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Recombinant Human, Mouse, Rat, Cynomolgus, Canine BDNF Protein

Catalog Number:	632901, 632902, 632903
Size:	20 μg, 100 μg, 500 μg
Target Name:	BDNF, Brain-derived neurotrophic factor
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	Bioassay
Format:	Lyophilized from sterile 20 mM HEPES, 500 mM NaCl, pH7.5.
Expression Host:	E.coli
Species:	Human, Mouse, Rat, Cynomolgus, Canine
accession number:	P23560-1
Sources:	A DNA sequence encoding the Human / Mouse / Rat / Cynomolgus / Canine BDNF (P23560-1) (His129-Arg247) was expressed.
Molecular Weight:	The recombinant Human / Mouse / Rat / Cynomolgus / Canine BDNF comprises 119 amino acids and has a predicted molecular mass of 13.51 KDa.
Affinity Tag:	None
Purity:	≥95% as determined by SDS-PAGE. ≥95% as determined by SEC-HPLC
Endotoxin level:	< 0.1 EU per μg protein
Protein Concentration:	Lyophilized
Storage and Handling:	Samples are stable for up to twelve months from date of receipt at -20℃ to -80℃. Store it under sterile conditions at -20℃ to -80℃. It is recommended that the protein be aliquoted for optimal storage. Avoid repeated freeze-thaw cycles.

BACKGROUND INFORMATION

Brain-derived neurotrophic factor (BDNF) is a member of the neurotrophin family of growth factors and plays a critical role in neuronal development, survival, differentiation, and synaptic plasticity. It is widely expressed in the central nervous system, particularly in the hippocampus, cerebral cortex, and other regions involved in learning, memory, and emotion. BDNF supports the growth and maintenance of neurons, promotes dendritic development, and regulates synaptic strength, making it essential for experience-dependent changes in neural circuits. It also contributes to adult neurogenesis and activity-dependent neuronal adaptation.

BDNF is encoded as a precursor protein, preproBDNF, which undergoes proteolytic processing to generate proBDNF and mature BDNF. Mature BDNF is a small, approximately 27-kDa homodimer composed of two polypeptide chains, each containing about 119 amino acids. It adopts the characteristic cysteine-knot structure of neurotrophins. BDNF primarily binds to tropomyosin receptor kinase B (TrkB, encoded by NTRK2), a receptor tyrosine kinase that activates intracellular pathways including MAPK/ERK, PI3K/AKT,

and PLCγ signaling. ProBDNF can preferentially interact with the p75 neurotrophin receptor (p75NTR), often together with sortilin, and may promote synaptic remodeling or cell-death pathways depending on cellular context. Thus, the biological effects of BDNF depend partly on its processing and receptor engagement.

Altered BDNF expression or signaling has been associated with several neurological and psychiatric conditions, including depression, anxiety disorders, schizophrenia, Alzheimer's disease, and other neurodegenerative disorders. These relationships are complex, and changes in BDNF are not necessarily causal or consistent across diseases, brain regions, or stages of illness. BDNF signaling is also important in pain processing and neuronal recovery after injury.

Therapeutically, BDNF and TrkB signaling are being investigated as targets for promoting neuronal survival, synaptic repair, and functional recovery in neurodegenerative diseases, stroke, and nerve injury. Direct BDNF delivery is challenging because of limited blood-brain barrier penetration and restricted distribution. Consequently, research includes TrkB agonists, gene-based approaches, and strategies to enhance endogenous BDNF production.

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