

Cytokines

Human Recombinant GDNF



Scientists Helping Scientists™ | WWW.STEMCELL.COM

TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713

INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM

FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

Glial cell line-derived neurotrophic factor

Catalog #	78058	10 µg
	78058.1	100 µg
	78058.3	500 µg
	78058.2	1000 µg

Product Description

Glial cell line-derived neurotrophic factor (GDNF) is a neurotrophic factor and a member of the tumor growth factor (TGF)-beta superfamily. The GDNF family of growth factors also includes neurturin, persephin, and artemin, which have seven conserved cysteine residues called cysteine-knots (Treanor et al.). GDNF family ligands signal through binding to specific GDNF-family receptor- α (GFR α) co-receptors and activate the RET receptor tyrosine kinase (Durbec et al.). Four different forms of GFR α co-receptors have been characterized (GFR α 1-4); GDNF binds specifically to GFR α 1 prior to forming a complex with RET (Airaksinen & Saarma). GDNF is known to promote survival and morphological differentiation of midbrain dopaminergic neurons in both in vivo and in vitro studies and increases their high-affinity dopamine uptake (Granholtm et al.; Lin et al.). GDNF has also been shown to have restorative effects on dying dopaminergic neurons in response to degenerative toxins (Aoi et al.). GDNF, together with Human Recombinant BDNF (brain-derived neurotrophic factor; Catalog #78005), BrainPhys™ Neuronal Medium (Catalog #05790), and other supplements, can be used to differentiate human pluripotent stem cell (hPSC)-derived neural progenitor cells into neurons (Bardy et al.).

Product Information

Alternative Names:	Astrocyte-derived trophic factor, ATF, ATF1, ATF2, Glial cell-derived neurotrophic factor
Accession Number:	P39905
Amino Acid Sequence:	MSPDKQMAVL PRRERNRQAA AANPENSRGK GRRGQRGKNR GCVLTAIHLN VTDLGLGYET KEELIFRYCS GSCDAAETTY DKILKNLSRN RRLVSDKVGQ ACCRPIAFDD DLSFLDDNLV YHILRKHSK RCGCI
Predicted Molecular Mass:	15.2 kDa monomer; 30.4 kDa dimer
Species:	Human
Cross Reactivity:	Rat
Formulation:	Lyophilized from a sterile-filtered aqueous solution containing sodium citrate and sodium chloride, pH 4.0.
Source:	E. coli

Specifications

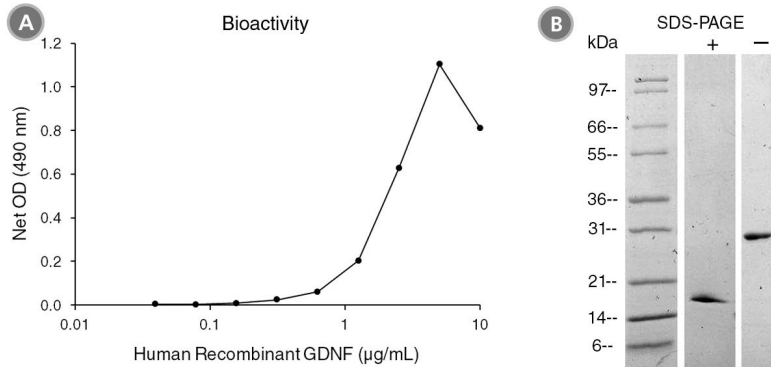
Activity:	The specific activity is $\geq 3.3 \times 10^2$ units/mg ($EC_{50} \leq 3 \mu\text{g/mL}$) as determined by a cell proliferation assay using C6 cells.
Purity:	$\geq 95\%$
Endotoxin Level:	Measured by kinetic Limulus amoebocyte lysate (LAL) analysis and is ≤ 1 EU/ μg protein.

Preparation and Storage

Storage:	Store at -20°C to -80°C .
Stability:	Stable as supplied for 12 months from date of receipt.
Preparation:	Centrifuge vial before opening. Reconstitute the product in sterile water to at least 0.1 mg/mL by pipetting the solution down the sides of the vial. Do not vortex.

OPTIONAL: After reconstitution, if product will not be used immediately, dilute with concentrated bovine serum albumin (BSA) to a final BSA concentration of 0.1%. The effect of storage of stock solution on product performance should be tested for each application. As a general guide, do not store at $2 - 8^\circ\text{C}$ for more than 1 month or at -20°C to -80°C for more than 3 months. Avoid repeated freeze-thaw cycles.

Data



(A) The biological activity of Human Recombinant GDNF was tested by its ability to promote the proliferation of C6 cells. Cell proliferation was measured after 7 days of culture using a fluorometric assay method. The EC₅₀ is defined as the effective concentration of the growth factor at which cell proliferation is at 50% of maximum. The EC₅₀ in the above example is 2.17 µg/mL.

(B) 1 µg of Human Recombinant GDNF was resolved with SDS-PAGE under reducing (+) and non-reducing (-) conditions and visualized by Coomassie Blue staining. Human Recombinant GDNF is a homodimer of 15.2 kDa subunits with a predicted total molecular mass of 30.4 kDa.

Related Products

For a complete list of cytokines, as well as related products available from STEMCELL Technologies, visit www.stemcell.com/cytokines or contact us at techsupport@stemcell.com.

References

- Airaksinen MS & Saarna M. (2002) The GDNF family: signalling, biological functions and therapeutic value. *Nat Rev Neurosci* 3(5): 383–94.
- Aoi M et al. (2001) Single administration of GDNF into the striatum induced protection and repair of the nigrostriatal dopaminergic system in the intrastriatal 6-hydroxydopamine injection model of hemiparkinsonism. *Restor Neurol Neurosci* 17(1): 31–8.
- Bardy C et al. (2015) Neuronal medium that supports basic synaptic functions and activity of human neurons in vitro. *Proc Natl Acad Sci USA* 112(20): E2725–34.
- Durbec P et al. (1996) GDNF signalling through the Ret receptor tyrosine kinase. *Nature* 381(6585): 789–93.
- Granhölm AC et al. (2000) Glial cell line-derived neurotrophic factor is essential for postnatal survival of midbrain dopamine neurons. *J Neurosci* 20(9): 3182–90.
- Lin LF et al. (1993) GDNF: a glial cell line-derived neurotrophic factor for midbrain dopaminergic neurons. *Science* 260(5111): 1130–2.
- Treanor JJ et al. (1996) Characterization of a multicomponent receptor for GDNF. *Nature* 382(6586): 80–3.

STEMCELL TECHNOLOGIES INC.'S QUALITY MANAGEMENT SYSTEM IS CERTIFIED TO ISO 13485. PRODUCTS ARE FOR RESEARCH USE ONLY AND NOT INTENDED FOR HUMAN OR ANIMAL DIAGNOSTIC OR THERAPEUTIC USES UNLESS OTHERWISE STATED.

Copyright © 2019 by STEMCELL Technologies Inc. All rights reserved including graphics and images. STEMCELL Technologies & Design, STEMCELL Shield Design, Scientists Helping Scientists, and BrainPhys are trademarks of STEMCELL Technologies Canada Inc. All other trademarks are the property of their respective holders. While STEMCELL has made all reasonable efforts to ensure that the information provided by STEMCELL and its suppliers is correct, it makes no warranties or representations as to the accuracy or completeness of such information.