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

GB 7912-2010

Replacing GB 7912-1987

**Gardenia yellow of the national food safety standards of food
additives**

食品添加剂 栀子黄

(English Translation)

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Table of Contents

Foreword
1 Scope
2 Normative references
3 Formula and relative molecular mass
3.2 Relative molecular mass
4 Technical Requirements

Foreword

This standard replaces GB 7912-1987 "Food additives Gardenia yellow (powder, extract)."
this standard compared with GB 7912-1987, the main changes are as follows.

- Modify the color value, loss on drying, arsenic, lead indicators;
- Added Geniposide indicators;
- Cancel the heavy metals and residue on ignition requirements.

Appendix A of this standard is a normative appendix.

This standard replaces the standards previously issued as follows.

--GB 7912-1987.

National Food Safety Standard Food additives Gardenia yellow

1 Scope

This standard applies to the Rubiaceae Gardenia (*Gardenia jasminoides* Ellis) fruit as raw material, extraction, refining and Become available dextrin diluted powder, liquid extract or food additives gardenia yellow.

2 Normative references

The standard file referenced in the application of this standard is essential. For cited documents with dates, only the date of Version applies to this standard. For undated references, the latest edition (including any amendments) applies to this standard.

3 Formula and relative molecular mass

Formula 3.1

Crocin. $C_{44}H_{64}O_{24}$

Crocetin. $C_{20}H_{24}O_4$

3.2 Relative molecular mass

Crocin. 977.21 (according to 2007 international relative atomic mass) Crocetin. 328.35 (according to 2007 international relative atomic mass)

4 Technical Requirements

4.1

Sensory requirements. comply with Table 1.

Table 1 Sensory requirements

Project requires test methods Color Powder product was orange and yellow to orange, cinnamon extract the product was Color, liquid product was brown to orange Take appropriate sample is placed in a clean, dry white porcelain plate or burning Cup, under natural light, observe its color and texture status. State organization powders, or liquid extract

4.2

Physical indicators. to comply with Table 2.

Table 2. Physical and chemical indicators

project

index

Testing method

Extract powder, liquid Color value) 5440 (nmnmE cm $\pm \geq 10$ Appendix A A.3 Geniposide, w /% ≤ 1 (with the color value of 10 dollars for conversion) Appendix A A.4 Loss on drying, w /% ≤ 7 - GB 5009.3 direct drying Arsenic (As)/(mg/kg) ≤ 2 2 GB/T 5009.11 Lead (Pb)/(mg/kg) ≤ 3 3 GB 5009.12 Appendix A (Normative) Testing method A.1 General Provisions Unless otherwise indicated in the analysis using only recognized as analytical reagents and GB/T 6682-2008 specified in the water. In the analysis Standard titration solution, impurities measured by standard solution, preparations and products, did not indicate when the other requirements, according to GB/T 601, GB/T 602, the provisions of preparation GB/T 603's. This solution was used in the test does not indicate what is formulated with solvent, it refers to an aqueous solution.

A.2 Identification Test A.2.1 maximum absorption wavelength Take A.3.2 color value determination of gardenia yellow liquid sample using a spectrophotometer, a wavelength of 440nm should be in the vicinity of the maximum absorption peak.

A.2.2 color reaction 0.5 g of sample, add 2 mL of sulfuric acid, which slowly from deep blue to purple and finally to brown.

A.2.3 TLC

A.2.3.1 Test Method

Stationary phase micro-crystalline cellulose lamina, Method. Weigh 10 g microcrystalline cellulose SF 35 mL water was added to a suspension Turbid liquid, smooth and evenly coated on a glass plate of uniform thickness, coating thickness of 0.35 mm or less, at 60 °C ~ 80 °C, bake 20 min.

Isoamyl alcohol mobile phase. acetone. water = 5. 6. 5 (by volume).

A.2.3.2 Preparation of test solution spotting Weigh a certain amount of the sample, dubbed the concentration of 50g/L solution as spotting the test solution.

A.2.3.3 spotting

Dried microcrystalline cellulose TLC plate using capillary spotting. Distance from the lower end plate 2 cm, between points 1 cm, dot diameter of about 3 mm, drying with cold air when spotted.

A.2.3.4 expand and observation when spotted TLC plate into the expansion slot expansion, to be launched height of 15 cm, removed, air-dried. Observation should be two yellow Spot. Rf is approximately 0.6 crocin; Rf is about 0.9 crocetin.

A.3 Determination of Color Value A.3.1 Instruments and Equipment Spectrophotometer.

A.3.2 Analysis step

Weigh about 0.15g powder sample (accurate to 0.000 2 g) or Weigh about 1g extract or liquid sample (accurate to 0.000 2 g), Dissolved in water, transferred to a 100 mL volumetric flask, add water to volume, shake. Then draw 10 mL sample solution, transferred to 100 mL volumetric flask, add water to volume, shake. Take this sample was placed in a 1 cm cuvette with water blank control, with Measuring absorbance in a spectrophotometer (440nm ± 5nm) the maximum absorption wavelength range. (Absorbance should be controlled at 0.3 to 0.7 of Room otherwise adjust the concentration of the sample should be re-measured absorbance.) A.3.3 Calculation Results Color value according to the formula (A.1) Calculated.

1) 5440 ($x = \pm c$

AnmE cm (A.1)

Where.

) 5440 (nmnmE cm $\pm$ - sample concentration of 1%, with a 1 cm cuvette at (440nm $\pm$ 5nm) in the range of most Great absorption wavelength measured color value;

Absorbance of the sample solution A-- actually measured;

c-- concentration of the sample solution to be tested, in grams per milliliter (g/mL).

The results parallel arithmetic mean of the measurement results shall prevail. Twice in the same condition absolutely independent determination results the difference is not more than 5% of the arithmetic mean.

A.4 Determination Geniposide A.4.1 Reagents and materials

a) acetonitrile. chromatography.

b) Geniposide standard. the mass fraction of $\geq 99\%$.

A.4.2 Instruments and Equipment High performance liquid chromatograph. with UV detector (detection wavelength 238 nm).

A.4.3 reference chromatographic conditions

a) Column. ODS C18, 4.6mm x 25cm, particle size 5 μ m; or other equivalent column.

b) Mobile phase. acetonitrile. water = 15.85; the 150mL and 850mL acetonitrile HPLC grade water after mixing with 0.45 μ m filter After filtration and degassing ultrasonic standby.

c) Column temperature. 40 °C.

d) flow rate. 0.7 mL/min.

e) Injection volume. 10 μ L.

A.4.4 Analysis step

A.4.4.1 Preparation of standard curve Geniposide Weigh about 0.01g Geniposide standard (accurate to 0.0001g), with the mobile phase (aqueous acetonitrile) was dissolved and set the volume to 50mL, Obtain standard stock solution A. Draw 0.25mL, 0.75 mL, 1.25mL, 2.0mL, 2.5mL stock solution A, respectively, with the mobile phase (B Nitrile diluted aqueous solution) and set the volume to 50mL, to give 5 standard. In A.4.3 reference chromatographic conditions, the concentration gradient of standard samples Determination, the experiment was repeated twice, to obtain the average standard peak area. In standard peak area for the vertical axis, the standard Geniposide mass concentration (g/mL) Abscissa, the standard curve.

A.4.4.2 Preparation of sample solution Weigh the amount of sample (accurate to 0.0001g), phase (aqueous acetonitrile) were dissolved in mobile and set the volume to 25mL, the resulting solution 0.45 μ m membrane filter, the filtrate was set aside.