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

1,2-bis(2-Aminophenoxy)ethane-N,N,N′,N′-tetraacetic acid

Product Number **A 4926**
Store at 2-8 °C

Product Description

Molecular Formula: $C_{22}H_{24}N_2O_{10}$
Molecular Weight: 476.4
CAS Number: 85233-19-8
Extinction coefficients: E^{mM} = 16 (254 nm, free anion)
5.6 (287 nm, free anion)
4.2 (274 nm, Ca^{2+} complex)[1,2]
Dissociation constants: 107 nM (Ca^{2+} complex)
17 mM (Mg^{2+} complex)[1,2]
Synonym: BAPTA

This product is a highly selective Ca^{2+} chelator over Mg^{2+}. This product has a total of six possible protonation sites. All four carboxyl groups are considered unprotonated at physiologic pH; the pK_a values are below 3.0, which indicate the high acidity of the carboxyl groups.[3] As a calcium indicator, it has many advantages over EGTA including: the affinity is insensitive to pH the product has a high buffering speed and this product is suitable for spectrophotometric monitoring.[1] In fact, it is routinely used for detection of Ca^{2+} complexes spectrophotometrically.

This product is used in the preparation of solutions with free calcium in the nanomolar range.[3] It is also used in contrast with BAPTA-AM for regulation of noradrenaline release.[4]

Precautions and Disclaimer

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

Preparation Instructions

BAPTA will dissolve in 0.3 N sodium bicarbonate (50 mg/ml) to yield a clear to slightly hazy, colorless to faint yellow solution. Some heating and sonication may be required. The tetrasodium and tetrapotassium (Product No. A 9801) salts of BAPTA are more readily soluble in water.

References

1. Tsien, R. Y., New calcium indicators and buffers with high selectivity against magnesium and protons: design, synthesis, and properties of prototype structures. Biochemistry, **19**, 2396-2404 (1980).
2. Harrison, S. M., and Bers, D. M., The effect of temperature and ionic strength on the apparent Ca-affinity of EGTA and the analogous Ca-chelators BAPTA and dibromo-BAPTA. Biochim. Biophys. Acta, **925**, 133-143 (1987).
3. Marks, P. W., and Maxfield, F. R., Preparation of solutions with free calcium concentration in the nanomolar range using 1,2-bis(o-aminophenoxy)ethane-N,N,N',N'-tetraacetic acid. Anal. Biochem., **193**, 61-71 (1991).
4. Fredholm, B. B., and Hu, P. S., Effect of an intracellular calcium chelator on the regulation of electrically evoked [3H]-noradrenaline release from rat hippocampal slices. Br. J. Pharmacol., **108**, 126-131 (1993).

HLD/RXR 12/02