Human β-Nerve Growth Factor (hβ-NGF)

**Source:** Recombinant human β-NGF (hβ-NGF) Ser122-Ala241 (Accession #NP_002497) was expressed in human 293 cells at Cell Signaling Technology.

**Molecular Characterization:** Based on amino acid sequencing, greater than 85% of recombinant hβ-NGF starts at Ser122 (SSSHP) and has a calculated MW of 13,494. The remainder starts at Ser124 (SHPIF). DTT-reduced and non-reduced protein migrate as 13 kDa non-disulfide linked homodimers.

**Endotoxin:** Less than 0.01 ng endotoxin/1 μg hβ-NGF.

**Purity:** >98% as determined by SDS-PAGE of 6 μg reduced (+) and non-reduced (-) recombinant hβ-NGF. All lots are greater than 96% pure.

**Bioactivity:** The bioactivity of recombinant hβ-NGF was determined in a TF-1 cell proliferation assay. The ED₅₀ of each lot is between 0.5-1.5 ng/ml.

**Bioactivity:** The purity of recombinant hβ-NGF was determined by SDS-PAGE of 6 μg reduced (+) and non-reduced (-) recombinant hβ-NGF and staining overnight with Coomassie Blue.

**Formulation:** With carrier: Lyophilized from a 0.22 μm filtered solution of PBS, pH 7.2 containing 20 μg BSA per 1 μg hβ-NGF. Carrier free: Lyophilized from a 0.22 μm filtered solution of PBS, pH 7.2.

**Reconstitution:** With carrier: Add sterile PBS or PBS containing 1% bovine or human serum albumin or 5-10% FBS to a final hβ-NGF concentration of greater than 50 μg/ml. Solubilize for 30 minutes at room temperature with occasional gentle vortexing.

**Storage:** Stable in lyophilized state at 4°C for 1 year after receipt. Stock solutions reconstituted with carrier protein are stable at 4°C for 2 months and -20°C for 6 months. Avoid repeated freeze-thaw cycles.

**Applications:** Optimal concentration for the desired application should be determined by the user.

**Background:** β-NGF is the prototypical member of the neurotrophin family of growth factors (1). β-NGF is involved in neuronal survival, differentiation and growth (1,2). Outside of the nervous system, NGF is produced by a variety of immune cells, including B cells, T cells, monocytes and mast cells (2,3). β-NGF binds to and signals through two distinct receptors, TrkA and p75NTR (1,2). Cellular responses induced by NGF are modulated by receptor expression. For example, TrkA leads to the inhibition of apoptosis and neuronal differentiation. In contrast, signaling through p75NTR in the absence of TrkA induces cell death (1,2). NGF signaling via TrkA is characterized by activation of the PI3K/Akt and PLCγ pathways (1,2). NGF signaling via p75NTR induces JNK and NFκB activation (1,2). Aberrant NGF signaling may be linked to the onset of Alzheimer disease (4,5).

**Background References:**