DISODIUM 5'-GUANYLATE

Prepared at the 41st JECFA (1993), published in FNP 52 Add 2 (1993) superseding specifications prepared at the 18th JECFA (1974), published in NMRS 54B (1975) and in FNP 52 (1992). Metals and arsenic specifications revised at the 57th JECFA (2001). A group ADI 'not specified' for 5'guanylic acid and its Ca & Na salts was established at the 18th JECFA (1974)

SYNONYMS Sodium 5'-guanylate, sodium guanylate, GMP, INS No. 627

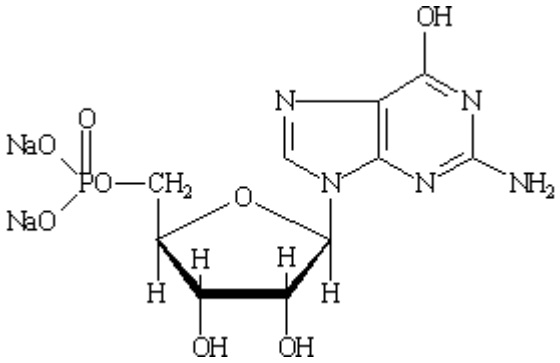
DEFINITION

Chemical names: Disodium guanosine-5'-monophosphate

C.A.S. number: 5550-12-9

Chemical formula: $C_{10}H_{12}N_5Na_2O_8P \cdot x\ H_2O$ (x = approximately 7)

Structural formula:



Formula weight: 407.19 (anhydrous)

Assay: Not less than 97.0% and not more than 102.0% calculated on the dried basis

DESCRIPTION Odourless, colourless or white crystals, or a white crystalline powder

FUNCTIONAL USES Flavour enhancer

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4): Soluble in water, sparingly soluble in ethanol, practically insoluble in ether

Spectrophotometry (Vol. 4): A 1 in 50,000 solution of the sample in 0.01 N hydrochloric acid exhibits an absorbance maximum at 256±2nm. The ratio A250/A260 is between 0.95 and 1.03, and the ratio A280/260 is between 0.63 and 0.71.

Test for sodium (Vol. 4): Passes test

Test for ribose (Vol. 4): Passes test

Test for organic: Passes test

phosphate (Vol. 4)	Test 5 ml of a 1 in 100 soln
PURITY	
Loss on drying (Vol. 4)	Not more than 25% (120º, 4 h)
pH (Vol. 4)	7.0 - 8.5 (1 in 20 soln)
Amino acids	Not detectable by the following test: To 5 ml of a 1 in 1,000 solution add 1 ml of ninhydrin TS and heat for 3 min. No colour is produced.
Related foreign substances (Vol. 4)	Chromatographically not detectable Test 1 µl of a 1 in 200 soln
Lead (Vol. 4)	Not more than 1 mg/kg Determine using an atomic absorption technique appropriate to the specified level. The selection of sample size and method of sample preparation may be based on the principles of the method described in Volume 4, “Instrumental Methods.”

METHOD OF ASSAY

Weigh accurately about 500 mg of the sample, dissolve in and make to 1,000 ml with 0.01 N hydrochloric acid. To 10.0 ml of this solution add 0.01 N hydrochloric acid to make to 250 ml. Determine the absorbance A of the solution in a 1-cm cell at the wave length of 260 nm using 0.01 N hydrochloric acid as the reference blank. Calculate the content of $C_{10}H_{12}N_5Na_2O_8P$, in % in the sample by the formula:

$$\frac{A}{289.8} \times \frac{250{,}000}{\text{weight of sample (mg)}} \times \frac{100}{100 - \text{loss on drying \%}} \times 100$$