

Product Information

Glial Cell Line-derived Neurotrophic Factor human
recombinant, expressed in *Escherichia coli*
cell culture tested

Catalog Number **G1777**

Product Description

Glial Cell Line-derived Neurotrophic Factor (GDNF) is produced from a DNA sequence encoding the human GDNF precursor¹ and expressed in *Escherichia coli*. Mature human GDNF, a disulfide-linked homodimeric glycoprotein, is predicted to contain two 15 kDa polypeptide chains called monomers. Each monomer contains seven conserved cysteine residues, one of which, Cys¹⁰¹, is used for inter-chain disulfide bridging and the others are involved in intramolecular ring formation known as the cysteine knot configuration.

Glial Cell Line-derived Neurotrophic Factor is a member of the cysteine-knot superfamily of growth factors that assume stable dimeric protein structures. GDNF signals through a multicomponent receptor system, composed of a RET and one of the four GFR α (α 1- α 4) receptors. GDNF specifically promotes dopamine uptake and survival and morphological differentiation of midbrain neurons. Using the Parkinson's disease mouse model, GDNF has been shown to improve conditions such as bradykinesia, rigidity, and postural instability.

GDNF shows remarkable cross-species amino acid sequence homology, with ~93% identity between rat and human GDNF.¹ GDNF promotes neuron survival in many different neuron cell types, including dopaminergic neurons,² embryonic avian motor neurons,³ as well as autonomic motor neurons of both sympathetic and parasympathetic systems.⁴ In addition, exogenously applied GDNF has been shown to rescue damaged facial motor neurons *in vivo*.⁵

Reagent

Lyophilized from a 0.2 μ m filtered solution of 10 mM sodium citrate and 150 mM sodium chloride containing 0.5 mg bovine serum albumin.

Storage/Stability

Store at -20°C . After reconstitution, the product should be frozen in working aliquots at -20°C . Repeated freezing and thawing is not recommended. Do not store in a frost-free freezer.

Preparation Instructions

Reconstitute the contents of the vial using 0.2 μ m filtered water to a concentration of 0.1-1 mg/mL. This solution can then be diluted into other aqueous buffers and stored at 2-8 $^{\circ}\text{C}$ for up to one week or aliquotted and stored at -20°C for future use.

Product Profile

The biological activity is determined by the dose-dependent dopamine uptake by rat ventral mesencephalic cultures.

Purity: $\geq 98\%$ (SDS-PAGE and HPLC)

Endotoxin level: < 1.0 EU (endotoxin units)/ μg of protein.

References

1. Lin, L.F., et al., *Science*, **260**, 1130 (1993)
2. Kriegstein, K., et al., *EMBO J.*, **14**, 736 (1995)
3. Oppenheim, R.W., et al., *Nature*, **373**, 344 (1995)
4. Ebendal, T., et al., *J. Neurosci. Res.*, **40**, 276 (1995)
5. Yan, Q., et al., *Nature*, **373**, 341 (1995)

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