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

Acetylcholinesterase
from *Electrophorus electricus* (electric eel)

Product Number **C3389**
Storage Temperature –20 °C

Product Description

EC Nmber: 3.1.1.7
CAS Number: 9000-81-1
Molecular Weight: 280 kDa (gel filtrationl)[1]
Isoelectric Point: 5.5[1]
Extinction Coefficient: $E^{1\%}$ = 18.0 (280 nm)[2]
Synonyms: Acetylcholine acetylhydrolase

Acetylcholinesterase from *Electrophorus electricus* (electric eel) is a tetramer composed of 4 equal subunits of 70 kDa each. It is a globular enzyme that can be separated into subunits in the presence of 6 M guanidine HCl. Each subunit contains one active site.[1] The enzyme is a glycoprotein containing hexosamines.[3]

Acetylcholinesterase catalyzes the hydrolysis of acetylcholine to acetate and choline. It can also hydrolyze acetic acid esters and can catalyze transacetylations. The turnover number of acetylcholinesterase from *Electrophorus electricus* is 823,000 min^{-1}.[4]

Acetylcholinesterase is primarily associated with the cell membranes of excitable tissue (nerve and muscle). It is of primary importance in neurotransmission. It terminates the action of acetylcholine at the postsynaptic membrane by hydrolyzing the acetylcholine.

Acetylcholinesterase is inhibited by eserine, acetylthiocholine (above 5 mM), choline, quinidine, tetramethyl ammonium ions, acetylcholine, p-carboxyphenyltrimethylammonium iodide, trimethyl(p-aminophenyl)ammonium chloride hydrochloride, neostigmine, organophosphorus pesticides, ethionamide, parathion, dimethoate, phosphatidylserine, prostigmine, ammonium salts (mono- and diquaternay), diisopropylfluorophosphate, N,N-diisopropylphosphorodiamidic anhydride (weak), and 5-Bis(4-allyldimethylammonium phenyl)pentan-3-one.[5]

Precautions and Disclaimer

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

Preparation Instructions

This enzyme is soluble in 20 mM Tris HCl buffer, pH 7.5, (1 mg/ml), yielding a clear solution.

References

1. Rosenberry, T.L., et al., Structure of 11S acetylcholinesterase. Subunit composition. Biochemistry, **13**, 3068-3079 (1974).
2. Rosenberry, T.L., et al., Purification of acetylcholinesterase by affinity chromatography and determination of active site stoichiometry. J. Biol. Chem., **247**, 1555-1565 (1972).
3. Leuzinger, W., and Baker, A.L., Acetylcholinesterase. I. Large scale purification, homogeneity, and amino acid analysis. Proc. Nat. Acad. Sci. USA, **57**, 446-457 (1967).
4. Rosenberry, T.L., Acetylcholinesterase. Adv. Enzymol. Relat. Areas Mol. Biol., **43**, 103-218 (1975).
5. The Enzyme Handbook, Schomburg, D., and Salzmann, M., Springer-Verlag (Berlin Heidelberg: 1991) Vol. 3, EC 3.1.1.7, p. 2.

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