5'-GUANYLIC ACID

Prepared at the 29th JECFA (1985), published in FNP 34 (1986) 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 Guanylic acid, GMP, INS No. 626

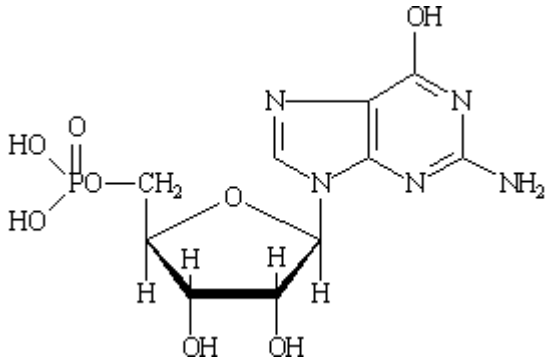
DEFINITION

Chemical names: Guanosine-5'-monophosphoric acid

C.A.S. number: 85-32-5

Chemical formula: $C_{10}H_{14}N_5O_8P$

Structural formula



Formula weight: 363.22

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

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

FUNCTIONAL USES Flavour enhancer

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4): Slightly soluble in water; practically insoluble in ethanol

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 ribose (Vol. 4): Passes test

Test for organic phosphate (Vol. 4): Passes test
Test 5 ml of a 1 in 400 soln

PURITY

Loss on drying (Vol. 4)	Not more than 1.5% (120°, 4 h)
pH (Vol. 4)	1.5 - 2.5 (1 in 400 soln)
Related foreign substances (Vol. 4)	Chromatographically not detectable Test 2 µl of a 1 in 400 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 0.5 g of the sample, dissolve in and make to 1,000 ml with 0.01 N hydrochloric acid. Take 10 ml of this solution and dilute with 0.01 N hydrochloric acid 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.

Calculate the content of $C_{10}H_{14}N_5O_8P$, in % in the sample by the formula:

$$\frac{A}{325} \times \frac{250{,}000}{\text{weight of sample (mg)}} \times \frac{100}{100 - \text{loss on drying (\%)}} \times 100$$