National Standards of People's Republic of China

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National Food Safety Standard

Dried Sea Cucumber

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1 Scope

This standard applies to dried sea cucumber.

2 Terms and definitions

2.1 Dried sea cucumber

is produced from fresh sea cucumber, after washing, their internal organs are removed, followed by boiling down, and drying process to preserve it.

Note: During the harvest season of apostichopus japonicus, it is common practice to boil and salt the fresh apostichopus japonicus, store it in the cold storage as the raw material for the dried sea cucumber.

2.2 Rehydration ratio

The ratio of the mass of rehydrated sea cucumber to the mass of the original sea cucumber.

3 Technical requirements

3.1 Sensory requirements

Sensory requirements shall comply with the requirements in Table 1.

Item	Requirement	Inspection Methods
Color	Dark brown, dark gray, gray or brown natural color, etc., probably with white surface and uniform color.	Take an appropriate amount of sample and spread it in a white porcelain plate, observe its color and tissue state under natural light, and smell it.
Smell	With the unique smell of fresh sea cucumber and no odor.	
State	In natural appearance with straight spines and basic integrity, allowing a small amount of limestone to be exposed.	

Table 1 Sensory requirements

3.2 Physical and chemical index

Physical and chemical index shall comply with the index in Table 2.

Item		Index	Tesing methods
Protein / (g/100g)	≥	40	Take samples processed after A.2 in this Standard and test it according to GB 5009.5.
Water / (g/100g)	≤	15	Take samples processed after A.2 in this Standard and test it according to GB 5009.5.
Salt / (g/100g)	≤	40	Take samples processed after A.2 in this Standard and test it according to GB 5009.44.
Water soluble sugar / (g/100g)	≤	3	Take 100-mL test solution after A.3.4.4 and test it according to GB/T 15672. Dilute the test solution if necessary.
Rehydration ratio/ %	≥	40	A.4 in the Appendix A
Sand content /(g/100g)	≤	3	A.5 in the Appendix A

Table 1 Sensory requirements

3.3 Pollutant limit

Please check the limits for the acanthus in GB 2762.

3.4 Veterinary drug residue limits

Please check the relevant regulations and announcements.

4 Other

4.1 Label shall indicate the salt content range of the product.

4.2 Examination of pollutants: shall be done with the sample after rehydration in A.3.4.2 with the test mothods in GB 2762.

4.3 Test of veterinary drug residues: shall be done with the sample after rehydration in A.3.4.2 with the test mothods according to the relevant published standard.

Appendix A
Testing methods

A.1 General provisions

Unless otherwise specified in this standard, the purity of all reagents shall be higher than analytical grade. The standard titration solution used and the standard solution used for impurity determination shall be prepared in accordance with the regulations of GB/T 601, GB/T 602, and GB/T 603, and the quality of experimental water shall comply with the regulation of third-grade water in GB/T 6682. The solution used in the test refers to the aqueous solution unless it is specified what kind of reagent is used to prepare it.

A.2 Sample preparation

A.2.1 Take at least 3 dried sea cucumbers and put them into a high-speed pulverizer to pulverize (25000 r/min. 10-15 s/time) for several times until all samples pass through 830-μm (20 mesh) sieve. The treated samples should be sealed and ready for use.

A.2.2 The samples processed by this method are mainly used for the detection of protein, moisture, salt and other index.

A.3 Rehydration of dried sea cucumber

A3.1 Pre-soaking

Take 2 to 3 dried sea cucumbers weighed about 10g (m1, accuracy - 0.01g), put them in a 1000 ml beaker, and pour water (the amount of water is about 50 times the mass of the sea cucumbers and sea cucumbers should be submerged in the water), then cover the beaker and soak sea cucumbers for 24 hours at room temperature.

A.3.2 Cleaning

Cut the sea cucumber body in the soaking solution, clean the mud and sand attached to the sea cucumber body, remove the lime in the mouth, and cut the sea cucumber into strips with a width of about 5 mm; The body, mud sand and limestone of the mouth should be all retained in the original soaking solution.

A.3.3 Boiling

Put the sample and soaking solution treated in A.3.2 in the original beaker, cover the beaker, and bring to a boil over high heat. Then adjust to low heat and keep boiling for 30 minutes. Cool it down to room temperature and place it in the 0-10 °C refrigerator for 20 hours. During the boiling and soaking process, the amount of water should be kept to submerge the sea cucumber body.

A.3.4 Sampling

A.3.4.1 Pour all the leaching solution and sea cucumber body treated in A.3.3 into a 1000-ml measuring cylinder, and make up to 600 ml. Mix well.

A.3.4.2 Take out the sea cucumber and put it in a beaker, add 600-ml water, and boil it again according to the method in A.3.3. Take out the sea cucumber having been placed in the refrigerator and absorb its surface moisture with filter paper, mince it for the test of pollutants and veterinary drug residues.

A.3.4.3 Filter the soaking solution and transfer it all to ashless filter paper for the sand content test.

A.3.4.4 The obtained filtrate will be used for the test of water-soluble sugar. When the sugar content in the test solution is high, it should be diluted with water before testing; The appropriate sugar content is 30-70 μg /ml.

A.4 Test methods for dry weight rate after rehydration dried sea cucumbers

A.4.1 Principle

Rehydrate the dried sea cucumber, remove various water-soluble substances from the sea cucumber, and then dry the sea cucumber to obtain the mass fraction of dry sea cucumber.

A.4.2 Instruments and Equipment

A.4.2.1 Beaker: tall type, 1000 ml;

A.4.2.2 Weighing bottle;

A.4.2.3 Electric heating constant temperature drying oven;

A.4.2.4 Dryer: with effective drying agent;

A.4.2.5 Balance: the sensing amount is 0.1 mg.

A.4.3 Analysis steps

A.4.3.1 Take a dried sea cucumber, weigh it (m_2 , accuracy - 0.0001g), put it in a 1000-ml beaker, pour water (the amount of water is about 50 times the mass of the sea cucumbers and the wholes sea cucumber should be immersed in the water), cover the beaker, and leave it at room temperature for 24 hours, theen cut the sea cucumber body, and wash the sand away from the sea cucumber and carefully remove the limestone from the mouth in the original soaking solution.

A.4.3.2 Cut the washed sea cucumbers into strips with a width of about 5 mm, put them in a clean beaker, and pour in water (the amount of water is about 50 times the mass of the sea cucumbers and the wholes sea cucumber should be immersed in the water). Cover the beaker, bring to a boil over high heat and then reduce it to low heat, keep it slightly boiled for 30 minutes. Afterwards, cool it to room temperature, add water to the original mark and place it in 0-5°C refrigerator for 18-20 hours.

A.4.3.3 After filtering with filter paper with constant weight, cut the sample into small pieces of about 3mm×3mm, and put the filter paper into the weighing bottle with constant weight. Bake in an oven at 101-105°C for more than 8 hours (to constant weight) and cool in a desiccator for 30 min. Weighing (m, accurate to 0.000 1g)

A.4.4 Presentation of analysis results

The dry weight rate after rehydration is calculated according to formula (A.1), and the calculation result, the arithmetic mean of two independent measurement results obtained under repeatability conditions, shall retains three significant digits.

$$X_1 = \frac{m_3}{m_2} \times 100 \qquad \cdots\cdots (A.1)$$

where:

X_1 — The dry weight rate after rehydration in the sample, in grams per 100 grams (g/100g);
m_3 — The mass of the sample after drying, in grams (g);
m_2 — The mass of the sample, in grams (g)。

A.4.5 Precision

The absolute deviation of the results of two independent determinations obtained under repeatability conditions shall not exceed 5% of the arithmetic mean.

A.5 Test method for sand content in dried sea cucumbers

A 5.1 Principle

After soaking and washing the dried sea cucumber, filtering is carried out, and the mass fraction of the dry matter obtained after burning the obtained residue.

A.5.2 Instruments and equipment

A.5.2.1 Crucible;
A.5.2.2 Electric stove;
A.5.2.3 High temperature furnace;
A.5.2.4 Balance: the sensing amount is 0.1 mg.

A.5.3 Analysis steps

Wrap the filtrate obtained in A.3.4.3 together with ashless filter paper and place it in a crucible that has been dried and weighed, put the crucible on an electric furnace for carbonization, then move it into a high-temperature furnace, and burn it at 550±25°C for 4 hours, until the color turns white. Take out the crucible. After cooling in air for 1min, put it in a desiccator for 30 min, and weigh it (m4, accuracy-0.0001g).

A.5.4 Presentation of analysis results

The sand content is calculated according to formula (A.2), and the calculation result, the arithmetic mean of two independent measurement results obtained under repeatability conditions, shall retains three significant digits.

$$X_2 = \frac{m_4}{m_1} \times 100 \qquad \text{(A.2)}$$

where:

X_2 — The sand content in the sample, in grams per 100 grams (g/100g);

m_4 — The mass of residue after burning, in grams (g);

m_1 — The mass of the sample, in grams (g).

A.5.5 Precision

The absolute deviation of the results of two independent determinations obtained under repeatability conditions shall not exceed 5% of the arithmetic mean.