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

GB 1886.32-2015

Replacing GB 9993-2005

**National Food Safety Standard -- Food Additives -- Sorghum
pigment**

食品安全国家标准 食品添加剂 高粱红

(English Translation)

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Foreword

This standard replaces GB 9993-2005 "food additive Red Sorghum." this standard compared with GB 9993-2005, the main changes are as follows.

--- Standard name was changed to "national food safety standards for food additives Red Sorghum." National Food Safety Standard Red Sorghum Food Additives

1 Scope

This standard applies to dark purple or red-brown sorghum (*Sorghum Vulgare*pers) shells as raw material extraction with water or dilute aqueous ethanol After concentrated, drying food additive sorghum red.

2.1 Chemical name (main component)

a) 5,7,4'- trihydroxyflavone

b) 3,5,3', 4'- tetrahydroxy-flavone glucoside -7-

2.2 Formula (main component)

a) C₁₅H₁₀O₅

b) C₂₁H₂₀O₁₂

2.4 Relative molecular mass (the main component)

- a) 270.24 (according to 2007 international relative atomic mass)
- b) 464.38 (according to 2007 international relative atomic mass)

3.1 Sensory requirements

Sensory requirements shall comply with the requirements of Table 1.

Table 1 Sensory requirements

Project requires test methods Color status Reddish brown powder Take the right amount of sample is placed in a clean, dry white porcelain plate , Under natural light and observe the color status

3.2 Physical and Chemical Indicators

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

Table 2. Physical and chemical indicators

Item Index Test Method Color value (E1 m500nm $\pm$ 10nm) $\geq$ 25.0 Appendix A A.3 pH 7.5 $\pm$ 0.5 in Appendix A A.4 Loss on drying, w /% $\leq$ 7.0 A.5 in Appendix A Arsenic (As)/(mg/kg) $\leq$ 2.0 GB 5009.76 Lead (Pb)/(mg/kg) $\leq$ 3.0 GB 5009.75 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. test Used in the standard solution, standard solution for measuring impurities, formulations 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 solubility Dissolved in water and aqueous solution of ethanol, insoluble in petroleum ether and chloroform.

A.2.2 color

Reddish brown transparent solution, reddish brown clear solution is an alkaline aqueous solution of 0.1% aqueous solution at neutral.

A.2.3 color reaction Take a sample of 1% aqueous solution of a few drops on filter paper, dried and placed in ammonia vapor, the samples into orange, immediately set under UV light Observed, with yellow-green fluorescence.

A.2.4 absorption maxima Take 1g sample volume with water to 100mL, removed from 1mL, then to volume with water to 100mL, the solution at a wavelength of 500nm $\pm$ 10nm maximum absorption peak.

A.2.5 paper chromatography A.2.5.1 instruments and equipment A.2.5.1.1 chromatography tank.

A.2.5.1.2 capillaries.

A.2.5.1.3 filter. 15cm x 7cm.

A.2.5.2 Reagents and materials A.2.5.2.1 butanol.

A.2.5.2.2 glacial acetic acid.

A.2.5.2.3 developing solvent. n-butanol. acetic acid. water = 4:1:5 (volume ratio). The three were added to a separatory funnel, shaken well, quiet Set more than 24h. The upper layer as a developing agent. The lower aqueous layer was put into a small beaker placed chromatography tank as a balanced solution.

A.2.5.3 analysis step the developing agent is added to the upper large dish, and expand the underlayer water was added to a small beaker, both flat on the bottom of the chromatography tank.

Cover, so that the cylinder space chromatography as developing solvent vapors fully saturated.

1.5cm away from the filter paper at one end with a fine light pencil to draw a line, a sample of 1% aqueous solution of red sorghum in the line at the point, the spot diameter does not exceed Over 2mm, air-dried, spotted repeated three times. Add chromatography cylinder at a temperature of $16^{\circ}\text{C} \pm 1^{\circ}\text{C}$ condition upward swing. Be mobile phase solvent when two-thirds of filter paper, remove the filter paper with a pencil to draw solvent front and the spot position shapes.

A.2.5.4 Calculation Results R_f first component (the R_{f1}) and the second component of R_f (in which R_{f2} is), respectively, according to formula (A.1) and formula (A.2) Calculated.

$R_{f1} =$

$R_{f2} =$

Where.

b_1 --- the origin to the center point of the first component of the distance in centimeters (cm);

A --- the origin to the solvent front distance in centimeters (cm & lt);

b_2 --- the origin to the center point of the second component of the distance in centimeters (cm).

A.2.5.5 R_f Results

R_{f1} shall be 0.9 ± 0.05 ;

Rf2 should be 0.5 ± 0.05 .

A.3 color value (E1 m500nm ± 10 nm) Determination A.3.1 Method summary by measuring the absorbance of the sample solution at a specific wavelength to indicate the purity of the sample.

A.3.2 Instruments and Equipment Spectrophotometer.

A.3.3 Analysis step

Accurately weighed sample 1g (accurate to 0.0002g), dissolved in water, placed in 100mL flask to volume, shake; removed from 1mL, washed with water to 100mL flask, shake. Of this solution into 1cm cuvette, at a wavelength of 500nm ± 10 nm at Absorbance was measured. The concentration of the sample solution should be measured absorbance in the range of 0.2 to 0.7 for the best, when the absorbance of the sample solution is greater than 0.7, the solution was diluted with water to the appropriate concentration and determination.

A.3.4 Calculation Results the color value of E1 m (500nm ± 10 nm), according to equation (A.3) Calculated.

E1 m (500nm ± 10 nm) = $A \times n \times m \times (A.3)$ where.

A --- diluted sample after the absorbance of the solution;

n --- dilution;

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

The results parallel arithmetic mean of the measurement results shall prevail. Twice under the same condition of independent determination results obtained absolute difference not more than 2% of the arithmetic mean.

A.4 pH measurement

Weigh sorghum red pigment sample 1.0g, with two dissolved in water, placed in 100mL flask, with two water volume, measured with pH Given pH.

A.5 Determination of loss on drying A.5.1 Method summary at a predetermined temperature, the sample is dried to constant weight, then reduce the quality of the measurement sample.

A.5.2 Instruments and Equipment Weighing bottle, diameter 5cm, height 3cm.

A.5.3 Analysis step

Weigh the sample 2g (accurate to 0.0002g), has been placed at $105^\circ\text{C} \pm 2^\circ\text{C}$ drying to constant weight weighing bottle was placed $105^\circ\text{C} \pm 2^\circ\text{C}$ Oven drying to constant weight.

A.5.4 Calculation Results Loss on drying mass fraction w1, according to equation (A.4) Calculated.