

# CALCIUM 5'-GUANYLATE

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** Calcium guanylate, INS No. 629

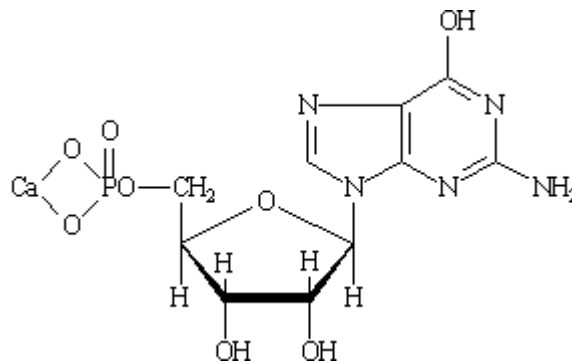
## DEFINITION

Chemical names Calcium guaosine-5'-monophosphate

C.A.S. number 38966-30-2

Chemical formula  $C_{10}H_{12}CaN_5O_8P \cdot xH_2O$

Structural formula



Formula weight 401.20 (anhydrous)

Assay Not less than 97.0% and not more than 102.0% of after drying

**DESCRIPTION** Odourless, white or off-white crystals, or powder

**FUNCTIONAL USES** Flavour enhancer

## CHARACTERISTICS

### IDENTIFICATION

Solubility (Vol. 4) Sparingly soluble in water

Spectrophotometry (Vol. 4) A 1 in 50,000 solution of the sample in 0.01 N hydrochloric acid exhibits an absorbance maximum at  $256 \pm 2$  nm. The ratio  $A_{250}/A_{260}$  is between 0.95 and 1.03, and the ratio  $A_{280}/A_{260}$  is between 0.63 and 0.71.

Test for calcium (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 2000 solution

PURITY

Loss on drying (Vol. 4) Not more than 23% (120°, 4 h)

pH (Vol. 4) 7.0 - 8.0 (1 in 2,000 soln)

Water soluble matter To 1 g of the sample, add 50 ml of water, allow to stand for 10 min with occasional shaking, filter through analytical grade filter paper (Whatman No. 42 or equivalent). Evaporate a 25 ml portion of the solution to dryness on a water bath and dry the residue at 105° for 1 h. Residue weighs less than 80 mg.

Amino acids Not detectable by the following test: To 5 ml of a 1 in 2,000 solution add 1 ml of ninhydrin TS and heat for 3 min. No colour is produced.

Related foreign substances Chromatographically not detectable  
Test 10 µl of a 1 in 2,000 solution of the sample.

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. Take 10.0 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<sub>10</sub>H<sub>12</sub>CaN<sub>5</sub>O<sub>8</sub>P, in % in the sample by the formula:

$$\frac{A}{294.1} \times \frac{250,000}{\text{weight of sample (mg)}} \times \frac{100}{100 - \text{loss on drying (\%)}} \times 100$$