SANTA CRUZ BIOTECHNOLOGY, INC.

BDNF (hBA-238): sc-4554

BACKGROUND

Neurotrophins function to regulate naturally occurring cell death of neurons during development. The prototype neurotrophin is nerve growth factor (NGF), originally discovered in the 1950s as a soluble peptide promoting the survival of, and neurite outgrowth from, sympathetic ganglia. Three additional structurally homologous neurotrophic factors have been identified. These include brain-derived neurotrophic factor (BDNF), neurotrophin-3 (NT-3) and neurotrophin-4 (NT-4) (also designatedNT-5). These various neurotrophins stimulate the *in vitro* survival of distinct, but partially overlapping, populations of neurons. The cell surface receptors through which neurotrophins mediate their activity have been identified. For instance, the Trk A receptor is the preferential receptor for NGF, but also binds NT-3 and NT-4. The Trk B receptor binds both BDNF and NT-4 equally well, and binds NT-3 to a lesser extent, while the Trk C receptor only binds NT-3.

REFERENCES

1. Oppenhem, R.W. 1991. Cell death during development of the nervous system. Ann. Rev. Neurosci. 14: 453-501.
2. Thoenen, H. 1991. The changing scene of neurotrophic factors. TINS 14: 165-170.
3. Chao, M.V. 1992. Neurotrophin receptors: a window into neuronal differentiation. Neuron 9: 583-593.
4. Korsching, S. 1993. The neurotrophic factor concept: a reexamination. J. Neurosci. 13: 2739-2748.
5. Ip, N.Y., et al. 1993. Similarities and differences in the way neurotrophins interact with the Trk receptors in neuronal and nonneuronal cells. Neuron 10: 137-149.
6. Klein, R. 1994. Role of neurotrophins in mouse neuronal development. FASEB J. 8: 738-744.
7. Götz, R., et al. 1994. The conservation of neurotrophic factors during vertebrate evolution. Comp. Biochem. Physiol. 108C: 1-10.

SOURCE

BDNF (hBA-238) is produced in *E. coli* as 40 kDa biologically active, GST-tagged protein corresponding to a 119 amino acid fragment of BDNF of human origin.

PRODUCT

BDNF (hBA-238) is purified from bacterial lysates (> 98%); supplied as 50 µg purified protein.

BIOLOGICAL ACTIVITY

BDNF (hBA-238) is biologically active as determined by induction of choline acetyl transferase activity in rat basal forebrain primary septal cultures: ED_{50} = 2-5 ng/ml

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

RECONSTITUTION

In order to avoid freeze/thaw damaging of the active protein, dilute protein when first used to desired working concentration. Either a sterile filtered standard buffer (such as 50mM TRIS or 1X PBS) or water can be used for the dilution. Store any thawed aliquot in refrigeration at 2° C to 8° C for up to four weeks, and any frozen aliquot at -20° C to -80° C for up to one year. It is recommended that frozen aliquots be given an amount of standard cryo-preservative (such as Ethylene Glycol or Glycerol 5-20% v/v), and refrigerated samples be given an amount of carrier protein (such as heat inactivated FBS or BSA to 0.1% v/v) or non-ionic detergent (such as Triton X-100 or Tween 20 to 0.005% v/v), to aid stability during storage.

SELECT PRODUCT CITATIONS

1. Kanoski, S.E., et al. 2007. The effects of energy-rich diets on discrimination reversal learning and on BDNF in the hippocampus and prefrontal cortex of the rat. Behav. Brain Res. 182: 57-66.
2. Vissio, P.G., et al. 2008. Brain-derived neurotrophic factor (BDNF)-like immunoreactivity localization in the retina and brain of *Cichlasoma dimerus* (Teleostei, Perciformes). Tissue Cell 40: 261-270.
3. Yovanovich, C.A., et al. 2009. Amphibian larvae and zinc sulphate: a suitable model to study the role of brain-derived neurotrophic factor (BDNF) in the neuronal turnover of the olfactory epithelium. Cell Tissue Res. 336: 1-9.
4. Lebonvallet, N., et al. 2012. Characterization of neurons from adult human skin-derived precursors in serum-free medium: a PCR array and immunocytological analysis. Exp. Dermatol. 21: 195-200.
5. Amen, A.M., et al. 2017. A rapid induction mechanism for Lin28a in trophic responses. Mol. Cell 65: 490-503.
6. Le, Y.Z., et al. 2021. VEGF mediates retinal Müller cell viability and neuroprotection through BDNF in diabetes. Biomolecules 11: 712.

STORAGE

Store desiccated at -20° C; stable for one year from the date of shipment.

RESEARCH USE

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