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CNTF Human

Ciliary-Neurotrophic Factor Human Recombinant
NTR0013

Product Overview

Name	CNTF Human
Description	
Ciliary-Neurotrophic Factor Human Recombinant	
Accession (Primary)	P26441
Synonyms	
HCNTF, CNTF, Ciliary Neurotrophic Factor.	
Introduction	
CNTF is a polypeptide hormone whose actions appear to be restricted to the nervous system where it promotes neurotransmitter synthesis and neurite outgrowth in certain neuronal populations. The protein is a potent survival factor for neurons and oligodendrocytes and may be relevant in reducing tissue destruction during inflammatory attacks. A mutation in this gene, which results in aberrant splicing, leads to ciliary neurotrophic factor deficiency, but this phenotype is not causally related to neurologic disease. In addition to the predominant monocistronic transcript originating from this locus, the gene is also co-transcribed with the upstream ZFP91 gene. Co-transcription from the two loci results in a transcript that contains a complete coding region for the zinc finger protein but lacks a complete coding region for ciliary neurotrophic factor. CNTF is a survival factor for various neuronal cell types. Seems to prevent the degeneration of motor axons after axotomy.	
Source	
Escherichia Coli.	
Physical Appearance	
Sterile Filtered White lyophilized (freeze-dried) powder.	
Formulation	
Lyophilized from a concentrated (1mg/ml) solution in water containing 5mM sodium Phosphate buffer pH=7.5 and 5mM sodium chloride.	
Stability	
Lyophilized Ciliary Neurotrophic Factor although stable at room temperature for 3 weeks, should be stored desiccated below -18°C. Upon reconstitution CNTF should be stored at 4°C between 2-7 days and for future use below -18°C. Please prevent freeze-thaw cycles.	
Purity	

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Greater than 98.0% 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-Phe-Thr-Glu.

Biological Activity

The ED50 as determined by the dose-dependant stimulation of TF-1 cells is < 2 ng/ml, corresponding to a Specific Activity of 500,000IU/mg.

Solubility

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

Background

Exploring the Potential of Human Recombinant Ciliary-Neurotrophic Factor: Implications and Applications Abstract: Ciliary-Neurotrophic Factor (CNTF) holds remarkable promise in neurobiology and therapeutic development due to its neuroprotective and regenerative properties. This paper delves into the significance of Human Recombinant CNTF, its production methodologies, and its potential applications in treating neurodegenerative disorders. The review sheds light on the therapeutic potential of CNTF and its role in advancing neuroregeneration research. Introduction: CNTF, a neurotrophic cytokine, is known for its pivotal role in neuronal survival and growth. The availability of Human Recombinant CNTF allows researchers to investigate its therapeutic potential and explore avenues for developing novel treatments for neurodegenerative diseases. CNTF's ability to support neuronal health and promote regeneration makes it a promising candidate for medical interventions. Mechanisms of Action: CNTF interacts with specific receptor complexes, activating various downstream signaling pathways, including Janus kinase (JAK) and Signal Transducer and Activator of Transcription (STAT) pathways. These pathways contribute to cell survival, differentiation, and axonal growth, forming the foundation for CNTF's neuroprotective effects. Production Methods: Human Recombinant CNTF is produced by introducing the CNTF gene into suitable expression systems, often employing bacterial or mammalian cells. Ensuring proper post-translational modifications is essential for maintaining the protein's biological activity and therapeutic potential. Therapeutic Applications: CNTF's neuroprotective and regenerative effects offer potential therapeutic applications in neurodegenerative disorders, such as amyotrophic lateral sclerosis (ALS), retinal degeneration, and Parkinson's disease. It holds promise for preserving and restoring neuronal function, thereby improving the quality of life for affected individuals. Challenges and Future Directions: While Human Recombinant CNTF shows great potential, challenges include precise dosing, delivery methods, and potential side effects. Further research is needed to optimize CNTF-based therapies and assess their long-term safety and efficacy in clinical settings. Conclusion: Human Recombinant Ciliary-Neurotrophic Factor emerges as a critical tool in advancing our understanding of neuroprotection and neuroregeneration. Its potential in treating neurodegenerative disorders highlights the ongoing quest for innovative therapeutic approaches that harness the body's inherent ability to heal and regenerate.

References

Bibliography: Sendtner M, Schmalbruch H, Stöckli KA, et al. Ciliary neurotrophic factor prevents degeneration of motor

neurons in mouse mutant progressive motor neuronopathy. Nature. 1992;358(6386):502-504. Lambiase A, Aloe L, Centofanti M, et al. Experimental and clinical evidence of neuroprotection by nerve growth factor eye drops: Implications for glaucoma. Proc Natl Acad Sci U S A. 2009;106(32):13469-13474. Sendtner M, Carroll P, Holtmann B, et al. Ciliary neurotrophic factor. J Neurobiol. 1994;25(11):1436-1453. Masu Y, Wolf E, Holtmann B, et al. Disruption of the CNTF gene results in motor neuron degeneration. Nature. 1993;365(6441):27-32. Davis S, Aldrich TH, Valenzuela DM, et al. The receptor for ciliary neurotrophic factor. Science. 1991;253(5015):59-63.

Protein content

CNTF quantitation was carried out by two independent methods 1. UV spectroscopy at 280 nm using the absorbency value of 1.28 as the extinction coefficient for a 0.1% (1mg/ml) solution. This value is calculated by the PC GENE computer analysis program of protein sequences (IntelliGenetics). 2. Analysis by RP-HPLC, using a standard solution of CNTF Recombinant as a Reference Standard.

Precautions

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

Target Information: (P26441)

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References for protein:

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