Product Specification Sheet

Recombinant Human Brain-Derived Neurotrophic Factor (BDNF) Protein

□ Cat. # BDNF11-R Recombinant (E.Coli) Human Brain Derived Neurotrophic Factor (BDNF) Protein **SIZE**: 5 ug

The development and maintenance of the vertebrate nervous system depends upon neuronal survival proteins known as neurotrophic factors. **Brain-derived neurotrophic factor (BDNF)** is a member of the neurotrophin family of growth factors that includes NGF, **NT-3**, and **NT-4** 9also designated NT5). Human BDNF (mature protein 119 aa; chromosome 11p13) is produced from a 247 aa propeptide by the cleavage of signal (1-18 aa) and the propeptide (19-128 aa). The mature human and rat lDNF are identical. All neurotrophins have six conserved cysteine residues and share a 55% sequence identity at the amino acid level. BDNF has been shown to enhance the survival and differentiation of several classes of neurons in vitro, including neural crest and placode-derived sensory neurons, dopaminergic neurons in the substantia nigra, basal forebrain cholinergic neurons, hippocampal neurons, and retinal ganglial cells. BDNF is expressed within peripheral ganglia and is not restricted to neuronal target fields, raising the possibility that BDNF has paracrine or even autocrine actions on neurons as well as non-neuronal cells. The **TrKA receptor** is the preferred receptor for NGF, but also binds NT-3 and Nt-4. The **TrkB receptor** binds equally well both BDNF and NT-4, and to a lesser extent NT-3. The **TrkC receptor** only binds NT-3.

Source of Protein

Human brain BDNF (full length 119-aa, 13.6 kda, a dimer of ~27 kda) was expressed in E. coli purified to >97% purity (assessed by RP_HPLC, anion exchange FPLC, and SDS-PAGE). The purified protein migrates as ~14 kDa in SDS-PAGE (reducing conditions). Amino acid sequence of the first 5 amino acid is verified to be Met-His-Ser-Asp-Pro. Formation of dimers and aggregates (<1%) was determined by SDS-PAGE. Endotoxin concentration was found to be <0.1 ng/µg (IEU/µg) of recombinant Brain-Derived Neurotrophic Factor.

It is recommended to reconstitute the lyophilized BDNF in sterile H2O at not less than 100µg/ml, which can then be further diluted to other aqueous solutions. A carrier protein (BSA) can be added if desired at 0.1-1%.

Biological Activity:

Recombinant purified BDNF is fully biologically active when compared to standard. The ED50, calculated by the dose-dependant induction of ACHE (acetylcholine esterase) in rat basal forebrain primary septal culture is 50 ng/ml.

Form & Storage

Purified BDNF is formulated in sodium citrate buffer pH 5.0, sterile filtered, and supplied as lyophilized powder or in solution (see concn on the vial). It is recommended to reconstitute the lyophilized BDNF in sterile H2O at not less than 100µg/ml, which can then be further diluted to other aqueous solutions. A carrier protein (BSA) can be added if desired at 0.1-1%.

Lyophilized BDNF although stable at room temperature for 3 weeks, should be stored desiccated below -20oC or -80oC. Upon reconstitution BDNF should be stored at 4 C between 2-7 days and for future use below -20oC or below. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA).

Stability: 6-12 months at –20oC or below.

Shipping: 4oC for solutions and room temp for powder.

General References: Maisonpierre,P.C et al (1991) Genomics 10 (3), 558-568; Shintani A et al (1991) Biochem. Biophys. Res. Commun. 182, 325-332; Robinson RC (1995) Biochemistry 34 (13), 4139-4146; Yancopoulos,G.D et al (1990) Cold Spring Harb. Symp. Quant. Biol. 55, 371-379; Timmusk T et al (1993) Neuron 10 (3), 475-489; Halbook F et al (1991) Neuron 6 (5), 845-858

*This product is for In vitro research use only.

Related material available from ADI

Ant-NGF, NT-3, NT-4, BDNF, Trk receptors, EGF, FGF and other growth factors

BDNF11-R 140611P

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