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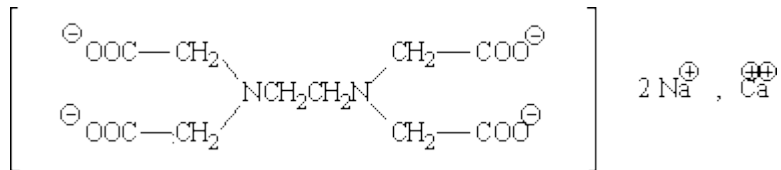
Residue Monograph prepared by the meeting of the Joint FAO/WHO Expert
Committee on Food Additives (JECFA), 30th Meeting, 1986

**CALCIUM DISODIUM
ETHYLENEDIAMINETETRAACETATE**

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CALCIUM DISODIUM ETHYLENEDIAMINETETRAACETATE

Prepared at the 30th JECFA (1986), published in FNP 37 (1986) and in FNP 52 (1992). Metals and arsenic specifications revised at the 61st JECFA (2003). An ADI of 0-2.5 mg/kg bw was established at the 17th JECFA (1973)

SYNONYMS	Calcium disodium EDTA, calcium disodium edetate; INS No. 385
DEFINITION	
Chemical names	N,N'-1,2-Ethanediybis[N-(carboxymethyl)-glycinate](4-)-N,N',O,O',O ^N ,O ^N]calciate(2-)-disodium; Calcium disodium ethylenediaminetetraacetate; Calcium disodium (ethylene-dinitrilo)-tetraacetate.
C.A.S. number	62-33-9
Chemical formula	C ₁₀ H ₁₂ CaN ₂ Na ₂ O ₈ · 2H ₂ O
Structural formula	
Formula weight	410.31
Assay	Not less than 97% and not more than the equivalent of 102% calculated on the anhydrous basis
DESCRIPTION	White, odourless crystalline granules or a white to nearly white powder; slightly hygroscopic
FUNCTIONAL USES	Sequestrant, preservative
CHARACTERISTICS	
IDENTIFICATION	
<u>Solubility</u> (Vol. 4)	Freely soluble in water, practically insoluble in ethanol.
<u>Test for calcium</u> (Vol. 4)	Passes test
<u>Test for sodium</u> (Vol. 4)	Passes test
<u>Chelating activity to metal ions</u>	To 5 ml of water in a test tube add 2 drops of ammonium thiocyanate TS and 2 drops of ferric chloride TS. A deep red solution develops. Add about 50 mg of the sample and mix. The deep red colour disappears.

PURITY

pH (Vol. 4) 6.5 - 7.5 (1 in 100 soln).

Magnesium chelating substances

Transfer 1 g of the sample, accurately weighed, to a small beaker, and dissolve it in 5 ml of water. Add 5 ml of buffer solution prepared by dissolving

67.5 g of ammonium chloride in 200 ml of water, adding 570 ml of strong ammonia TS, and diluting with water to 1000 ml. To the buffered solution add 5 drops of eriochrome black TS, and titrate with 0.1 M magnesium acetate to the appearance of a deep wine-red colour. Not more than 2.0 ml should be required.

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

Transfer about 1.2 g of the sample, accurately weighed, into a 250-ml beaker, and dissolve in 75 ml of water. Add 25 ml of dilute acetic acid TS and 1.0 ml of diphenylcarbazone solution (1 g in 100 ml ethanol). Titrate slowly with 0.1 M mercuric nitrate (see below) to the first appearance of a purplish colour.

Each ml of 0.1 M mercuric nitrate is equivalent to 37.43 mg of $C_{10}H_{12}CaN_2Na_2O_8$.

Mercuric nitrate solution:

Dissolve about 35 g of mercuric nitrate $Hg(NO_3)_2 \cdot H_2O$ in a mixture of 5 ml of nitric acid and 500 ml of water and dilute with water to 1000 ml. Standardize the solution as follows: Transfer an accurately measured volume of about 20 ml of the solution into an Erlenmeyer flask and add 2 ml of nitric acid and 2 ml of ferric ammonium sulfuric TS. Cool to below 20° and titrate with 0.1 N ammonium thiocyanate to the first appearance of a permanent brownish colour. Calculate the molarity. (0.1 M = 32.46 g $Hg(NO_3)_2$ per litre).