

BChE (D-5): sc-377403

BACKGROUND

Present in most cells except erythrocytes, butyrylcholine esterase (BChE), also designated acylcholine acylhydrolase or pseudocholinesterase, has esterase activity as well as aryl acylamidase activity. It hydrolyzes acylcholine into choline and carboxylate. BChE is synthesized in the liver and is highly reactive with organophosphate esters. BChE can form a homotetramer composed of two dimers linked by a disulfide bond. Defects in the gene encoding BChE are associated with the disease hypocholinesterasemia. Inhibition of BChE effects the toxicity of organophosphates in the respiratory system suggesting that BChE may play a role in respiratory function. In addition, BChE may play an important pharmacological role by hydrolyzing toxic esters. This suggests an involvement of BChE in a treatment for intoxication with substances such as cocaine.

REFERENCES

- Schopfer, L.M., et al. 2005. Reaction kinetics of biotinylated organophosphorus toxicant, FP-Biotin, with human acetylcholinesterase and human butyrylcholinesterase. *Chem. Res. Toxicol.* 18: 747-754.
- Souza, R.L., et al. 2005. Four new mutations in the BChE gene of human butyrylcholinesterase in a Brazilian blood donor sample. *Mol. Genet. Metab.* 84: 349-353.
- Kotelevets, L., et al. 2005. Cholinesterase activity in human pulmonary arteries and veins: correlation with mRNA levels. *Life Sci.* 76: 2211-2220.

CHROMOSOMAL LOCATION

Genetic locus: BCHE (human) mapping to 3q26.1; Bche (mouse) mapping to 3 E3.

SOURCE

BChE (D-5) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 85-119 near the N-terminus of BChE of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

BChE (D-5) is available conjugated to agarose (sc-377403 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-377403 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-377403 PE), fluorescein (sc-377403 FITC), Alexa Fluor® 488 (sc-377403 AF488), Alexa Fluor® 546 (sc-377403 AF546), Alexa Fluor® 594 (sc-377403 AF594) or Alexa Fluor® 647 (sc-377403 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-377403 AF680) or Alexa Fluor® 790 (sc-377403 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-377403 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

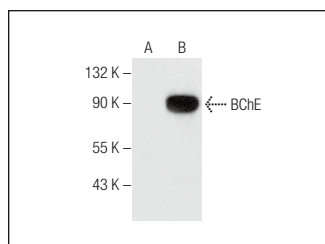
BChE (D-5) is recommended for detection of mature BChE and Cholinesterase precursor of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for BChE siRNA (h): sc-60267, BChE siRNA (m): sc-60268, BChE shRNA Plasmid (h): sc-60267-SH, BChE shRNA Plasmid (m): sc-60268-SH, BChE shRNA (h) Lentiviral Particles: sc-60267-V and BChE shRNA (m) Lentiviral Particles: sc-60268-V.

Molecular Weight of BChE: 81 kDa.

Positive Controls: BChE (h): 293T Lysate: sc-113260, HeLa whole cell lysate: sc-2200 or SK-N-SH cell lysate: sc-2410.

DATA



BChE (D-5): sc-377403. Western blot analysis of BChE expression in non-transfected: sc-117752 (A) and human BChE transfected: sc-113260 (B) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

- Alkanaimsh, S., et al. 2016. Transient expression of tetrameric recombinant human butyrylcholinesterase in *Nicotiana benthamiana*. *Front. Plant Sci.* 7: 743.
- Macharoen, K., et al. 2021. Production of recombinant butyrylcholinesterase from transgenic rice cell suspension cultures in a pilot-scale bioreactor. *Biotechnol. Bioeng.* 118: 1431-1443.
- Jasiecki, J., et al. 2021. Butyrylcholinesterase-protein interactions in human serum. *Int. J. Mol. Sci.* 22: 10662.
- Wang, D., et al. 2022. Hepatocellular BChE as a therapeutic target to ameliorate hypercholesterolemia through PRMT5 selective degradation to restore LDL receptor transcription. *Life Sci.* 293: 120336.
- Allard, J.L., et al. 2024. Effective parallel evaluation of molecular design, expression and bioactivity of novel recombinant butyrylcholinesterase medical countermeasures. *Chem. Biol. Interact.* 403: 111219.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

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