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

GB 1886.82-2015

**National food safety standard -- Food nutrition fortifier --
Disodium 5-uridine**

食品安全国家标准 食品营养强化剂 5'-尿苷酸二钠

(English Translation)

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1 Scope

This standard applies to food fortifier Disodium 5'-uridine.

2 Molecular formula, relative molecular mass and structural formula

Formula 2.1

C₉H₁₁N₂Na₂O₉P

2.3 Relative molecular mass

368.14 (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 Colorless to white color Smell odor specificity State crystal or crystalline powder Take the right amount of sample is placed in a clean, dry white porcelain plate, observe its color under natural light and status, olfactory odor

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 Disodium 5'-uridine (C₉H₁₁N₂Na₂O₉P) content (dry basis), w /%
97.0 ~ 102.0 Appendix A A.3 pH 7.0 ~ 8.5 GB/T 9724a Water, w /% ≤ 26.0 GB/T 6283b
Heavy metals (Pb)/(mg/kg) ≤ 20.0 GB 5009.74 Arsenic (As)/(mg/kg) ≤ 3.0 GB 5009.76

Clarity through test A.4 in Appendix A Absorbance ratio A_1/A_2 0.70 ~ 0.78 A_3/A_2 0.34 ~ 0.42 Appendix A A.5 Other nucleic acid decomposition by test A.6 in Appendix A a 1.0g sample was dissolved in 20mL of carbon dioxide-free water.

b 0.15g sample, reverse titration method, and stirred for 20min.

Appendix A

Testing method

A.1 General Provisions this standard reagents and water in the absence of other specified requirements, refer to the three water analytical reagent and GB/T 6682 regulations. Reagents Used in the standard solution, standard solution for measuring impurities, formulations and products, did not indicate when the other requirements according to GB/T 601, GB/T 602, the provisions of the preparation of GB/T 603's. 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 Weigh 0.03g sample, accurate to 0.01g, was dissolved in 100mL of water. Take this solution 3mL, and hydrochloric acid is added 1mL 1mL bromine Test solution, heated in a water bath 30min, air blowing into the drum after the bromine addition, toluene was added 0.2mL 3,5- dihydroxy - ethanol solution (1 -> 10), plus Into 3mL ammonium ferric sulfate - hydrochloric acid solution (1 -> 1000), in a water bath heated 20min, should be significantly green.

A.2.2 Weigh 1.0g sample accurate to 0.01g, was dissolved in 20mL water. Take this solution 5mL, magnesium oxide was added 2mL solution, should not produce Health precipitation. 7mL of nitric acid was added, after boiling 10min, was added sodium hydroxide solution (40g/L) and then ammonium molybdate solution, heating when, to form a yellow precipitate, together with sodium hydroxide solution (40g/L), or aqueous ammonia solution (23), the precipitate was dissolved.

A.2.3 Weigh 0.02g sample, plus 1000mL hydrochloric acid solution (1 -> 1000) dissolving solution made at a wavelength of 260nm ~ 264nm Maximum absorption band.

A.2.4 sample presentation sodium salt.

Determination A.3 5'- uridine disodium ($C_9H_{11}N_2Na_2O_9P$) content (dry basis) of A.3.1 Analysis step Weigh 0.5g sample, accurate to 0.0002g, plus hydrochloric acid solution (1 -> 1000) dissolved and accurate distribution to 1000mL, the exact amount of this Solution 10mL, hydrochloric acid solution (1 -> 1000) and to accurately match into 250mL, as the test solution. Measured at a wavelength of 260nm at the detection of liquid Absorbance A.

A.3.2 Calculation Results Disodium 5'-uridine ($C_9H_{11}N_2Na_2O_9P$) content (dry basis) of the mass fraction w, according to equation (A.1) Calculated.

$$0.5 \times 1.859 \times A$$

$$m \times 100\%$$

Where.

0.5 --- conversion factor;

1.859 --- conversion factor;

A --- absorbance detection solution;

Quality, unit m --- converted to a dry basis after the sample in grams (g).

A.4 Determination of Clarity A.4.1 Reagents and materials A.4.1.1 nitric acid solution. 12.

A.4.1.2 dextrin solution. 20g/L.

A.4.1.3 silver nitrate solution. 20g/L.

A.4.1.4 turbidity standard solution. chlorine (Cl) 0.01mg/mL. Amount of c (HCl) = 0.1mol/L hydrochloric acid standard titration solution 14.1mL $\pm$ 0.02mL, a 50mL volumetric flask, dilute to the mark. Amount of the solution 10mL $\pm$ 0.02mL in 1000mL volumetric flask, add Diluted with water to the mark.

A.4.2 Analysis step

Weigh about 1g sample accurate to 0.01g, placed colorimetric tube, dissolved in water and diluted to 25mL, as the test solution; another take Only colorimetric tubes, turbidity standard solution was accurately added 0.50mL, water was added to about 20mL, add 1mL nitric acid solution, and 0.2mL dextrin solution 1mL silver nitrate solution, add water to 25mL, shake, dark place 15min, as a standard turbidity solution.

In the absence of direct sunlight, axial and lateral observation, turbidity test solution is not greater than the standard nephelometric turbidity of the solution.

A.5 measured absorbance ratio Weigh 0.020g sample of hydrochloric acid (1 -> 1000) to dissolve and with 1000mL, the solution was measured at a wavelength of 250nm, 260nm and A1 280nm absorbance at, A2 and A3, calculation of A1/A2 and A3/A2. A1/A2 is 0.70 ~ 0.78, A3/A2 ~ 0.34 0.42.

Determination A.6 other nucleic acid decomposition products Weigh 0.10g sample was dissolved in water and formulated into 20mL, as the test solution. Amount of test solution 1 μ L, without control solution, ethanol -Ethylene glycol monomethyl ether - HCl (1 -> 10) of the mixed solution (2.2.1) as a developing solvent, TLC analysis. Using previously 60 °C ~ 80 °C drying 20min, thin layer chromatography on silica gel (incorporated fluorescent agent) as a carrier lamina. When expand the original line up top solvent Stop about 10cm high when expanded, air-dried observed in the dark, UV light (wavelength of about 250nm), the just shall see that there is a spot.