CALCIUM CITRATE

Prepared at the 19th JECFA (1975), published in NMRS 55B (1976) and in FNP 52 (1992). Metals and arsenic specifications revised at the 59th JECFA (2002). An ADI 'not limited' was established at the 17th JECFA (1973)

SYNONYMS INS No. 333(iii)

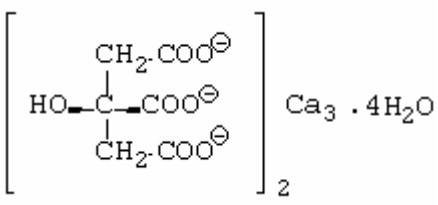
DEFINITION

Chemical names: Tricalcium citrate, tricalcium salt of 2-hydroxy-1,2,3- propanetricarboxylic acid, tricalcium salt of ß-hydroxy-tricarballylic acid

C.A.S. number: 813-94-5

Chemical formula: $C_{12}H_{10}Ca_3O_{14} \cdot 4H_2O$

Structural formula:



Formula weight: 570.51

Assay: Not less than 97.5% after drying

DESCRIPTION Odourless, fine white powder

FUNCTIONAL USES Sequestrant, buffer, firming agent

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4): Very slightly soluble in water. Insoluble in ethanol.

Test for citrate (Vol. 4): Passes test

Test for calcium (Vol. 4): Passes test
Test a solution obtained by igniting 0.5 g of the sample at as low a temperature as possible, cooling and dissolving the residue in 10 ml of water and adding 1 ml of glacial acetic acid.

PURITY

Loss on drying (Vol. 4): Not less than 10% and not more than 14% (150°, 4 h)

Fluorides (Vol. 4)	Not more than 30 mg/kg (Method I or III)
Free acid and alkali	Passes test To 1 g of the sample, add 5 ml of water, shake well for 1 min, and add 2 drops of phenolphthalein TS. No pink colour is produced. Add 0.5 ml of 0.1 N sodium hydroxide. A pink colour is produced.
Oxalate	Dissolve 1 g of the sample in 5 ml of warm dilute hydrochloric acid TS and filter the solution if necessary. Add 2 g of sodium acetate and dilute to 10 ml with water. No turbidity is produced within 1 h.
Lead (Vol. 4)	Not more than 2 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 350 mg of the sample, previously dried at 150^{o} for 4 h, dissolve in a mixture of 10 ml of water and 2 ml of dilute hydrochloric acid TS, and dilute to about 100 ml with water. While stirring (preferably with a magnetic stirrer) add about 30 ml of 0.05 M disodium ethylenediaminetetra-acetate from a 50-ml buret, then add 15 ml of sodium hydroxide TS and 300 mg of hydroxynaphthol blue indicator, and continue the titration to a blue endpoint. Each ml of 0.05 M disodium ethylenediaminetetraacetate is equivalent to 8.303 mg of $C_{12}H_{10}Ca_3O_{14}$.