CCS X 40

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 1903.24-2016

Food Safety National Standard Food Nutrition Enhancer -- Vitamin C Phosphate Magnesium

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Table of Contents

1 Scope

This standard applies to vitamin C, and magnesium oxide after phosphorylation reaction, the resulting food fortifier vitamin C magnesium phosphate.

2.1 Chemical Name

L- ascorbic acid-2-phosphate magnesium salt Formula 2.2 C12H12O18P2Mg3 . 10H2O

2.4 Molecular Weight

759.22 (according to 2007 international relative atomic mass)

3.1 Sensory requirements

Sensory requirements shall comply with the requirements in Table 1.

Table 1 Sensory requirements

Project requires test methods White or slightly yellow color State of a powder or granules Proper amount of sample is placed in clean, dry white porcelain plate, since in Observe the natural color and light 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 Vitamin C magnesium phosphate content, w /% >= 95.0 Appendix

A A.3 Water, w /% <= 29.0 GB 5009.3 Karl Fischer method pH 7.0 ~ 8.5 GB/T 9724 Specific rotation alpham (20 degrees C, D)/[(°) . m2 . kg-1] 20.0 ~ 26.5 GB/T 613 Free phosphate, w /% <= 1.0 GB/T 9727 Chloride (based on Cl), w /% <= 0.35 Appendix A A.4 Heavy Metals (as Pb)/(mg/kg) <= 10 GB 5009.74 Arsenic (As)/(mg/kg) <= 1.0 GB 5009.76

Appendix A Testing method

A.1 General Provisions Unless otherwise specified in this standard, it should be of analytical grade purity of the reagents, the titration standard solution, the determination of impurities with a standard solution, the formulation And products shall GB/T 601, GB/T 602, a predetermined preparation GB/T 603, the test water shall meet the GB/T 6682 in three water gauge set. The test does not indicate when the solution which is formulated with a solvent, refer to the aqueous solution.

A.2 Identification Test A.2.1 Reagents and materials Hydrochloric acid solution A.2.1.1. c (HCl) = 0.1mol/L.

Sodium hydroxide solution A.2.1.2. c (NaOH) = 0.1mol/L.

A.2.1.3 magnesium solution. Weigh 50mg magnesium, sodium hydroxide solution (2mol/L), dissolved constant volume to 100mL.

A.2.1.4 ferric chloride solution. Weigh 10g of ferric chloride, hydrochloric acid was added to the solution, after dissolution the volume to 100mL.

A.2.2 identification method A.2.2.1 Weigh about 50mg sample was added 5mL hydrochloric acid solution, together with 2 drops of ferric chloride solution, the sample solution should be significantly burgundy.

A.2.2.2 take appropriate sample prepared containing hydrochloric acid solution was added 20ug per ml sample, measured using a spectrophotometer, the solution Absorption maximum at 237nm; Another sample amount, a sodium hydroxide solution was added 20ug per ml of solution containing the sample is made using a spectrophotometer Photometer, and the solution has a maximum absorption peak at 261nm.

A.2.2.3 weighed sample of about 50mg, about adding water dubbed 0.1mol/L of sample solution, sodium hydroxide solution was adjusted to pH 10, plus

2 drops of the magnesium solution, a blue precipitate should appear.

Determination of the content of vitamin C magnesium phosphate A.3 A.3.1 HPLC A.3.1.1 Reagents and materials A.3.1.1.1 sodium acetate.

A.3.1.1.2 disodium edetate.

A.3.1.1.3 n-hexylamine.

A.3.1.1.4 glacial acetic acid.

A.3.1.1.5 methanol solution. 298.

A.3.1.1.6 vitamin C magnesium phosphate Reference Sample. Purity >=98%.

A.3.1.2 instruments and equipment A.3.1.2.1 HPLC. with UV detector.

A.3.1.2.2 Column. octadecyl silane bonded silica gel as column filler stainless steel (dia. 4.6mm x 15cm, the filler particle size 3 m)

Or other equivalent column.

A.3.1.3 Reference chromatographic conditions A.3.1.3.1 Mobile phase. weigh 6.56g of sodium acetate, 0.0375 g of disodium edetate and 0.37mL n-hexylamine, placed 1000mL Volumetric flask, dissolve in methanol solution volume. Glacial acetic acid and then the solution was adjusted to pH 5.0.

A.3.1.3.2 flow rate. 0.8mL/min.

A.3.1.3.3 Injection volume. 5uL.

A.3.1.3.4 Detection wavelength.200nm.

A.3.1.4 analysis step Preparation of sample solution A.3.1.4.1 Weigh 0.6 g of (accurate to 0.0001g) sample was dissolved in mobile phase, transferred to 200mL volumetric flask, dilute to the mark. spectrum analysis Before with 0.45um filter membrane, and the filtrate set aside.

Preparation of the control solution A.3.1.4.2 Weigh 0.6 g of (accurate to 0.0001g) vitamin C magnesium phosphate reference substance, dissolved in mobile phase, transferred to 200mL volumetric flask, To the mark. Chromatography prior to analysis by 0.45um filter membrane, and the filtrate set aside.

A.3.1.4.3 Determination In reference A.3.1.3 chromatographic conditions, draw a sample solution and control solution were injected into the chromatograph, record the dimensions of the resulting sample solution Vitamin C magnesium phosphate and peak area of control solution of vitamin C magnesium phosphate peak area.

A.3.1.5 calculation results Content of vitamin C magnesium phosphate content w1, calculated according to formula (A.1).

w1 = Aims Asmi x 100% (A.1)

Where.

--- AI in the sample solution of vitamin C magnesium phosphate peak area;

MS --- mass control solution of vitamin C magnesium phosphate, in grams (G);

--- AS control solution of vitamin C magnesium phosphate peak area;

--- mass mi The sample solution of vitamin C magnesium phosphate, in grams (g).

The test result to the arithmetic mean of replicates results.

A.3.2 UV spectrophotometry A.3.2.1 Reagents and materials Hydrochloric acid solution. c (HCl) = 0.1mol/L.

A.3.2.2 instruments and equipment UV spectrophotometer.

A.3.2.3 analysis step Weigh about 0.1g sample, accurate to 0.0002g, dissolved hydrochloric acid solution, a 100mL volumetric flask, dilute to volume, shake uniform. 1.0mL taken from the amount of the solution was placed in a 50mL volumetric flask, dilute hydrochloric acid solution was added to volume, shake. UV spectrophotometer Meter absorbance measured at 237nm. At the same time a blank test.

A.3.2.4 calculation results Content of vitamin C magnesium phosphate content w2, calculated according to equation (A.2).

w2 = A x 5000 0.7627 x m1 x 324 x 100% (A.2)

Where.

A --- absorbance of the sample solution;

--- sample dilution multiples of 5000;

--- 0.7627 molar mass conversion factor;

M1 --- mass of sample, grams (G);

--- 324 percent absorption coefficient of the sample liquid.

The test result to the arithmetic mean of replicates results.

A.4 Determination of chloride (Cl) of A.4.1 Reagents and materials A.4.1.1 nitric acid solution. 14.

A.4.1.2 silver nitrate solution. 17g/L.

A.4.1.3 sodium standard solution. Weigh 1.65g of sodium chloride, was placed in a 1000mL volumetric flask, add water to dissolve and dilute to volume, Shake (equivalent to 1 mL of Cl 1mg).

A.4.2 Instruments and Equipment 50mL Nessler colorimetric tube.

A.4.3 Analysis step Preparation of sample solution A.4.3.1 Weigh 1g sample was placed in a Nessler tube, dissolved in water to 25mL, 10mL plus nitric acid solution, add water to a volume of about 40mL, Shake well.

Preparation of the control solution A.4.3.2 3.5mL standard amount of sodium chloride solution was placed in a Nessler tube, dissolved in water to 25mL, 10mL plus nitric acid solution, add water To a volume of about 40mL, shake.