

#3887 Store at -20°C

Human Neurotrophin-4 (NT-4)

✓ 10 µg

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rev. 06/22/10

This product is intended for research purposes only. This product is not intended to be used for therapeutic or diagnostic purposes in humans or animals.

Entrez-Gene ID #4909
Swiss-Prot Acc. #P34130

Molecular Wt.	Source	Purity
22 kDa	Human Recombinant Protein Expressed in <i>E. coli</i>	>95%

Background: Neurotrophins are comprised of at least four family members including NGF, BDNF, NT-3 and NT-4 and all are known to influence growth, development, differentiation and survival of neurons (1). Proneurotrophins bind to p75NTR but not to the family of Trk receptor tyrosine kinases (Trk). Following maturation, NT-3 binds and activates TrkA, TrkB and TrkC, with TrkC almost exclusively binding to NT-3. Mature NT-4 binds to and activates TrkB (2). Trk receptors in turn activate three major signaling pathways: (a) Ras/MAPK, which promotes neuronal differentiation and neurite outgrowth, (b) PI3 Kinase/Akt, which promotes survival and growth of neurons, and (c) PLC-γ 1/PKC, which promotes synaptic plasticity (2).

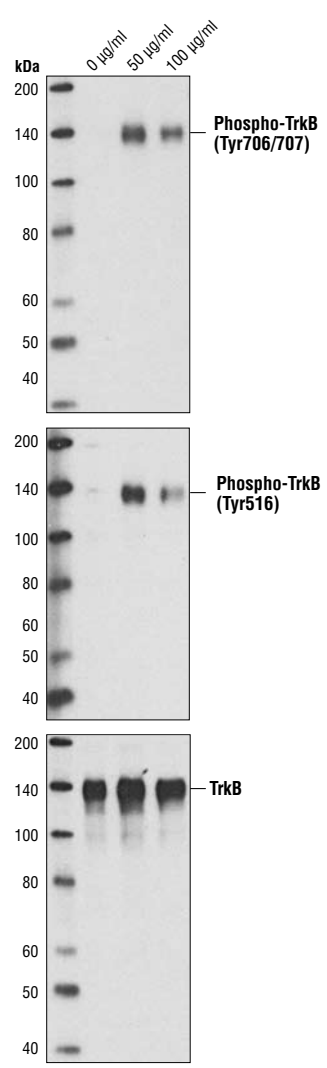
Unlike knockout mice of other neurotrophins, NT-4^{-/-} mice do not die early, suggesting that NT-4-dependent neurons are not critical for survival. However, the absence of NT-4 does result in sensory neuron loss (3,4). These mice also have deficits in long-term memory and long-lasting long-term potentiation (L-LTP) in the hippocampus but have normal short term-memory (5).

Source/Purification: Human NT-4 was prepared in *E. coli* and is supplied in a lyophilized form. A greater than 95% purity was determined by HPLC and SDS-PAGE.

Directions for Use: The working concentration for NT-4 generally ranges from 50-100 ng/ml.

Background References:

- (1) Minichiello, L. and Klein, R. (1996) *Genes Dev* 10, 2849-58.
- (2) Reichardt, L.F. (2006) *Philos Trans R Soc Lond B Biol Sci* 361, 1545-64.
- (3) Conover, J.C. et al. (1995) *Nature* 375, 235-8.
- (4) Liu, X. et al. (1995) *Nature* 375, 238-41.
- (5) Xie, C.W. et al. (2000) *Proc Natl Acad Sci USA* 97, 8116-21.



Western blot analysis of extracts from NIH/3T3 cells, transfected with TrkB and treated with 50 ng/ml and 100 ng/ml Human Neurotrophin-4 (NT-4) for 5 minutes, using Phospho-TrkA (Tyr674/675)/TrkB (Tyr706/707) (C50F3) Rabbit mAb #4621 (upper), Phospho-TrkA (Tyr490)/TrkB (Tyr516) (C35G9) Rabbit mAb #4619 (middle) and a total TrkB antibody (lower).

Storage: Recombinant human NT-4 is supplied as lyophilized material that is very stable at -20 °C. It is recommended to reconstitute with sterile water at a concentration of 0.1 mg/ml which can be further diluted in aqueous solutions as needed. Addition of a carrier protein (0.1% HSA or BSA) is recommended for long term storage.

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Material Safety Data Sheet (MSDS) for NT-4

I. Identification:

Product name: NT-4
Product Catalog: 3887
Manufacturer Supplier: Cell Signaling Technology
3 Trask Lane
Danvers, MA 01923 USA
978-867-2300 TEL
978-867-2400 FAX
978-578-6737 EMERGENCY TEL

II. Composition/Information:

Substance Name: Neurotrophin 4, recombinant, human
CAS#: None

III. Hazard Identification:

CAUTION: This product is not for use in humans. To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been established.

NFPA Rating: Health: 0 Flammability: 0 Reactivity: 0

IV. First Aid Measures:

Inhalation: If inhaled, remove to fresh air. If breathing is difficult, get medical attention.
Ingestion: If swallowed, wash out mouth with water provided person is conscious. Get medical attention.
Skin exposure: In case of contact, immediately wash skin with soap and water for at least 15 minutes. Remove contaminated clothing. Wash clothing before reuse.
Eye exposure: In case of contact with eyes, immediately flush eyes with water for at least 15 minutes. Get medical attention.

V. Fire Fighting Measures:

Flash Point: Data not available.
Autoignition Temperature: Data not available.
Explosion: Data not available.
Fire extinguishing media: Water spray, dry chemical, alcohol foam, or carbon dioxide.
Firefighting: Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes. May emit toxic fumes under fire conditions.

VI. Accidental Release Measures: Wear appropriate personal protective equipment. Sweep up material and avoid raising dust. Transfer to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

VII. Handling And Storage:

Storage: Store in tightly closed container at -20°C.
Avoid inhalation. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

VIII. Exposure Controls/Personal:

Ventilation System: A system of local and/or general exhaust is required.
Skin Protection: Wear compatible chemical resistant gloves and protective clothing.
Eye protection: wear protective safety glasses or chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

IX. Physical And Chemical Properties

Appearance: powder
pH: data not available
Melting Point: data not available
Boiling Point: data not available
Freezing Point: data not available
Volatile Organic Compounds: data not available
Solubility: data not available

X. Stability and Reactivity:

Stability: Stable under normal conditions. Avoid strong oxidizing agents.
Hazardous Decomposition: Data not available.

XI. Toxicological Information:

Acute Effects: Not established. May cause irritation inhaled, ingested or absorbed.
Chronic Effects: Not established. May be harmful if inhaled, ingested or absorbed.

Potential Health Effects: Not established.
Inhalation: May be harmful, may be irritating to mucous membranes and upper respiratory tract.
Skin: May be harmful if absorbed through skin. May cause skin irritation.
Eyes: May be harmful if absorbed through the eyes. May cause eye irritation.
Ingestion: May be harmful if swallowed.

To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been established.

XII. Ecological Information:

 Data not available.

XIII. Disposal Considerations: Dispose of in accordance with federal, state, local environmental regulations.

XIV. Transport Information:

DOT: Proper Shipping Name: This substance is considered non-hazardous for transport.

IATA: Proper Shipping Name: This substance is considered non-hazardous for air transport.

XV. Regulatory Information:

EU Regulations/Classifications/Labeling Information: None.
US Regulatory Information: None.
SARA Listed: None.
Canada (WHMIS): DSL No, NDSL No.

XVI. Other Information:

This compound is sold only for research use only. It is not for use in humans. To the best of our knowledge, this document is accurate. It is intended to serve as a guide for safe use of this product in a laboratory setting by experienced personnel. The burden of safe use of this material rests entirely with the user. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product.