9051 Mira Mesa Blvd, #910094
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proBDNF Human

Precursor Brain-Derived Neurotrophic Factor Human Recombinant
NTR0072

Product Overview

Name	proBDNF Human
Description	
Precursor Brain-Derived Neurotrophic Factor Human Recombinant	
Accession (Primary)	P23560
Synonyms	
proBDNF, Precursor Form Brain-derived Neurotrophic Factor.	
Introduction	
proBDNF (the precursor form of Brain-derived neurotrophic factor) interacts preferentially with p75NTR (the pan-neurotrophin receptor p75) and vps10p domain-containing receptor sortilin and induces neuronal apoptosis, while the mature BDNF selectively binds with great affinity to the TrkB kinase receptor and promotes the survival, growth and differentiation of neurons. Since proneurotrophins and mature neurotrophins bring forth opposite biological effects, proBDNF cleavage in the neuronal system is regulated in a specific and cell-context dependent manner. proBDNF has an important role in negative regulation of neurotrophic actions in the brain.	
Source	
Escherichia Coli.	
Physical Appearance	
Sterile Filtered White lyophilized (freeze-dried) powder.	
Formulation	
proBDNF was lyophilized from a concentrated (0.5mg/ml) solution in 20mM PB, pH 8.0 and 500mM NaCl.	
Stability	
Lyophilized proBDNF although stable at room temperature for 3 weeks, should be stored desiccated below -18°C. Upon reconstitution proBDNF should be stored at 4°C between 2-7 days and for future use below -18°C. Please prevent freeze-thaw cycles.	
Purity	
Greater than 95.0% as determined by: (a) Analysis by RP-HPLC. (b) Analysis by SDS-PAGE.	
Amino acid sequence	
The sequence of the first five N-terminal amino acids was determined and was found to be Met-Ala-Pro-Met-Lys.	
Solubility	

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It is recommended to reconstitute the lyophilized proBDNF in sterile 18M-cm H2O not less than 100 µg/ml, which can then be further diluted to other aqueous solutions.

Background

Precursor Brain-Derived Neurotrophic Factor Human Recombinant: Unveiling the Potential of a Key Neurotrophic Factor Abstract: Precursor Brain-Derived Neurotrophic Factor (proBDNF) human recombinant is a pivotal neurotrophic factor that plays a critical role in neuronal development, survival, and synaptic plasticity. This research paper provides a comprehensive overview of proBDNF, including its characteristics, processing mechanisms, and potential therapeutic applications. Furthermore, innovative methodologies for the production and optimization of proBDNF human recombinant are proposed, highlighting its future implications in the field of neuroregenerative medicine. Introduction: Understanding the intricate processes underlying neuronal development and function is crucial for advancing neuroregenerative strategies. Neurotrophic factors, such as proBDNF, have garnered significant attention due to their pivotal roles in supporting neuronal growth and survival. This paper delves into the unique features of proBDNF and presents novel approaches for its production and optimization. Characteristics and Processing Mechanisms: proBDNF is a precursor protein consisting of 247 amino acids and is processed into mature brain-derived neurotrophic factor (mBDNF) through proteolytic cleavage. The ratio between proBDNF and mBDNF is tightly regulated and determines the balance between neuronal survival and apoptosis. Additionally, proBDNF exerts distinct biological functions through its receptor interactions, modulating synaptic plasticity and neuronal activity. Production of proBDNF Human Recombinant: Efficient production methodologies are essential to harness the therapeutic potential of proBDNF human recombinant. Various expression systems, including bacterial, yeast, and mammalian cell-based platforms, have been explored. Each system presents unique advantages and challenges, necessitating careful selection to achieve high yields and protein quality. Optimization strategies, such as codon optimization, fusion protein tags, and growth conditions, have been employed to enhance production efficiency. Purification techniques, such as affinity chromatography and size exclusion chromatography, have been optimized to isolate high-quality proBDNF recombinant. Potential Therapeutic Applications: proBDNF human recombinant holds immense promise for neuroregenerative medicine. Its role in promoting neuronal survival, axonal growth, and synaptic plasticity positions it as a valuable therapeutic agent for neurodegenerative disorders, spinal cord injuries, and stroke. Additionally, the balance between proBDNF and mBDNF presents a potential therapeutic target for fine-tuning neuronal processes and restoring proper brain function. Conclusion: proBDNF human recombinant represents a crucial neurotrophic factor with diverse therapeutic applications in neuroregenerative medicine. Optimizing production methodologies and further understanding its processing mechanisms will enhance its clinical utility. With its potential implications in neurodegenerative disorders and neuronal repair, proBDNF human recombinant holds immense promise as a transformative tool for promoting neural health and regeneration.

References

Bibliography: Lu B, Nagappan G, Guan X, Nathan PJ, Wren P. BDNF-based synaptic repair as a disease-modifying strategy for neurodegenerative diseases. Nat Rev Neurosci. 2013;14(6):401-416. Mowla SJ, Farhadi HF, Pareek S, et al. Biosynthesis and post-translational processing of the precursor to brain-derived neurotrophic factor. J Biol Chem.

2001;276(16):12660-12666. Teng HK, Teng KK, Lee R, et al. ProBDNF induces neuronal apoptosis via activation of a receptor complex of p75NTR and sortilin. J Neurosci. 2005;25(22):5455-5463. Zuccato C, Cattaneo E. Brain-derived neurotrophic factor in neurodegenerative diseases. Nat Rev Neurol. 2009;5(6):311-322. Turner RC, Naser ZJ, Lucke-Wold BP, et al. BDNF-based synaptic repair as a treatment for neurodegenerative diseases: a review. J Neurodegener Dis. 2016;2016:2180417.

Precautions

proBDNF Human is for research use only and not for use in diagnostic or therapeutic procedures.

Target Information: (P23560)

Background

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References for protein:

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