Cytokines

Human Recombinant BDNF, ACF

Brain-derived neurotrophic factor, animal component-free

Catalog #	78133	10 µg
	78133.1	100 µg
	78133.2	1000 µg

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Product Description

Brain-derived neurotrophic factor (BDNF), like nerve growth factor (NGF), neurotrophin-3 (NT-3), and neurotrophin-4 (NT-4), is a member of the NGF family of neurotrophins, which are required for the differentiation and survival of specific neuronal subpopulations in both the central and the peripheral nervous systems (Minichiello & Klein; Minichiello et al.). BDNF binds with high affinity to the TRKB kinase receptor, and activates AKT and ERK pathways (Mattson et al.). It is expressed in hippocampus, cortex, and synapses of the basal forebrain. BDNF acts as a survival factor for human embryonic stem cells when plated on either feeder cells or Corning® Matrigel® (Pyle et al.). BDNF regulates synaptic transmission and plasticity at adult synapses in the central nervous system, contributes to adaptive neuronal responses including long-term potentiation, long-term depression, certain forms of short-term synaptic plasticity, as well as homeostatic regulation of neuronal excitability (Reichardt). It also has a role in neurogenesis by promoting survival and growth of dorsal root ganglion cells, and hippocampal and cortical neurons (Binder & Scharfman). BDNF, together with glial cell-derived neurotrophic factor (GDNF) and other supplements, is commonly used to differentiate human pluripotent stem cell (hPSC)-derived neural progenitor cells into neurons (Brafman). This product is animal component-free.

Product Information

Alternative Names:	Abrineurin, ANON2, BULN2, Neurotrophin, MGC34632
Accession Number:	P23560
Amino Acid Sequence:	MHSDPARRGE LSVCDSISEW VTAADKKTAV DMSGGTVTVL EKVPVSKGQL KQYFYETKCN PMGYTKEGCR GIDKRHWNSQ CRTTQSYVRA LTMDSKKRIG WRFIRIDTSC VCTLTIKRGR
Predicted Molecular Mass:	13.6 kDa monomer; 27.3 kDa dimer
Species:	Human
Cross Reactivity:	Mouse, Rat
Formulation:	Lyophilized from a sterile-filtered aqueous solution containing 0.1% trifluoroacetic acid
Source:	E. coli

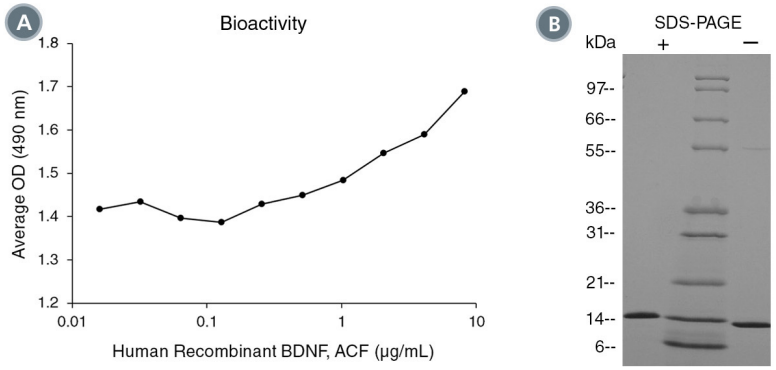
Specifications

Activity:	The specific activity is ≥ 5.0 x 10^2 units/mg (EC50 ≤ 2 µg/mL) as determined by a cell proliferation assay using C6 cells.
Purity:	≥ 95%
Endotoxin Level:	Measured by kinetic Limulus amebocyte lysate (LAL) analysis and is ≤ 1 EU/µg protein.

Preparation and Storage

Storage:	Store at -20°C to -80°C.
Stability:	Stable as supplied for 12 months from date of receipt.
Preparation:	Centrifuge vial before opening. Resuspend the product in sterile water containing 0.1% bovine serum albumin (BSA) to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex. Store at 2 - 8°C for up to 1 month or at -20°C to -80°C for up to 3 months. Avoid repeated freeze-thaw cycles. NOTE: If reconstituted product will be used immediately, BSA is not required.

Data



(A) The biological activity of Human Recombinant BDNF, ACF was tested by its ability to promote the proliferation of C6 cells. Cell proliferation was measured using a fluorometric assay method. The EC50 is defined as the effective concentration of the growth factor at which cell proliferation is at 50% of maximum. The EC50 in the example above is 1.69 µg/mL.
(B) 1 µg of Human Recombinant BDNF, ACF was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining.

Related Products

For a complete list of cytokines, as well as related products available from STEMCELL Technologies, please visit our website at www.stemcell.com/cytokines or contact us at techsupport@stemcell.com.

References

Binder DK & Scharfman HE. (2004) Brain-derived neurotrophic factor. Growth Factors 22(3): 123–31.
Brafman DA. (2015) Generation, expansion, and differentiation of human pluripotent stem cell (hPSC) derived neural progenitor cells (NPCs). Methods Mol Biol 1212: 87–102.
Mattson MP et al. (2004) A neural signaling triumvirate that influences ageing and age-related disease: insulin/IGF-1, BDNF and serotonin. Ageing Res Rev 3(4): 445–64.
Minichiello L & Klein R. (1996) TrkB and TrkC neurotrophin receptors cooperate in promoting survival of hippocampal and cerebellar granule neurons. Genes Dev 10(22): 2849–58.
Minichiello L et al. (1995) Differential effects of combined trk receptor mutations on dorsal root ganglion and inner ear sensory neurons. Development 121(12): 4067–75.
Pyle AD et al. (2006) Neurotrophins mediate human embryonic stem cell survival. Nat Biotechnol 24(3): 344–50.
Reichardt LF. (2006) Neurotrophin-regulated signalling pathways. Philos Trans R Soc Lond B Biol Sci 361(1473): 1545–64.