



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

GB 1886.115-2015

National Food Safety Standard -- Food Additives -- Red beans

食品安全国家标准 食品添加剂 黑豆红

(English Translation)

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Table of Contents

- 1 Scope
- 2 Chemical name, molecular formula, molecular mass and structural formula
 - 2.1 Chemical Name
 - 2.3 Formula
 - 2.4 Relative molecular mass
- 3 Technical requirements
 - 3.1 Sensory requirements
 - 3.2 Physical and Chemical Indicators

1 Scope

This standard applies to beans (*Glycine soja* Sieb. et Zucc.) seed coat as raw material, extracted with dilute ethanol extract, concentrated by Shrinking, drying food additive red beans.

2.1 Chemical Name

Cyanidin -3- galactosidase Formula 2.2 $C_{21}H_{21}O_{11}$

2.4 Relative molecular mass

449.38 (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 purple State powder Take appropriate sample in a clean, dry colorimetric Tube, under natural light, visually observed with color Chak and state

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 pH 3.5 ~ 4.5 in Appendix A A.3 Absorbance $E_{1\text{ m}}(525 \pm 5)\text{ nm} \geq 20.0$ Appendix A A.4 Loss on drying, w /% ≤ 5.0 A.5 in Appendix A Residue on ignition, w

/% ≤ 11.0 A.6 in Appendix A Lead (Pb)/(mg/kg) ≤ 3.0 GB 5009.75 Arsenic (As)/(mg/kg) ≤ 2.0 GB 5009.76 Note. The red beans commercialization of products conforming to this standard shall be red beans as raw material, add edible dextrin, antioxidants and other accessories made of.

Appendix A

Testing method

A.1 General Provisions this standard reagents and water, did not indicate when the other requirements, refer to analytical reagent and third grade water GB/T 6682 regulations.

Standard solutions used in the tests, impurity standard solution, preparations and products, did not indicate when the other requirements, according to GB/T 601, GB/T 602 and the provisions of GB/T 603 formulation. 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 A.2.1.1 soluble in water and ethanol, transparent and no precipitation. Insoluble in non-polar solvent ether, acetone and the like.

A.2.1.2 When an aqueous solution of neutral purple clear solution; when the acidic aqueous solution is a transparent cherry red; blue-violet alkaline aqueous solution Color transparent solution.

A.2.2 color reaction A.2.2.1 Take a little water sample drop on filter paper, placed in dry ammonia vapor, the sample into the blue. Immediately placed under ultraviolet light Concept Police, with light blue fluorescence.

A.2.2.2 Take a little water sample drop on filter paper, dry solution of concentrated sulfuric acid was spotted at 1 drop of orange-yellow spots.

A.2.2.3 The sample was dissolved in 95% ethanol, and then taken in a test tube 1mL, plus magnesium, plus the number of concentrated hydrochloric acid drops immediately visible by the red liquid Faded pink.

A.2.3 absorption maxima A.2.3.1 Reagents and materials A.2.3.1.1 ethanol.

A.2.3.1.2 hydrochloric acid.

A.2.3.1.3 Ethanol - hydrochloric acid solution. volume fraction of 40% ethanol solution, concentrated hydrochloric acid adjusted to pH 3.0.

A.2.3.2 analysis step Take 0.15g sample with ethanol - hydrochloric acid solution volume to 100mL, which take 10mL, then ethanol - hydrochloric acid solution volume to 100mL, the solution in the absorption peak wavelength at 525nm ± 5nm.

A.2.4 paper chromatography A.2.4.1 instruments and equipment A.2.4.1.1 chromatography tank.

A.2.4.1.2 capillaries.

A.2.4.1.3 filter. 15cm x 7cm.

A.2.4.2 Reagents and materials A.2.4.2.1 butanol.

A.2.4.2.2 glacial acetic acid.

A.2.4.2.3 developing solvent. n-butanol. acetic acid. water = 4.1.2 (volume ratio).

A.2.4.3 analysis step the developer added to the dish, which is placed in chromatography tank. Chromatography tank to make room for the agent fully saturated steam.

At a distance of about 1.5cm at the thin end of the filter paper pencil scratching a line, at this point the line of red pigment black beans 1% ethanol solution of the sample 5 μ L ~ 10 μ L, spot diameter is not more than 2mm, and air dried. Add chromatography cylinder at a temperature of 16 °C $\pm$ 2 °C condition upward swing. Flow to be compatible Agent to two-thirds of the filter paper, remove the filter paper with a pencil to draw solvent front and the spot position, shape.

A.2.4.4 Calculation Results R_f R_f , according to equation (A.1) Calculated.

Where.

b --- the origin to the center of the spot component distance in centimeters (cm);

A --- the origin to the solvent front distance in centimeters (cm).

Results. $R_f = 0.6 \pm 0.05$.

The results parallel arithmetic mean of the measurement results shall prevail.

A.3 pH measurement

A.3.1 Instruments and Equipment PH meter.

A.3.2 Analysis step

The sample was dubbed in 1% aqueous solution, with a pH meter.

The results parallel arithmetic mean of the measurement results shall prevail.

A.4 Determination of absorbance A.4.1 Instruments and Equipment Spectrophotometer.

A.4.2 Reagents and materials A.4.2.1 ethanol.

A.4.2.2 hydrochloric acid.

A.4.2.3 Ethanol - hydrochloric acid solution. volume fraction of 40% ethanol solution, concentrated hydrochloric acid adjusted to pH 3.0.

A.4.3 Analysis step

Weigh the sample 0.15g (accurate to 0.0001g), with ethanol - hydrochloric acid solution

volume to 100mL. Reap 10mL, followed by ethanol - salt Acid solution volume to 100mL. Remove the dilution in 1cm cuvette using a spectrophotometer at a wavelength of $525\text{nm} \pm 5\text{nm}$ Department to B Alcohol - hydrochloric acid solution as the reference solution, measure the absorbance ($E1\text{ m } (525 \pm 5) \text{ nm}$).

A.4.4 Calculation Results Absorbance $E1\text{ m } (525 \pm 5) \text{ nm}$, according to equation (A.2) Calculated.

$E1\text{ m } (525 \pm 5) \text{ nm} =$

Where.

A --- absorbance;

f --- dilution factor;

M1 --- the quality of the sample, in grams (g);

100 --- conversion factor.

The results parallel arithmetic mean of the measurement results shall prevail.

A.5 Determination of loss on drying A.5.1 Instruments and Equipment A.5.1.1 weighing bottle.

A.5.1.2 oven.

A.5.2 Analysis step

Weigh the sample 1g (accurate to 0.002g), constant weight weighing bottle is placed at $105^\circ\text{C} \pm 1^\circ\text{C}$ oven for about 4h, cooling, weighing, to Constant weight.

A.5.3 Calculation Results Loss on drying of the sample mass fraction $w1$, according to equation (A.3) Calculated.

$m2-m3$

100% (A.3)

Where.

$m2$ --- weighing bottle plus the quality of the sample, in grams (g);

$m3$ --- dried weighing bottle plus the quality of the sample, in grams (g);

$m4$ --- sample mass, in grams (g).

The results parallel arithmetic mean of the measurement results shall prevail.

A.6 Determination of residue on ignition A.6.1 Instruments and Equipment A.6.1.1 crucible.

A.6.1.2 high-temperature furnace.

A.6.2 Analysis step