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

GB 1886.61-2015

**National Food Safety Standard -- Food Additives -- Saffron
yellow**

食品安全国家标准 食品添加剂 红花黄

(English Translation)

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1 Scope

This standard applies to food to Compositae saffron (*Carthamus tinctorius* L.) Petals as raw material, water extraction, refining Additives saffron yellow.

2 Molecular formula, relative molecular mass and structural formula

Formula 2.1

Safflower Flavin A. $C_{27}H_{32}O_{16}$ Safflower Flavin B. $C_{48}H_{54}O_{27}$

2.3 Relative molecular mass

Safflower Flavin A. 612.5 (according to 2011 international relative atomic mass) Safflower Flavin B. 1062 (according to 2011 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 Yellow to dark brown color the state of powder, extract, liquid
Take the right amount of sample is placed in white porcelain plate, observe its color and status in natural light

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

project

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Extract powder, liquid Testing method the color value of E1 m (400 ~ 408) nm conform claimed in Appendix A A.3 Loss on drying, w /% ≤ 10 - GB 5009.3 direct drying Total arsenic (As)/(mg/kg) ≤ 1.0 GB 5009.11 Lead (Pb)/(mg/kg) ≤ 5.0 GB 5009.75 Note. The commercialization of saffron yellow product shall comply with the standards of saffron yellow as raw material, add edible dextrin and other food materials and manufactured.

Appendix A

Testing method

A.1 General Provisions Unless otherwise specified in this standard, the use of reagents were of analytical grade purity, the standard titration solution, impurity measurement standard solution preparation and products, should be GB/T 601, GB/T 602 and GB/T 603 provisions of preparation, the test water should comply with GB/T 6682 in three water Provisions. 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 Test Soluble in water, slightly soluble in ethanol, almost insoluble in ether.

A.2.2 absorption maxima A.2.2.1 Reagents and materials Citric acid - disodium hydrogen phosphate buffer solution (pH5.0). Weigh 21g of citric acid ($C_6H_8O_7 \cdot H_2O$), dissolved in 1000mL of water, this is the solution A. Weigh 71.6g of disodium hydrogen phosphate ($Na_2HPO_4 \cdot 12H_2O$), was dissolved in 1000mL of water, to this solution B. The solution A and B were mixed solution (97 103). If the mixture is not pH 5.0, then adjusted to pH 5.0 with solution A or solution B.

A.2.2.2 Determination Weigh quality equivalent to 0.1g, color value for the sample of 10, with citric acid - is dissolved and diluted to the disodium hydrogen phosphate buffer solution (pH5.0) 100mL, the sample solution in the 400nm ~ 408nm absorption peak.

A.2.3 color reaction Was added sodium hydroxide solution (40g/L) in a sample solution (A.2.2.2), and the solution was made basic color of the sample solution turns orange.

A.2.4 TLC

Weigh quality equivalent to 1g, color value of the specimen 10, dissolved in 1mL of water was added 10mL of methanol, mix, about 3000r/min Centrifugation 10min, the supernatant of the sample solution. Draw the sample solution 20μL, microcrystalline cellulose spotted on TLC plates (previously at 60 °C ~ Activation at 80 °C 20min), the dried, placed in a developing solvent (n-butanol. acetic acid. water = 4.1.2) expand. When the solvent front rises to Time from the origin of about 10cm, remove the thin, dry air. On at least two thin yellow spots, R_f value should be between 0.2 to 0.5.

A.3 Determination of the color value of E1 m (400 ~ 408) nm of A.3.1 Instruments and

Equipment Spectrophotometer.

A.3.2 Reagents and materials Citric acid - disodium hydrogen phosphate buffer solution (pH5.0). Weigh 21g of citric acid ($\text{C}_6\text{H}_8\text{O}_7 \cdot \text{H}_2\text{O}$), dissolved in 1000mL of water, this is the solution A. Weigh 71.6g of disodium hydrogen phosphate ($\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$), was dissolved in 1000mL of water, to this solution B. The solution A and B were mixed solution (97 103). If the mixture is not pH 5.0, then adjusted to pH 5.0 with solution A or solution B.

A.3.3 Analysis step

Weigh a sample of about 0.1g, accurate to 0.0002g, with citric acid - dissolved disodium hydrogen phosphate buffer solution (pH5.0), set the volume to 1000mL, shake, if necessary, filtered. Take this sample was placed in a 1cm cuvette, citric acid - disodium hydrogen phosphate buffer solution (PH 5.0) as the control, using a spectrophotometer at maximum absorption wavelength within 400nm ~ 408nm absorbance was measured (absorbance should Control between 0.2 and 0.8, otherwise the sample concentration should be adjusted and re-measuring the absorbance).

A.3.4 Calculation Results the color value of E1 m 400 ~ 408 () nm, according to formula (A.1) Calculated.

$E1\text{ m } (400 \sim 408)\text{ nm} = c \times 100$ (A.1) where.

A --- measured absorbance of the sample solution;

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

100 --- concentration conversion factor.

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 5% of the arithmetic mean.