



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 1886.86-2015

National Food Safety Standard -- Food Additives -- Tara gum

食品安全国家标准 食品添加剂 刺云实胶

(English Translation)

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1 Scope

This standard applies to the legume seed endosperm of tara as raw material grinding and prepared food additive tara gum.

2.1 Sensory requirements

Sensory requirements shall comply with the requirements of Table 1.

Table 1 Sensory requirements

Project requires test methods White to pale yellow color State powder Odour almost odorless Take the right amount of sample is placed in a clean, dry white porcelain dish, under natural light, Views and state police color, taste and smell the

2.2 Physical indicators

Physical and chemical indicators should be consistent with the provisions of Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method Loss on drying, w /% ≤ 15 GB 5009.3a Residue on ignition, w /% ≤ 1.5 Appendix A A.3 Acid insoluble, w /% ≤ 2.0 Appendix A A.4 Protein, w /% ≤ 3.5 A.5 in Appendix A Starch test by test A.6 in Appendix A Lead (Pb)/(mg/kg) ≤ 2.0 GB 5009.12 a1g samples, direct drying.

Appendix A

Testing method

A.1 General Provisions this standard reagents and water in the absence of other specified requirements, refer to the three water analytical reagent and GB/T 6682 regulations.

Standard solutions used in the tests, the determination of impurities standard solution, preparations and products, did not indicate when the other requirements according to GB/T 601, GB/T 602, GB/T 603 provisions of preparation. Solution was used in the tests did not indicate what is formulated with solvent, it refers to an aqueous solution.

A.2 Identification Test A.2.1 gel test Samples were dissolved in appropriate amount of water, adding a small amount of sodium borate in the sample solution to be formed a gel.

A.2.2 Viscosity Test 2g samples taken, transferred to 400mL beaker, isopropanol 4mL allow complete wetting. Vigorous stirring was added 200mL of water, Continue stirring until completely homogeneous colloidal dispersion to form a milky viscous solution (viscosity of the solution compared with Guar gum, carob relatively large gum). will the solution was transferred to another 400mL 100mL beaker, heated on a water bath at about 10min, cooled to room temperature. The viscosity of the solution should be significantly Increased.

A.2.3 colloidal components A.2.3.1 Reagents and materials A.2.3.1.1 barium carbonate.

A.2.3.1.2 sulfuric acid solution. 694.

Methanol solution A.2.3.1.3. 2 3.

A.2.3.1.4 galactose and mannose standard samples.

A.2.3.1.5 eluent A. formic acid. methyl ethyl ketone. t-butanol. water = 15.30.40.15 (volume ratio).

A.2.3.1.6 eluent B. isopropanol. pyridine. acetic acid. water = 40.40.5.20 (volume ratio).

A.2.3.1.7 sprays. Weigh 1.23g and 1.66g fennel gum acid dissolved in 100mL ethanol.

A.2.3.2 instruments and equipment A.2.3.2.1 rotary evaporator.

A.2.3.2.2 TLC plate. Silica Gel G.

A.2.3.3 analysis step the 200mg sample and 20mL sulfuric acid solution was mixed cooking 3h. After cooling the excess of barium carbonate was added, stirring constantly until pH = 7, and filtered. The filtrate was placed on a rotary evaporator and evaporated at 30 °C ~ 50 °C or slurry in the crystallization to obtain residue, and the resulting solution was in 10mL methanol solution, i.e. the hydrolyzate solution.

Take two layer chromatography in the starting point of the line plus 1μL ~ 5μL of hydrolyzate solution, as well as galactose and mannose standard samples each 1μL ~ 10μL. Two chromatography plates are used to expand the agent A and the agent B. After the expansion, with sprays injection layer chromatography and for 10min at 100 °C. Comparative sample and standard sample spots stain, should galactose and mannose component.

A.2.4 microscopy

Iodine formulated into 0.5% after grinding through the sample, a sample of 1% aqueous solution of potassium iodide, placed on glass slides under a microscope.

Tara gum display round to pear shaped cells, the intracellular exhibited by yellow to brown (guar gum and tara gum cells are similar in shape, but Larger. Locust bean gum, compared

with long tubular cells, separated from each other or a little gap, easy to separate and tara gum).

A.3 Determination of residue on ignition
A.3.1 Analysis step Weigh a certain amount (so that the final residue on ignition can reach 20mg) of the specimen to the nearest 0.001g, is placed in advance constant quality crucible at 550 °C burning, until all residue and carbonized color is dark red. Cool in a desiccator and weighed. If not all at once carbonized, Available moist residue amount of hot water, the residue was stirred with a glass rod dispersion, dried in an oven, and then repeat the ignition. If you can not completely Carbonation, instead 15mL ethanol wet sample, repeat the above operation.

A.3.2 Calculation Results Burning residue mass fraction w_1 , according to equation (A.1) Calculated.

$m_1 - m_2$

$m \times 100\%$

Where.

Mass m_1 --- crucible plus residue, in grams (g);

m_2 --- crucible mass in grams (g);

M --- the quality of the sample, in grams (g).

A.4 Determination of acid-insoluble matter
A.4.1 Reagents and materials Sulfuric acid solution. 94.5% ~ 95.5%. Plus a certain amount of known concentration of sulfuric acid in sufficient water to give a final concentration in the above range.

A.4.2 Analysis step

Weigh 2g specimen to the nearest 0.001g, placed in 250mL beaker, add 150mL water, 1.5mL sulfuric acid solution. Cover with a watch glass Live beaker and placed on a steam bath heated 6h, with a stirring rod with a rubber head often rub over the inside of the beaker, and supplemented by the evaporation losses of water. Weigh a suitable acid aid 500mg, placed in the sample solution, with advance 105 °C ± 2 °C drying 1h of known weight and Containing asbestos pad Buchner filter crucible. Residue was washed several times with hot water, the crucible with its contents was at 105 °C ± 2 °C dried 3h, After cooling in a desiccator and weigh. Poor quality of the aid and the total mass of the crucible and the Canadian asbestos mat, namely the amount of acid insolubles. In terms of quality Volume fraction.

A.5 Determination of Protein
A.5.1 principle of the method Determination of total nitrogen mixture Kjeldahl method. That is, under conditions of a catalyst, with concentrated sulfuric acid digestion of the sample would have switched to organic nitrogen Into inorganic ammonium salts, and the ammonium salt under basic conditions into ammonia, with the steam distillate and absorption of excess acid, a base and then drops to a standard Fixed,

we can calculate the amount of nitrogen in the sample. Due to a relatively constant protein nitrogen content, the protein content can be calculated by nitrogen.

A.5.2 Reagents and materials A.5.2.1 potassium sulfate.

A.5.2.2 copper sulfate.

A.5.2.3 zinc particles.

A.5.2.4 sulfuric acid.

A.5.2.5 sodium hydroxide solution. 400g/L.

A.5.2.6 boric acid. 40g/L.

A.5.2.7 methyl red - methylene blue indicator solution.

A.5.2.8 sulfuric acid standard titration solution. $c(\text{H}_2\text{SO}_4) = 0.5\text{mol/L}$.

A.5.3 Instruments and Equipment Kjeldahl instrument by. 500mL Kjeldahl flask and distillation apparatus composed.

A.5.4 Analysis step

Weigh 1g specimen to the nearest 0.001g, into 500mL Kjeldahl flask, 10g potassium, 500mg copper sulfate and 20mL sulfuric acid, heated slowly, if foam generation during heating, the flask was tilted 45° , to facilitate the elimination of foam. Cook solution to the solution of Clear green or nearly colorless and can be maintained for at least 30min, cooling, water was added 150mL mix continues to cool. Carefully 100mL Sodium hydroxide solution was poured into the bottom of the flask, the following acid solution to form a single layer. Adding an appropriate amount of zinc particles. Now connect the flask was distilled Distillates means, as a general nitrogen determination distillation, the distillate was collected in a solution of boric acid containing 50mL 500mL receiving flask. Light distillation process Light swirl the flask, the contents were mixed, after two-thirds of the liquid to be collected in the receiving flask is, distillation was stopped. Add methyl red to the receiving flask - Asia Methylene blue indicator solution a few drops of sulfuric acid standard titration solution titration.

2g sugar while using the above operation blank test.

A.5.5 Calculation Results the protein mass fraction w_2 , according to equation (A.2) Calculated.

$1000 \times c \times M$

100% (A.2)

Wherein

5.7 --- conversion factor protein content and nitrogen content;