

## Animal-Free BDNF Protein, Human/Mouse (His)

Cat. No.:	HY-P700158AF
Synonyms:	rain-derived neurotrophic factor; BDNF; Abrineurin; ProBDNF
Species:	Human;Mouse
Source:	E. coli
Accession:	P23560 (H129-R247)
Gene ID:	627
Molecular Weight:	Approximately 14.45 kDa

### PROPERTIES

AA Sequence	M H S D P A R R G E    L S V C D S I S E W    V T A A D K K T A V    D M S G G T V T V L E K V P V S K G Q L    K Q Y F Y E T K C N    P M G Y T K E G C R    G I D K R H W N S Q C R T T Q S Y V R A    L T M D S K K R I G    W R F I R I D T S C    V C T L T I K R G R
Biological Activity	Measure by its ability to induce proliferation in BaF3 cells transfected with TrkB. The ED <sub>50</sub> for this effect is <2 ng/mL
Appearance	Lyophilized powder.
Formulation	Lyophilized from a solution containing 20 mM sodium citrate, 0.2 M NaCl, pH 3.5.
Endotoxin Level	<0.1 EU per 1 µg of the protein by the LAL method.
Reconstitution	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH <sub>2</sub> O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

### DESCRIPTION

Background	<p>BDNF, a neurotrophin that belongs to NGF-beta family. BDNF is widely expressed in the CNS, gut and other tissues. BDNF regulates neurodevelopmental processes, including maturation, survival and differentiation of neuronal populations, and synaptic plasticity<sup>[1]</sup>.</p> <p>BDNF can bind to its high affinity receptor TrkB and activates signal transduction cascades (IRS1/2, PI3K, Akt), thereby inducing increased Ca<sup>2+</sup> intake and phosphorylation of transcription factors. BDNF can also bind to the p75NTR, but the affinity for the p75NTR receptor is lower than for TrkB. The activation of p75NTR increases apoptotic and inflammatory signaling in neurons and glial cells by activation of c-Jun N-terminal kinases (JNK) and NF-κB expression, respectively<sup>[2]</sup>. In human, decreased levels of BDNF are associated with neurodegenerative diseases (such as Parkinson's disease and</p>
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Alzheimer's disease) and type 2 diabetes mellitus<sup>[1]</sup>. Human BDNF shares >97% aa sequence identity with mouse and rat. Rat BDNF shares >99% aa sequence identity with mouse. BDNF is a neurotransmitter modulator which is vital in maturation, survival and differentiation of neuronal populations during development. BDNF also participates in neuronal plasticity, which is essential for learning and memory<sup>[1]</sup>.

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## REFERENCES

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- [1]. Bathina S, et al. Brain-derived neurotrophic factor and its clinical implications. Arch Med Sci. 2015 Dec 10;11(6):1164-78.
- [2]. Lima Giacobbo B, et al. Brain-Derived Neurotrophic Factor in Brain Disorders: Focus on Neuroinflammation. Mol Neurobiol. 2019 May;56(5):3295-3312.
- [3]. Egan MF, et al. The BDNF val66met polymorphism affects activity-dependent secretion of BDNF and human memory and hippocampal function. Cell. 2003 Jan 24;112(2):257-69.
- [4]. Alonso M, et al. Signaling mechanisms mediating BDNF modulation of memory formation in vivo in the hippocampus. Cell Mol Neurobiol. 2002 Dec;22(5-6):663-74.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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