

Product Information

TrkB/Fc Chimera human

recombinant, expressed in mouse NS0 cells

Catalog Number **T8694**

Storage Temperature -20°C

Synonyms: Tyrosine kinase receptor B

Product Description

A cDNA sequence encoding the extracellular domain of human TrkB¹ fused by means of a polypeptide linker to the Fc region of human IgG₁ that is histidine-tagged at the carboxyl terminus was expressed in a mouse myeloma cell line, NS0.

TrkB is one member of a family of three tyrosine kinase receptors that bind members of the nerve growth factor family of structurally-related, secreted proteins that are important regulators of neuronal development, function, and repair. The preferred ligands for TrkB are brain-derived neurotrophic factor (BDNF) and Neurotrophin-4/5. Recent studies indicate that TrkB plays a key role in hippocampal development and in regulating the synaptic plasticity that underlies long-term potentiation and learning.

All Trk family proteins, TrkA, TrkB and TrkC, share a conserved subdomain organization consisting of a signal peptide, two cysteine-rich domains, a cluster of three leucine-rich motifs, and two immunoglobulin-like domains in the extracellular moiety. The tyrosine kinase domain is localized on the intracellular moiety. Natural splice variants of TrkB have been described that lack the first cysteine-rich domain, the first and second or all three leucine-rich motifs, or the tyrosine kinase domain.

Human and rat TrkB share greater than 90% amino acid sequence homology, and the proteins are active in cells of both species. TrkB is primarily expressed in the nervous system, but low levels of TrkB expression have been observed in a wide variety of non-neuronal tissues, including pancreas, kidney, and ovary.⁴

Components/Reagents

Supplied as a lyophilized powder from a 0.2 μm filtered solution in phosphate buffered saline.

Preparation instructions

Reconstitute to 100 $\mu\text{g/mL}$ in phosphate buffered saline.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability

The lyophilized protein is stable for at least six months at -20°C . Upon reconstitution, the solution containing TrkB can be stored under sterile conditions at $2-8^{\circ}\text{C}$ for one month or at -20°C for three months without detectable loss of activity. Avoid repeated freeze-thaw cycles.

Product Profile

Recombinant human TrkB/Fc chimera is a disulfide-linked homodimer. Each monomeric subunit, generated after removal of the 31 residue signal peptide, contains 643 amino acid residues with a calculated molecular mass of ~ 71 kDa. As a result of glycosylation the monomeric subunit migrates in SDS-PAGE under reducing conditions as a 120-130 kDa protein.

The activity of recombinant human TrkB/Fc chimera is measured by its ability to inhibit BDNF-induced proliferation of cells that have been transfected with TrkB, Baf-TrkB-BD. The ED_{50} for this effect is in the range of 0.1-0.4 μg TrkB per ml in the presence of 16 ng/ml of rhBDNF.

The purity of recombinant human TrkB/Fc chimera is $>90\%$ determined by SDS-PAGE with silver staining.

References

1. Shelton, D.L., et al., Human trks: molecular cloning, tissue distribution, and expression of extracellular domain immunoadhesins. *J. Neurosci.*, 15, 477-491 (1995).
2. Barbacid, M., Structural and functional properties of the TRK family of neurotrophin receptors. *Ann. NY Acad. Sci.*, 766, 442-458 (1995).

3. Gooney, M., and Lynch, M.A. Long-term potentiation in the dentate gyrus of the rat hippocampus is accompanied by brain-derived neurotrophic factor-induced activation of TrkB. *J. Neurochem.*, 77, 1198-1207 (2001).
4. Tyler, W.J., et al., BDNF enhances quantal neurotransmitter release and increases the number of docked vesicles at the active zones of hippocampal excitatory synapses. *J. Neurosci.*, 21, 4249-4258 (2001).

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