

## Data Sheet

# Brain-Derived Neurotrophic Factor Human

Recombinant, expressed in *E. coli*, suitable for cell culture

**B3795**

## Product Description

Brain-Derived Neurotrophic Factor (BDNF) is a member of the neurotrophin family of growth factors that includes NGF, NT-3, and NT-4. Like other members of this family, BDNF (brain derived neurotrophic factor) supports neuron proliferation and survival. 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.<sup>1</sup> BDNF mediates its neurotrophic properties by signaling through a high affinity cell surface receptor called gp145/trkB (tropomyosin-related kinase B).<sup>1</sup>

BDNF also plays an important role in vascular function and participates in angiogenesis. It is involved in the pathogenesis of Alzheimer's disease. 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.<sup>2</sup>

The active form of recombinant human BDNF (27 kDa) is a dimer formed by two identical 119 amino acid subunits held together by strong hydrophobic interactions.

Product is lyophilized from a sterile 0.2 µm filtered solution containing BSA.

The biological activity is determined by its ability to stimulate the proliferation of human neuroblastoma cells SH-SY5Y at 50 ng/mL, differentiated by retinoic acid treatment, in a serum free medium.<sup>3</sup>

Purity: ≥ 95% (SDS-PAGE)

Endotoxin: ≤ 1.00 EU/µg growth factor

## Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

## Preparation Instructions

Reconstitute the contents of the vial with water to a concentration of 0.1-1.0 mg/mL. This solution can then be diluted into other aqueous buffers and stored at 2-8 °C for up to one week. For extended storage, freeze in working aliquots at -20 °C. Repeated freezing and thawing is not recommended.

## Storage/Stability

Store the lyophilized product at -20 °C. It remains active for up to a few weeks at room temperature.

Reconstituted product should be stored in working aliquots at -20 °C. Repeated freezing and thawing is not recommended. Do not store in frost-free freezer.

## References

1. Jones, K.R. et al., Targeted disruption of the BDNF gene perturbs brain and sensory neuron development but not motor neuron development. *Cell*, 76, 989 (1994).
2. Snider, W.D., Functions of the neurotrophins during nervous system development: what the knockouts are teaching us. *Cell*, 77, 627 (1994).
3. Encinas, M. et al., Sequential treatment of SH-SY5Y cells with retinoic acid and brain-derived neurotrophic factor gives rise to fully differentiated, neurotrophic factor-dependent, human neuron-like cells. *Neurochemistry*, 75, 991(2000).

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