

Human GDNF premium grade

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1. Description

Products	Human GDNF, premium grade. Recombinant human glial cell line-derived neurotrophic factor.										
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Biological activity	<p>The ED₅₀ is ≤25 ng/mL corresponding to an activity of ≥4×10⁴ U/mg. Lot-specific activities are stated in the Certificate of Analysis (www.miltenyibiotec.com/certificates).</p> <p>▲ Note: The ED₅₀ is determined by proliferation assay using rat C6 cells. The proliferation assay was calibrated with the Non-WHO Reference Material for human GDNF (NIBSC code 09/266) provided by the WHO/National Institute for Biological Standards and Control.</p>										
Primary structure	Homodimer, covalently linked non-glycosylated polypeptide chains (134 amino acid residues).										
Molecular mass	30.1 kDa (dimer).										
Source	Produced in <i>E. coli</i> .										
Product format	Lyophilized from a filtered (0.2 µm) buffer solution.										
Stabilizer	Mannitol and trehalose.										
Purity	>97% as determined by SDS-PAGE analysis.										
Endotoxin level	Low endotoxin (<0.1 EU/µg cytokine) as determined by Limulus Amebocyte Lysate (LAL) assay.										
Storage	Lyophilized Human GDNF, premium grade should be stored at -20 °C. The expiration date is indicated on the vial label. Upon reconstitution aliquots should be stored at -20 °C or below. Avoid repeated freeze-thaw cycles.										

Reconstitution It is recommended to reconstitute lyophilized Human GDNF, premium grade with deionized sterile-filtered water to a final concentration of 0.1–1.0 mg/mL in a minimal volume of 100 µL. Further dilutions should be prepared with 0.1% bovine serum albumin (BSA) or human serum albumin (HSA) in phosphate-buffered saline.

1.1 Background information

Glial cell line-derived neurotrophic factor (GDNF) is a disulfide-bonded homodimeric protein. GDNF and its related factors neurturin (NRTN), persephin (PSPN), and artemin (ARTN) are being referred to as GDNF family ligands (GFLs), which belong to the TGF-β superfamily. They activate intracellular signaling cascades through a multicomponent receptor system, composed of the receptor tyrosine kinase RET and one of the four GFRα (α1-α4) receptors. GDNF is expressed by a number of cell types including type 1 astrocytes, Schwann cells, neurons, pinealocytes, and skeletal muscle cells. GDNF has been shown to promote the survival of various neuronal subpopulations in the central nervous system, including midbrain dopaminergic neurons and motoneurons. Furthermore, it supports the survival and regulates the differentiation of many peripheral neurons, such as sympathetic, parasympathetic, sensory and enteric neurons. Outside the nervous system GDNF functions as a morphogen in kidney development and regulates spermatogonial differentiation.

1.2 Applications

Human GDNF may be used for a variety of applications, including:

- Growth and differentiation of neurons and synapses.
- Survival and differentiation factor in neuronal cell culture.
- Analysis of apoptosis and signaling pathways.

Optimal concentration for a specific application should be determined by a dose-response experiment.

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