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

GB 15570-2010

Replacing GB 15570-1995

**National food safety standards -- Food additives -- Folic acid
(English Translation)**

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Foreword

This standard replaces GB 15570-1995 "Food Additives folic acid." this standard compared with GB 15570-1995, the main changes are as follows.

- Indicators of folic acid by the mass fraction of 95% to 102% revised to 96% to 102%;
- Residue on ignition $\leq 0.1\%$ by the index revised to $\leq 0.2\%$;
- Determination of folic acid canceled colorimetric spectroscopy, quantitative methods HPLC internal standard method was modified by the external standard method;
- Improve the moisture determination method.

Appendix A of this standard is a normative appendix, Appendix B is an informative annex.

This standard replaces the standards previously issued as follows.

--GB 15570-1995.

National Food Safety Standard Folic acid food additives

1 Scope

This standard applies to chemical synthesis of folic acid food additives.

2 Normative references

The standard file referenced in the application of this standard is essential. For dated references, only the date of the note Stage version applies to this standard. For undated references, the latest edition (including any amendments) applies this standard.

3.1 Chemical Name

N - {-(2- amino-1,4-dihydro-4-oxo-6-pteridiny) methylamino] benzoyl} -L- glutamic acid
Formula 3.2 C₁₉H₁₉N₇O₆

3.4 Relative molecular mass

441.40 (according to 2007 international relative atomic mass)

4 Technical Requirements

4.1

Sensory requirements. comply with Table 1.

Table 1 Sensory requirements

Project requires test methods Yellow or orange color take appropriate sample is placed in a clean, dry white porcelain dish, natural Light, observe its color and texture. Organizational status crystalline powder

4.2

Physical indicators. to comply with Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method Folic acid (C₁₉H₁₉N₇O₆, dry basis), w /% 96.0 ~ 102.0 Appendix A A.4 Water, w /% ≤ 8.5 A.5 in Appendix A Residue on ignition, w /% ≤ 0.2 A.6 in Appendix A Heavy metals (Pb)/(mg/kg) ≤ 10 Appendix A A.7 Arsenic (As)/(mg/kg) ≤ 3 GB/T 5009.76 Appendix A (Informative) Testing method A.1 Safety Tips Reagents The standard test methods used for toxic or corrosive, according to the relevant provisions of the operation, the operator would like to be careful Shen. If splashed on the skin should immediately wash with water, severe cases should be treated immediately. When using a volatile acid, to enter in the hood Row.

A.2 General Provisions this standard reagents and water, did not indicate when the other requirements, refer to analytically pure reagents and GB/T 6682-2008 in Regulation Given three water; test the standard titration solution and other required solution, when it is not specified, according to GB/T 601, GB/T 602, GB/T 603 provisions formulated.

A.3 Identification Test A.3.1 Reagents and materials Sodium hydroxide solution. c (NaOH) = 0.1 mol/L.

A.3.2 Instruments and Equipment UV spectrophotometer, with a 1 cm absorption cell.

A.3.3 UV absorption test Weigh laboratory sample, add sodium hydroxide solution produced per 1 mL containing 10 μg laboratory sample solution by UV spectrophotometry

Meter measured at $256\text{ nm} \pm 2\text{ nm}$, $283\text{ nm} \pm 2\text{ nm}$, $365\text{ nm} \pm 4\text{ nm}$ wavelength of maximum absorption at 256 nm and 365 nm wavelength absorbance ratio should be 2.8 to 3.0.

A.4 Determination of folic acid A.4.1 Reagents and materials A.4.1.1 Methanol. HPLC grade.

A.4.1.2 potassium dihydrogen phosphate.

A.4.1.3 potassium hydroxide solution. $c(\text{KOH}) = 0.1\text{ mol/L}$.

A.4.1.4 ammonia solution. 0.5 -> 100.

A.4.1.5 folic acid reference substance.

A.4.2 Instruments and Equipment High performance liquid chromatography.

A.4.3 Chromatography conditions Recommended chromatographic columns and typical operating conditions are shown in Table A.1, folic acid typical HPLC diagram in Appendix B, other You can achieve the same degree of separation and efficiency of the column and chromatographic conditions can be used.

Table A.1 column chromatography and typical operating conditions

Column length 25cm, column diameter 4.6mm, octadecyl silane bonded silica gel column.

The mobile phase with 70 mL of potassium dihydrogen phosphate 6.8g potassium hydroxide solution, diluted with water to 850 mL, and the pH adjusted to 6.3 ± 0.1 , add 80 mL of methanol, diluted with water to 1000 mL of solution.

A flow rate of 1mL/min.

Detection wavelength 254 nm.

The column temperature was $30\text{ }^{\circ}\text{C}$, control accuracy $\pm 1\text{ }^{\circ}\text{C}$.

A.4.4 Analysis step

A.4.4.1 reference solution.

Weigh about 10 mg of folic acid reference substance, to the nearest 0.02 mg, set 50 mL volumetric flask, add 30 mL aqueous ammonia solution to dissolve After diluted with water to the mark.

A.4.4.2 laboratory sample solution.

Weigh about 10 mg laboratory samples, accurate to 0.02 mg, set 50 mL volumetric flask, add 30 mL aqueous ammonia solution to dissolve After diluted with water to the mark.

A.4.4.3 system suitability test Number of theoretical plates folic acid peak calculation should not be less than 2000, folic acid peak and the adjacent impurity peak separation should be

greater than 1.5.

A.4.4.4 Determination

Table A.1 column chromatography and typical operating conditions, the precise amount of 10 μ L laboratory sample solution into the liquid chromatograph, record

Record the chromatograms; the other to take folic acid reference solution, the same method.

A.4.5 Calculation Results Folic acid ($C_{19}H_{19}N_7O_6$ to count, dry basis) of the mass fraction in 1w and its value is expressed in%, according to equation (A.1) count Operator.

twenty three

100%

A m ww

A mw

Where. m - injection volume of laboratory sample values, expressed in milligrams (mg);

1m - injection volume of folic acid reference value, expressed in milligrams (mg);

2w - Folic acid reference substance (in terms $C_{19}H_{19}N_7O_6$, wet basis) of the mass fraction of the value, expressed in%;

3w - Experimental determination of moisture content of products sample mass fraction press A.5 value, expressed in%;

1A - Numerical laboratory sample solution folic acid peak area;

2A - folic acid reference solution peak area values.

Take two parallel determination results of the arithmetic average of the measurement results, the relative deviation of two parallel determination results is not more than 2.0%.

A.5 Determination of Moisture A.5.1 Reagents and materials A.5.1.1 Fischer's test solution.

A.5.1.2 anhydrous methanol.

A.5.2 Instruments and Equipment Fischer's moisture meter.

A.5.3 Analysis step

Press the "People's Republic of China Pharmacopoeia" 2005 edition two Appendix M VIII determination of moisture content determination A first method. It weighs about 0.1 g Laboratory samples, accurate to 0.0002 g, solvent is anhydrous methanol directly measured with a moisture meter, or dry laboratory sample set the dry glass bottle with stopper, add 25mL ~ 30mL of anhydrous methanol continuously shaken (or stirred) under the test solution with Fischer's titration to dissolve Liquid from light yellow to reddish brown,