



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

GB 1886.171-2016

**National Food Safety Standard -- Food Additives - 5'-Flavor
Nucleotides Disodium**

食品安全国家标准 食品添加剂 5'-呈味核苷酸二钠（又名呈味核苷酸二钠）
(English Translation)

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1 Scope

This standard applies to the starch, carbohydrate as the starting materials, disodium inosinate by fermentation or hydrolysis by 5'-guanylate and disodium 5', then by the resulting processed food additives disodium 5'flavor nucleotides (also known as flavor nucleotides disodium).

2.1.1 Formula

$C_{10}H_{11}N_4Na_2O_8P \cdot nH_2O$

2.1.3 Relative molecular mass (anhydrous)

392.17 (according to 2011 international relative atomic mass) 2.2 5'-disodium guanylate (GMP)

2.2.1 Formula

$C_{10}H_{12}N_5Na_2O_8P \cdot nH_2O$

2.2.3 Relative molecular mass (anhydrous)

407.18 (according to 2011 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 white color Crystalline state or crystalline powder
Proper amount of sample is placed in a clean, dry porcelain dish, natural light the observed color and state

3.2 Physical and Chemical Indicators

Physical and chemical indicators should be consistent with the provisions of Table 2.

A.2 flavor nucleotides disodium content (dry basis), the mixing ratio of IMP and GMP was measured mixing ratio A.2.1 Reagents and materials Hydrochloric acid solution. amount of 0.9mL of hydrochloric acid, 1000mL water was slowly injected.

A.2.2 Instruments and Equipment UV spectrophotometer (band width. 1nm, wavelength accuracy. $\pm 2.0\text{nm}$, wavelength repeatability. $\pm 1.0\text{nm}$, stray light. $\leq 0.02\%$).

A.2.3 Analysis step

Preparation of sample solution A.2.3.1 0.4 g of a sample was weighed (accurate to 0.0001g) in 100mL beaker, dissolved with appropriate amount of water and dilute to 250 mL, shake, spare.

5.0 mL of the solution suction, the solution was diluted with hydrochloric acid and dilute to 250 mL, shake, a sample solution for use.

A.2.3.2 Determination the sample solution was injected into 1cm Shi Ying cuvette, a solution of hydrochloric acid as a reference solution, UV spectrophotometer at 250nm, Absorbance was measured at 280nm.

A.2.4 calculation results A.2.4.1 flavor nucleotides disodium was calculated content (dry basis) of Disodium flavor nucleotides content (dry basis) the mass fraction w_1 , according to formula (A.1) is calculated.

$(A-1.463 \times B) \times 254.55 (7.976 \times BA) \times 47.769 \text{ m} \times 5 \times 100-w_4 \times 100\%$ (A.1) where.

A --- sample solution measured at 250nm absorbance;

B --- sample solution measured at 280nm absorbance;

--- m sample weight of the sample in grams (G);

5 --- volume conversion factor;

100 --- conversion factor;

--- W_4 of the sample weight loss on drying,%;

1.463,254.55,7.976,47.769 dual wavelength absorbance measurement ---, according to Beer's law, equation derivation for generating Coefficients.

The test result to the arithmetic mean of replicates results. Obtained in two independent determination results under repeatability conditions of absolute difference Value is not more than 1% of the arithmetic mean. Results accurate to one decimal place.

Calculation A.2.4.2 IMP and GMP mixing ratio of the mixing ratio of IMP content of w_2 ,

calculated according to equation (A.2).

$A - 1.463 \times B \times 342.18 \times 5 \times 100\%$ (A.2) Mass fraction of GMP w_3 , calculated according to formula (A.3).

$7.976 \times BA \times 62.55 \times 5 \times 100\%$ (A.3) of formula (A.2), the formula (A.3) in which.

A --- sample solution measured at 250nm absorbance;

B --- sample solution measured at 280nm absorbance;

--- m sample weight of the sample in grams (G);

5 --- volume conversion factor;

--- 1.463,342.18,7.976,62.55 measuring the absorbance at dual wavelength, according to Beer's law, the mathematical expression generated during derivation coefficient.

It mixing ratio X_1 , according to formula (A.4) is calculated.

$w_2 \times w_3$

100% (A.4)

GMP mixing ratio X_2 , according to formula (A.5) Calculated.

$w_2 \times w_3$

100% (A.5)

Of formula (A.4), formula (A.5) in which.

--- w_2 of the mass fraction of IMP the sample,%;

--- w_3 sample mass fraction of GMP,%;

The test result to the arithmetic mean of replicates results. Obtained in two independent determination results under repeatability conditions of absolute difference Value is not more than 1% of the arithmetic mean. Results accurate to one decimal place.

A.3 measured light transmittance (5% aqueous solution) A.3.1 Instruments and Equipment Spectrophotometer.

A.3.2 Analysis step

1g sample was weighed (accurate to 0.0001g), was dissolved in 20mL of water, shake well. The solution was placed in the sample cuvette of 1cm to Water as blank, the light transmittance measured with a spectrophotometer at a sample solution of 430 nm, the readings are recorded.

The test result to the arithmetic mean of replicates results. Obtained in two independent determination results under repeatability conditions of absolute difference Value is not greater than 0.5% of the arithmetic mean.

Determination A.4 pH (5% aqueous solution) A.4.1 Instruments and Equipment PH meter.

A.4.2 Analysis step

1g sample was weighed (accurate to 0.0001g), was dissolved in 20mL of water, the pH of the sample solution was measured by pH.

The test result to the arithmetic mean of replicates results. Obtained in two independent determination results under repeatability conditions of absolute difference is not greater than 0.2.

Determination of nucleotide A.5 Other A.5.1 Reagents and materials A.5.1.1 developing solution. saturated aqueous ammonium isopropanol = 79,219.

A.5.1.2 chromatography filter.

A.5.2 Instruments and Equipment A.5.2.1 UV analyzer.

A.5.2.2 micro-syringe.

A.5.3 Analysis step

Sample Weigh 1.0g, dissolved in water and dilute to 100mL, chromatography paper spotted with 10.0μL, expand to expand solution for about 30cm, Drying (or drying) the filter paper is observed at 254nm in a UV analyzer.

A.5.4 results found

If only presents IMP, GMP two spots, it is determined by testing.

Determination of amino acid A.6 A.6.1 Reagents and materials Ninhydrin solution. Take ninhydrin 0.5g, was dissolved in ethanol and brought to 100mL.

A.6.2 Instruments and Equipment Water bath.

A.6.3 Analysis step

Sample weighed 0.1g, dissolved in water and dilute to 100mL, after shaking the sample was drawn 5mL, ninhydrin solution was added 1mL, in boiling Water bath heated 3min.

A.6.4 results found

Solution does not color, it is determined by experiments.

A.7 Determination of ammonium salt A.7.1 Reagents and materials A.7.1.1 magnesium oxide.

A.7.1.2 red Shi Rui paper.

A.7.2 Analysis step

0.1g sample was weighed in a test tube, and 1mL of water was added 50mg of magnesium oxide, red Shi Rui paper moistened with water, will be linked into a test tube , The tube was