3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone (800) 325-5832 (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

ProductInformation

Ethylene glycol-bis(2-aminoethylether)-N,N,N',N'-tetraacetic acid

Product Number **E3889**
Store at Room Temperature

Product Description

Molecular Formula: $C_{14}H_{24}N_2O_{10}$
Molecular Weight: 380.4
CAS Number: 67-42-5
pK_a: < 2, 2.7, 8.8, and 9.5[1]
Melting Point: 241 °C, with decomposition
Synonym: EGTA

This product is designated as Molecular Biology grade and is suitable for molecular biology applications. It has been analyzed for the presence of nucleases and proteases.

EGTA is a reagent that is used to chelate Ca^{2+} in the presence of Mg^{2+}.[2]
EGTA chelates Ca^{2+} at a ratio of 1:1. The log (stability constants) for several cations are as follows:[1]

Mg^{2+} = 5.2
Ca^{2+} = 11.0
Mn^{2+} = 12.1
Fe^{2+} = 11.8
Co^{2+} = 12.3
Ni^{2+} = 11.8
Cu^{2+} = 17.7
Zn^{2+} = 12.9

A protocol for the determination of free calcium in calcium-EGTA solutions has been reported.[3] A procedure for making a calibration standard for calcium ion concentration, with detection accurate to 10 µM in a mixture of EGTA, HEDTA, and NTA has been reported.[4]

EGTA can be used as an anti-coagulant when dissolved at 1 g per 100 ml of blood. EDTA is more commonly used for the same purpose; either agent chelates the calcium ion from blood.

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in 1 M NaOH (110 mg/ml). A saturated solution at room temperature was found to be 2 mM in EGTA and had a pH of 2.72. This product has the following maximal solubilities in aqueous media at the respective pH values:

pH 8.4 > 0.52 M
pH 5.4 > 0.48 M
pH 4.5 = 0.45 M
pH 4.2 = 0.42 M
pH 4.0 = 0.31 M

References

1. Data for Biochemical Research, 3rd ed., Dawson, R.M.C., et al., Oxford University Press (New York, NY: 1986), pp. 404-405.
2. Schmid, R.W., and Reilley, C.N., New complexon for titration of calcium in the presence of magnesium. Anal. Chem., **29**, 264 (1957).
3. Bers, D.M., A simple method for the accurate determination of free [Ca] in Ca-EGTA solutions. Am. J. Physiol., **242**, C404-408 (1982).
4. May, P.M., et al., Calibration of ionized calcium and magnesium with ligand mixtures for intracellular ion-selective electrode measurements. Anal. Chem., **57**, 1511-1517 (1985).

GCY/AJH 4/08