 号令（2005） 定量包装商品计量监督管理办法
中华人民共和国药典一部（沙棘总黄酮的测定）

2 Normative reference files

The following documents are essential for the application of this document. For dated references, only the dated version applies to this document. For undated references, the latest version (including all amendment orders) applies to this document.

GB 2760 National Standard for Food safety Standard for the use of food additives
GB 2761 National Standard for food safety Limits for mycotoxins in food
GB 2762 National Standard for Food Safety Limits for contaminants in food
GB 2763 National Standard for Food safety Maximum limits for pesticide residues in food
GB 4789.1 National Standard for Food Safety Microbiology inspection of food General Rules
GB 4789.2 National standard for food safety Microbiology test of food Total colony measurement
GB 4789.3 National Standard for Food safety Food microbiology test Coliform count
GB 4789.4 National standard for food safety Microbiology inspection of food Salmonella test
GB 4789.10 National standard for food safety Microbiological examination of food Examination

for *Staphylococcus aureus*

GB 4789.15 National Standard for food safety Food microbiology test Mould and yeast count

GB 4789.26 National standard for food safety Microbiology testing of food Commercial sterility testing

GB 5009.3 National standard for Food safety Determination of moisture in food

GB 5009.4 National standard for food safety Determination of ash content in food

GB 5009.5 National standard for Food safety Determination of protein in food

GB 5009.6 National standard for Food safety Determination of total fat in food

GB 5009.11 National standard for Food safety Determination of total arsenic and inorganic arsenic in food

GB 5009.12 National standard for food safety Determination of lead in food

GB 5009.83 National standard for food safety Determination of carotene in food

GB 5009.86 National standard for Food safety Determination of ascorbic acid in food

GB 5009.168 National standard for food safety Determination of fatty acids in food

GB 5009.227 National standard for food safety Determination of peroxide value in food

GB 5009.229 National standard for food safety Determination of acid value in food

GB 5749 Hygienic standard for drinking water

GB 7101 National Standard Beverage for Food safety Beverage

GB 7718 National Standard for Food safety General Rules for labelling of Prepackaged food

GB/T 12456 National standard for food safety Determination of total acids in food

GB 28050 National Standard for Food safety General Rules for nutrition labeling of prepackaged food

GB/Z21922 Basic terms for nutrition in foods

GB/T 191 package storage and transportation graphic symbol

GB/T 29602 Solid Drink

Decree No. 75 of the General Administration of Quality Supervision, Inspection and Quarantine (2005) Measures for the Supervision and Administration of Quantitative Packaged Commodities
Pharmacopoeia of the People's Republic of China Part I (Determination of Total Flavonoids of Sea-buckthorn)

3 术语和定义

3.1 沙棘全果粉 seabuckthorn fruit powder

以沙棘全果为原料，加工制成粉末状制品。

3.2 沙棘果汁粉 seabuckthorn juice powder

以沙棘果汁为原料，添加或不添加食品原料，加工制成粉末状制品。

3 Terms and definitions

3.1 seabuckthorn fruit powder

The whole fruit of Sea buckthorn was processed into powder products.

3.2 seabuckthorn juice powder

With seabuckthorn juice as raw material, processed into powdered products with or without food raw materials.

4 分类

沙棘果粉分为沙棘全果粉、沙棘果汁粉。

4 Classification

Seabuckthorn fruit powder is divided into whole seabuckthorn fruit powder and seabuckthorn juice powder.

5 要求

5.1 原料要求

沙棘果完好无损，无腐烂、无杂质。

5.2 生产用水

应符合 GB 5749 的规定。

5.3 工艺流程

5.3.1 沙棘全果粉

沙棘全果粉工艺流程包括全果干燥和打浆干燥两种。

工艺一：全果干燥

原料(沙棘冻果或鲜果) → 清洗 → 干燥(真空干燥、冷冻干燥) → 粉碎 → 灭菌 → 检验 → 包装 → 成品

工艺二：打浆干燥

原料(沙棘鲜果) → 清洗 → 磨浆细化(粉碎) → 干燥(真空干燥、冷冻干燥) → 灭菌 → 检验 → 包装 → 成品

5.3.2 沙棘果汁粉

原料(沙棘冻果或鲜果) → 清洗 → 打浆(压榨) → 分离 → 干燥(真空干燥、冷冻干燥、喷雾干燥) → 灭菌 → 检验 → 包装 → 成品

5 Requirements

5.1 Raw material requirements

Seabuckthorn fruit intact, no rot, no impurities.

5.2 Production water

Shall comply with the provisions of GB 5749.

5.3 Process flow

5.3.1 Whole fruit powder of sea Buckthorn

The whole fruit powder process of Sea Buckthorn includes two kinds: whole fruit drying and beating drying.

Process one: Whole fruit drying

Raw materials (frozen or fresh fruits of sea buckthorn) are cleaned and dried (vacuum drying, freeze drying), crushed and sterilized to inspect packaged finished products

Process two: Beating dry

Raw material (sea buckthorn fruit) cleaning grinding pulp refining (grinding) drying (vacuum drying, freeze-drying) sterilization inspection packaged finished products

5.3.2 Sea Bbckthorn juice powder

Raw materials (frozen or fresh fruit of sea buckthorn) cleaning, beating (pressing) separation and drying (vacuum drying, freeze drying, spray drying) sterilization inspection packaged finished products

5.4 特征指标

沙棘果粉特征指标应符合表 1 的规定。

5.4 Characteristic Indicators

The characteristic indexes of Seabuckthorn fruit powder should conform to the provisions of the following **Table 1**.

表 1 特征指标

Table 1 Characteristic Indicators of seabuckthorn fruit power

特 征 Characteristics	指 标 Index	
	沙棘全果粉 Sea buckthorn whole fruit powder	沙棘果汁 粉 Sea buckthorn juice powder
总黄酮（以芦丁计） Total flavonoids (rutin) (g/100g) ≥	0.3	0.1
维生素 C Vitamin C (mg/100g) ≥	（大果） For large SBT fruit 150; （小果） For native small SBT fruit 400	200
β-胡萝卜素 Beta-carotene (μg/100g) ≥	2000	800
棕榈油酸(C16:1) (%) (限全果粉) Palmitoleic acid (C16:1) (%) (whole fruit powder only) ≥	4	

5.5 质量指标

5.5.1 感官指标

沙棘果粉感官指标应符合表 2 的规定。

5.5 Quality Indicators

5.5.1 Sensory indicators

The sensory indexes of Seabuckthorn fruit powder should conform to the provisions of **Table 2**.

表 2 感官指标

Table 2 Sensory indicators of seabuckthorn fruit powder

指标名称 Indicator name	指 标 Indicators	
	沙 棘 全 果 粉 Sea buckthorn whole fruit powder	沙棘果汁粉 Sea buckthorn juice powder
外 观 Appearance	棕红色、棕黄色的粉末 brown red, brown yellow powder	棕黄色的粉末 brown red, brown yellow powder
气味及滋味 Smell and taste	具有沙棘果固有的气味、滋味，无异味，无外来杂质 Smell and taste with seabuckthorn fruit inherent smell, taste, no odor, no foreign impurities	
色泽 Color	棕红色、棕黄色 Brown red, brown yellow	棕黄色 brown yellow

5.5.2 理化指标

沙棘果粉理化指标应符合表 3、表 4 的规定。

5.5.2 Physical and chemical specifications

The physicochemical indexes of Seabuckthorn fruit powder should conform to the provisions of **Table 3** and **Table 4**.

表 3 理化指标

Table 3 Physical and chemical indexes

指 标 名 称 Index name	沙棘全果粉	沙棘果汁粉
蛋白质 Protein (g/100g) \geq	5	2
总脂肪 Total fat (g/100g) \geq	15	0.6
总 碳 水 化 合 物 Total carbohydrate \geq	50	40
总酸（以苹果酸计） Total acid (in malic acid) (g/kg) \geq	80	50
酸 价 Acid value (KOH mg/g) \leq	3.0	
过氧化值 Peroxide value (mmol/kg) \leq	10	

表 4 水分和灰分

Table 4 Moisture and ash contents

指 标 名 称 Index name	指 标 index
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	沙棘全果粉 Sea buckthorn whole fruit powder	沙棘果汁粉 Sea buckthorn juice powder
水分 Moisture(g/100g) ≤	4	7
灰分 Ash content (g/100g) ≤	2	2

5.5.3 污染物限量

沙棘果粉污染物限量应符合表 5 的规定。

5.5.3.1 污染物限量应符合 GB 2762 的规定。

5.5.3.2 真菌毒素限量应符合 GB 2761 的规定。

5.5.3 Pollutant Limits

The pollutant limit of Seabuckthorn fruit powder should conform to the provisions in Table 5.

5.5.3.1 Pollutant limits shall comply with GB 2762.

5.5.3.2 The limits of mycotoxins shall comply with GB 2761.

表 5 污染物限量

Table 5 Pollutant limits

指标名称 Index name	指标 index
总砷（以 As 计） Total arsenic (As)/(mg/kg) ≤	0.5
铅（以 Pb 计） Lead (measured in Pb)/(mg/kg) ≤	1.0

5.5.4 微生物限量

沙棘果粉微生物限量应符合表 6 的规定。

5.5.4.1 致病菌限量应符合 GB7101 的规定。

5.5.4.2 经商业无菌生产的产品应符合商业无菌的要求，按 GB 4789.26 规定的方法检验。

5.5.4.3 非经商业无菌生产的产品，其微生物限量还应符合表 6 的规定。

5.5.4.4 样品采集及处理应符合 GB 4789.1 和 GB/T4789.21 规定。

5.5.4 Microbial limits

Microbial limit of Seabuckthorn fruit powder shall conform to the provisions of Table 6.

5.5.4.1 Pathogenic bacteria limit shall comply with the regulations of GB7101.

5.5.4.2 Commercially sterile products shall meet the requirements for commercial sterility and shall be tested according to the method specified in GB 4789.26.

5.5.4.3 The microbial limits of products not manufactured in commercial asepsis should also

comply with the provisions in Table 6.

5.5.4.4a Sample collection and processing shall comply with GB 4789.1 and GB/T4789.21.

表 6 微生物限量
Table 6 Microbial limits

项 目 Item	指 标 index			
	采样方案 ^a 及限量 Sampling scheme and limit			
	n	c	m	M
菌落总数 Total number of colonies (CFU/g) ≤	5	2	1000	5×10 ⁴
大肠菌群 Coliform group (CFU/g) ≤	5	2	10	100
霉菌 Mold (CFU/g) ≤	50			
致病菌 (沙门氏菌、金黄色葡萄球菌) Pathogenic bacteria (Salmonella, Staphylococcus aureus)	不得检出 non-detectable			

5.5.5 净含量

净含量应符合国家质量监督检验检疫总局[2005]第75号令的规定。

5.5.5 Net content

The net content should comply with the provisions of Decree No. 75 [2005] of the General Administration of Quality Supervision, Inspection and Quarantine.

6 食品添加剂

如果添加食品添加剂，按 GB 2760 执行。

6 Food additives

If food additives are added, following to GB 2760.

7 检验方法

7.1 特征指标

7.1.1 总黄酮 (以芦丁计)

按《中华人民共和国药典一部 沙棘总黄酮的测定》规定的方法测定。

7.1.2 维生素 C

按 GB 5009.86 规定的方法测定。

7.1.3 β-胡萝卜素

按 GB 5009.83 规定的方法测定。

7.1.4 棕榈油酸

按 GB 5009.168 规定的方法测定。

7 Test method

7.1 Feature indicators

7.1.1 Total flavonoids (rutin)

Determination of total flavonoids of Sea-buckthorn according to the method stipulated in the Pharmacopoeia of the People's Republic of China.

7.1.2 Vitamin C

Measured according to the method specified in GB 5009.86.

7.1.3 Beta-carotene

Measured according to the method specified in GB 5009.83.

7.1.4 Palmitoleic acid

Measured according to the method specified in GB 5009.168.

7.2 质量指标

7.2.1 蛋白质

按 GB 5009.5 规定的方法测定。

7.2.2 总脂肪

按 GB 5009.6 规定的方法测定。

7.2.3 总碳水化合物

按 GB/Z 21922 规定的方法测定。

7.2.4 总酸

按 GB/T 12456 规定的方法测定。

7.2.5 酸价

按 GB 5009.229 规定的方法测定。

7.2.6 过氧化值

按 GB 5009.227 规定的方法测定。

7.2.7 水分

按 GB 5009.3 规定的方法测定。

7.2.8 灰分

按 GB 5009.4 规定的方法测定。

7.2 Quality Specifications

7.2.1 Protein

Measured in accordance with the method specified in GB 5009.5.

7.2.2 Total fat

Measured by the method specified in GB 5009.6.

7.2.3 Total carbohydrates

Measured according to the method specified in GB/Z 21922.

7.2.4 Total acid

According to the method specified in GB/T 12456.

7.2.5 Acid value

Measured according to the method specified in GB 5009.229.

7.2.6 Peroxide value

Measured according to the method specified in GB 5009.227.

7.2.7 Moisture

Measured according to the method specified in GB 5009.3.

7.2.8 Ash content

Measured according to the method specified in GB 5009.4.

7.3 污染物限量

7.3.1 总砷

按 GB 5009.11 规定的方法测定。

7.3.2 铅

按 GB 5009.12 规定的方法测定。

7.3.3 农药残留

按 GB 2763 规定的方法测定。

7.3 Pollutant Limits

7.3.1 Total Arsenic

Measured according to the method specified in GB 5009.11.

7.3.2 Lead

Measured in accordance with the method specified in GB 5009.12.

7.3.3 Pesticide residues

Measured in accordance with the method specified in GB 2763.

7.4 微生物指标

7.4.1 菌落总数

按 GB 4789.2 规定的方法检验。

7.4.2 大肠菌群

按 GB 4789.3 规定的方法检验。

7.4.3 霉菌

按 GB 4789.15 规定的方法检验。

7.4.4 致病菌（沙门氏菌、金黄色葡萄球菌）

7.4.4.1 沙门氏菌

按 GB 4789.4 规定的方法检验。

7.4.4.2 金黄色葡萄球菌

按 GB 4789.10 规定的方法检验。

7.4 Microbiological indexes

7.4.1 Total number of colonies

Test according to the method specified in GB 4789.2.

7.4.2 Coliform

Test according to the method specified in GB 4789.3.

7.4.3 Mold

Test according to the method specified in GB 4789.15.

7.4.4 Pathogenic bacteria (Salmonella and Staphylococcus aureus)

7.4.4.1 Salmonella

Test according to the method specified in GB 4789.4.

7.4.4.2 Staphylococcus aureus

Test according to the method specified in GB 4789.10.

8 检验规则

8.1 检验分类

检验分为出厂检验和型式检验两种。

8.2 组批与抽样

每批原料所生产的产品为一检验批，抽样方法按照 GB/T 29602 规定的要求执行。

8.3 出厂检验

8.3.1 产品出厂前应逐批检验，检验合格后，方可出厂。

8.3.2 按表 1、表 2、表 4、表 6 进行检测。

8 Inspection rules

8.1 Inspection classification

The inspection is divided into factory inspection and type inspection.

8.2 Batch and sampling

The products produced from each batch of raw materials shall be one inspection lot. The sampling method shall be in accordance with the requirements specified in GB/T 29602.

8.3 Delivery Inspection

8.3.1 Products shall be inspected batch by batch before leaving the factory, and can leave the factory only after passing the inspection.

8.3.2 Test according to Table 1, 2, 4 and 6.

8.4 型式检验

型式检验项目应包括本标准第 5 章规定的全部指标, 正常生产时, 每年进行一次检验。有下列情形之一者应进行型式检验:

- a) 产品定型鉴定时;
- b) 正常生产条件下每年进行一次;
- c) 原料、工艺、设备有较大变动时;
- d) 停产半年以上恢复生产时;
- e) 国家质量监督机构提出型式检验要求时。

8.5 判定规则

出厂检验、型式检验中有一项检测结果不符合本标准要求时, 则判定为不合格。检测结果全部符合本标准规定时, 该批产品判为合格。

8.4 Type test

The type test item shall include all the indicators stipulated in Chapter 5 of this standard. During normal production, the test shall be conducted once a year. Type test shall be carried out under any of the following circumstances:

- a) When the product is finalized and evaluated;
- b) Once a year under normal production conditions;
- c) Major changes in raw materials, processes and equipment;
- d) when production is suspended for more than half a year and resumed;
- e) When the national quality supervision agency puts forward the type test requirements.

8.5 Decision rules

If there is one test result in factory inspection or type inspection that does not meet the requirements of this standard, it will be judged as unqualified. When all the test results meet the requirements of this standard, the batch of products are judged as qualified.

9 标签标识

产品标志及标签应符合 GB 7718 和 GB 28050 及相关规定。

9 Label identification

The product mark and label shall comply with GB 7718 and GB 28050 and relevant regulations.

10 包装、运输、贮存

10.1 包装

包装材料应符合 GB/T 191 及国家食品卫生的有关规定和要求，应采用避光材质密封包装，并附有产品合格证。

10.2 运输

产品在运输过程中不能与危险品混运。运输时必须有遮盖物，避免日晒、雨淋、污染和标签脱落，防止受热及撞击。

10.3 贮存

产品应保存在阴凉、干燥、通风良好的避光处或低温条件下，避免受潮。不得与有毒、有害、有异味、易挥发、易腐蚀的物品同库储存。

10 Packaging, transportation and storage

10.1 Packaging

The packing materials shall conform to GB/T 191 and the relevant provisions and requirements of national food hygiene. The packing materials shall be sealed and packed in light-proof materials, and the product qualification certificate shall be attached.

10.2 Transportation

The product shall not be mixed with dangerous goods during transportation. Transport must be covered, to avoid sun, rain, pollution and label off, to prevent heat and impact.

10.3 Storage

The product should be stored in a cool, dry, well ventilated place away from light or at low temperature to avoid moisture. It shall not be stored in the same warehouse with poisonous, harmful, smelly, volatile and corrosive articles.