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1. Description

Components	Human BDNF, research grade: Purified recombinant human brain-derived neurotrophic factor.
Sizes	2 µg, 10 µg, 100 µg.
Biological activity	The ED ₅₀ is <50.0 ng/mL* corresponding to a specific activity of >2×10 ⁴ U/mg.
Primary structure	Two identical non-glycosylated polypeptide chains (119 amino acid residues).
Molecular mass	27.0 kDa (homodimer).
Source	Produced in <i>E. coli</i> .
Product format	Lyophilized from a filtered (0.2 µm) buffer solution.
Stabilizer	None.
Purity	>95% as determined by SDS-PAGE analysis.
Endotoxin level	Low endotoxin (<1.0 EU/µg cytokine) as determined by Limulus Amebocyte Lysate (LAL) assay.
Storage	Lyophilized Human BDNF, research grade should be stored at -20 °C. The expiration date is indicated on the vial label. Upon reconstitution aliquots should be stored at -20 °C or below. Avoid repeated freeze-thaw cycles.
Reconstitution	It is recommended to reconstitute lyophilized Human BDNF with deionized sterile-filtered water to a final concentration of 0.05–1.0 mg/mL in a minimal volume of 40 µL. Further dilutions should be prepared with 0.1% bovine serum albumin (BSA) or human serum albumin (HSA) in phosphate-buffered saline.

* The ED₅₀ is determined by dose-dependant induction of acetylcholine esterase (AChE) activity in rat basal forebrain primary septal culture.

1.1 Background information

Brain-derived neurotrophic factor (BDNF), also known as abrineurin, is a member of the neurotrophin family. It shares high structural homology to nerve growth factor (NGF), neurotrophin 3 (NT-3), and neurotrophin 4 (NT-4), but they all operate via different high-affinity membrane receptors and differ in target specificity. BDNF has been shown to support the survival of existing neurons, the growth and differentiation of new neurons and synapses, as well as their function in the peripheral and the central nervous system. High expression levels of BDNF have been detected in the hippocampus, cerebellum, and cortex. Furthermore BDNF is expressed in the pituitary gland, spinal cord, heart, lung, and skeletal muscle. BDNF has been shown to bind with high affinity and specifically activate the cell surface TrkB tyrosine receptor kinase. The amino acid sequence of human and mouse BDNF is identical.

1.2 Applications

Human BDNF may be used for a variety of applications, including:

- Growth and differentiation of neurons and synapses.
- Survival and differentiation factor in neuronal cell culture.
- Trk signaling.
- Stimulation of axon outgrowth *in vitro*.

Optimal concentration for a specific application should be determined by a dose-response experiment.

All protocols and data sheets are available at www.miltenyibiotec.com.

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