Native Equine Butyrylcholinesterase

Cat. No. NATE-0092

Lot. No. (See product label)

Introduction

Description Butyrylcholinesterase (BChE) is a serine hydrolase that is structurally similar to acetylcholinesterase (AChE), but differs in substRate specificities and inhibitor sensitivities. BChE can, unlike AChE, efficiently hydrolyze larger esters of choline such as butyrylcholine and benzoylcholine. The enzyme is a tetrameric glycoprotein with four equal subunits (110 kDa each). The enzyme is activated by Ca2+ and Mg2+ and the activity is constant over the pH range 6.0-8.0. It is inhibited by Betaine, nicotine, organophosphates, carbamates.

Applications Butyrylcholinesterase from equine serum has been used in a microcalorimetric study of the inhibition of butyrylcholinesterase by paraoxon. This enzyme has also been used in a study to investigate the synthesis and inhibition of cholinergic enzymes. Selective inhibition of BChE activity can be used in the detection of organophosphates. Its use in the treatment of organophosphate toxicity has shown clinical potential, as there is a correlation between the blood level of BChE in humans and the degree of protection against toxic nerve agents. There has also been an interest in the roles of cholinesterases with regard to Alzheimer's disease. Investigations into selective inhibitors may provide a clearer picture of the physiological role of BChE in both healthy and diseased individuals. This product has been used for the screening of cholineesterase inhibitors in selected fruits and vegetables, for restoring cognitive function and improving memory. It has also been used to develop a butyrylcholinesterase and choline oxidase immobilized bio-sniffer for the detection of nicotine. Nicotine inhibits BChE activity. A decrease in the byproducts of BChE activity reflects the volume of nicotine.

Synonyms Butyrylcholinesterase; BCHE; BuChE; pseudocholinesterase; plasma cholinesterase; EC 3.1.1.8; 9001-08-5; Acylcholine acyl-hydrolase; Choline esterase; butyryl

Product Information

Species Equine

Source Equine serum

Form lyophilized powder; Highly purified; contains buffer salts

EC Number EC 3.1.1.8

CAS No. 9001-08-5

Molecular Weight Mr ~440 kDa

Activity Type 1, > 10 units/mg protein; Type 2, > 500 units/mg protein; Type 3, > 300 units/mg protein; Type 4, > 900 units/mg protein

Buffer cold water: soluble 60 U/mL

Function These findings show that BCHE can hydrolyze 2-Arachidonoylglycerol which may be evidence of a more specific role for BCHE in endocannabinoid regulation. Data indicate that polyproline peptides of various lengths and sequences are included in the tetramer structure of butyrylcholinesterase, and the function of these polyproline peptides is to serve as tetramer-organizing peptides. proline-rich peptides organize the 4 subunits of BChE into a 340 kDa tetramer, by interacting with the C-terminal BChE tetramerization domain

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Definition	The activity obtained using butyrylcholine as substrate is ~2.5 times that obtained using acetylcholine.

Storage and Shipping Information

Storage	−20°C