NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB 1886.364-2022

National food safety standard - Food additive - Cowberry red

Issued on: June 30, 2022 **Implemented on: December 30, 2022**

Issued by: NHC; SAMR

Table of Contents

1 Scope

This standard applies to the food additive cowberry red obtained from using the fruit of cowberry (also known as Vaccinium vitis-idaea Linn.) of Vaccinium spp. of Ericaceae as raw materials, extracting with water and (or) edible ethanol, and then purifying/refining, concentrating and drying.

2 Chemical name, molecular formula, structural formula, and

the relative molecular mass

2.1 Chemical name and the molecular formula (main ingredients)

Cyanidin glucoside. C21H21O11 Cyanidin arabinoside. C20H19O10 Cyanidin 3-O-galactoside. C21H21O11

2.4 Relative molecular mass (according to 2018 International Relative Atomic

Mass)

Cyanidin glucoside Cyanidin arabinoside Cyanidin 3-O-galactoside

Appendix A Testing method

A.1 Warning Some of the reagents used in the test methods of this standard are toxic or corrosive, so appropriate safety and protective measures shall be taken during operation.

A.2 General provisions Unless other requirements are specified, the reagents and water used in this standard refer to analytical reagents and grade III water specified in GB/T 6682.The standard solutions, preparations, and products used in the test shall be prepared in accordance with the provisions of GB/T 601, GB/T 602, and GB/T 603 unless other requirements are specified. The solution used in the test refers to the aqueous solution if

the solvent is not specified.

A.3 Identification test A.3.1 Reagents and materials A.3.1.1 Ethyl acetate.

A.3.1.2 N-hexane A.3.1.3 Acetonitrile.

A.3.1.4 Petroleum ether.

A.3.1.5 Anhydrous ethanol.

A.3.1.6 Acetone.

A.3.1.7 Hydrochloric acid.

A.3.1.8 Sodium hydroxide.

A.3.1.9 Citric acid.

A.3.1.10 Disodium hydrogen phosphate.

A.3.2 Instruments and equipment A.3.2.1 Analytical balance (0.01 g).

A.3.2.2 Spectrophotometer.

A.3.3 Analysis steps A.3.3.1 Solubility Weigh 1 g of the sample (the weight shall be accurate to 0.01 g), place it in a certain amount of solvent at 25 °C+/-2 °C, and shake it vigorously for 30 s every 5 minutes;

observe the dissolution status within 30 minutes, if solute particles or droplets cannot be seen, it can be considered that the sample is completely dissolved. Soluble means that 1 g of the sample can be dissolved in 10 mL to 30 mL solvent; slightly soluble means that 1 g of the sample can be dissolved in 100 mL to 1000 mL solvent; almost insoluble or insoluble means that 1 g of the sample cannot be completely dissolved in 10,000 mL solvent. The sample shall be soluble in water, acidic ethanol (pH< 4) and anhydrous ethanol, slightly soluble in acetone, and insoluble in petroleum ether.

A.3.3.2 Acid and base reaction Take the aqueous pigment solution with the concentration of 1% to prepare the solution of different pH with 0.1 mol/L hydrochloric acid and 0.1 mol/L sodium hydroxide, respectively. The hue of the solution varies with pH. It is red under acidic conditions and blue-cyan under alkaline conditions.

A.3.3.3 Maximum absorption peak Weigh 0.1 g sample (the weight shall be accurate to 0.01 g), dissolve it with pH 3 citric acid-disodium hydrogen phosphate buffer solution, and dilute to 100 mL; the sample solution has the maximum absorption peak within the range of 505 nm~525 nm.

A.4 Determination of pH A.4.1 Instruments and equipment A.4.1.1 Analytical balance (0.01 g).

A.4.1.2 Acidity meter.

A.4.2 Analysis steps Weigh 1.0 g of the sample (the weight shall be accurate to 0.01 g), dissolve it in water;

place it in a 100 mL volumetric flask, make up to volume with water, and measure the pH with an acidity meter. The result is rounded to one decimal place.

A.5 Determination of the color value A.5.1 Principles of the method