

Recombinant Canine GDNF Protein DataSheet

Catalog Number: GR112059

Background

Glial cell-derived neurotrophic factor (GDNF) is a protein that is encoded by the *GDNF* gene.^[1] GDNF is a small protein that potently promotes the survival of many types of neurons and signals through GFR α receptors, particularly GFR α 1. It is also responsible for the determination of spermatogonia into primary spermatocytes. GDNF is synthesized as a 211 amino acid-long protein precursor, pro-GDNF^[2] and then cleaved to 134 amino acids.^[2] Proteases that play a role in the proteolysis of pro-GDNF into mature GDNF include furin, PACE4, PC5A, PC5B, and PC7. Because multiple proteases can cleave the pro-GDNF, four different mature forms of GDNF can be produced.^[2] The proteolytic processing of GDNF requires SorLA, a protein sorting receptor. The mature form of the protein is a ligand for the product of the RET protooncogene. GDNF is highly distributed throughout both the peripheral and central nervous system. It can be secreted by astrocytes, oligodendrocytes, Schwann cells, motor neurons, and skeletal muscle during the development and growth of neurons and other peripheral cells.^[2]

The recombinant form of this protein was shown to promote the survival and differentiation of dopaminergic neurons in culture, and was able to prevent apoptosis of motor neurons induced by axotomy. GDNF has the ability to activate the ERK-1 and ERK-2 isoforms of MAP kinase in sympathetic neurons as well as P13K/AKT pathways via activation of its receptor tyrosine kinases.^{[3][4]} It can also activate Src-family kinases through its GFR α 1 receptor.^[5] The most prominent feature of GDNF is its ability to support the survival of dopaminergic^[6] and motor neurons. It prevents apoptosis in motor neurons during development, decreases the overall loss of neurons during development, rescues cells from axotomy-induced death, and prevents chronic degeneration.^[2] GDNF also regulates kidney development and spermatogenesis, and has a powerful and rapid negative (ameliorating) effect on alcohol consumption.^[7] GDNF also promotes hair follicle formation and cutaneous wound healing by targeting resident hair follicle stem cells (BSCs) in the bulge compartment.^[8]

References

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3. Kotzbauer PT, et al. (1996). *Nature*. 384 (6608): 467–70.
4. Ibáñez CF, Andressoo JO (2017). *Neurobiology of Disease*. 97 (Pt B): 80–89.
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6. Oo TF, et al. (2003). *The Journal of Neuroscience*. 23 (12): 5141–8.
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Description

Source: *E coli*-derived
Compositions: Phe61–Ile211
Accession # A0A8I3MVS5
Predicted Molecular Mass: 17 kDa (monomer)

Specifications

Activity Measured in a cell proliferation assay using SH-SY5Y human neuroblastoma cells. The ED50 for this effect is typically 1-6 ng/mL in the presence of recombinant human GFR α 1/GDNFR α 1 Fc chimera.

Endotoxin Level: <1.0 EU per 1 μ g of the protein by the LAL method.

Purity: >95%, by SDS-PAGE under reducing conditions and visualized by silver stain.

Formulation: Lyophilized from a 0.2 μ m filtered PBS with BSA as a carrier protein.

Preparation and Storage

Reconstitution: Reconstitute at 50-500 μ g/mL in sterile PBS containing 1 mg/ml of human or serum albumin.

Shipping The product is shipped at ambient temperature or with wet ice. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage: Use a manual defrost freezer and avoid repeated freeze thaw cycles.

- 6 months, -20 °C as supplied.
- 3 months, -20 to -70°C under sterile conditions after reconstitution.

DECLARATION

THIS REAGENT IS FOR IN VITRO LABORATORY TESTING AND RESEARCH USE ONLY. DO NOT USE IT FOR CLINICAL DIAGNOSTICS. DO NOT USE OR INJECT IT IN HUMANS AND ANIMALS.

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