Recombinant Human NRG1-β1/HRG1-β1 GMP

Catalog Number: 396-GMP

DESCRIPTION

Source	*E. coli*-derived human Neuregulin-1 beta 1/NRG1 beta 1 protein Thr176-Lys246 Accession # NP_039250 Manufactured and tested under cGMP guidelines.
N-terminal Sequence Analysis	Thr-Ser-His-Leu-Val-Lys-(Cys)-Ala-Glu-Lys
Predicted Molecular Mass	8 kDa

SPECIFICATIONS

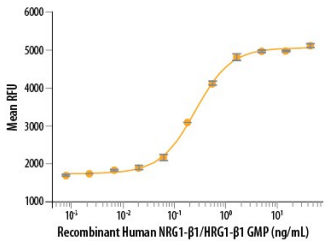
SDS-PAGE	8 kDa, reducing conditions
Activity	Measured in a serum-free cell proliferation assay using MCF-7 human breast cancer cells. Karey, K.P. *et al.* (1988) Cancer Research **48**:4083. The ED_{50} for this effect is 0.06-0.3 ng/mL.
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>97%, by SDS-PAGE with silver staining, under reducing conditions.
Host Cell Protein	< 0.5 ng per µg of protein when tested by ELISA.
Mycoplasma	Negative when tested in a ribosomal RNA hybridization assay.
Formulation	Lyophilized from a 0.2 µm filtered solution in Acetonitrile and TFA. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 100 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** ● A minimum of 6 months when stored at ≤ -20 °C as supplied. Refer to lot specific COA for the Use by Date. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 3 months, ≤ -20 °C under sterile conditions after reconstitution.

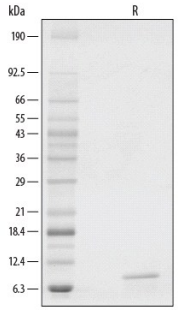
DATA

Bioactivity



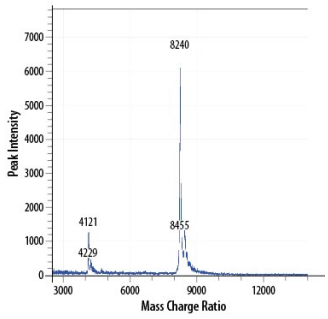
GMP-grade Recombinant Human NRG1-β1/HRG1-β1 (Catalog # 396-GMP) stimulates cell proliferation of the MCF-7 human breast cancer cell line. The ED_{50} for this effect is 0.06-0.3 ng/mL.

SDS-PAGE



1 µg/lane of Recombinant Human GMP-grade NRG1-β1/HRG1-β1 (Catalog # 396-GMP) was resolved with SDS-PAGE under reducing (R) conditions and visualized by silver staining, showing a single band at 8 kDa.

Mass Spectrometry



MALDI-TOF analysis of GMP-grade Recombinant Human NRG-β1/HRG-β1 (Catalog # 396-GMP). The major peak corresponds to the calculated molecular mass, 8241 Da. The minor peak at 8455 Da is a matrix-associated artifact of the MALDI-TOF.

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BACKGROUND

The neuregulin family of structurally related glycoproteins comprises products from four distinct but related genes, *Nrg-1, Nrg-2, Nrg-3, and Nrg-4.* Through alternative splicing or the use of alternative promoters, *Nrg-1* has been shown to encode more than 14 soluble or transmembrane proteins. The extracellular domain of the transmembrane NRG1 isoforms can be proteolytically cleaved to release soluble growth factors. All NRG1 isoforms contain an EGF-like domain (α- or β-splice variant that differ in their C-terminal region) that is required for their direct binding to the ErbB3 or ErbB4 receptor tyrosine kinases. The ErbB3 or ErbB4 subsequently recruits and heterodimerizes with ErbB2, resulting in tyrosine phosphorylation and NRG1 signaling. NRG1 isoforms can be classified into three major subtypes. Type I (Neu Differentiation Factor, NDF; Heregulin, HRG; Acetylcholine Receptor Inducing Activity, ARIA) and type II (Glial Growth Factor, GGF) NRG1s have an immunoglobulin (Ig)-like domain N-terminal to the EGF-like domain. Type I NRG1s differ from type II NRG1s by having a glycosylation-rich domain between the Ig-like and the EGF-like domains. Type III NRG1s (Sensory and Motor neuron-Derived Factor) lacks the Ig-like domain but has a cysteine rich domain (CRD) instead. NRG1 isoforms show distinct spatial and temporal expression patterns. These proteins play important roles during development of both the nervous system and the heart. They have been shown to regulate the selective expression of neurotransmitter receptors in neurons and at the neuromuscular junction, and promote the differentiation and development of Schwann cells from neural crest stem cells. NRG1s have also been shown to be involved in the establishment of the oligodendroglial lineage.

References:

1. Buonanno, A., and Fischbach, G.D. (2001) Curr. Opin. Neurobiol. **11**:287.
2. Adlkofer, K. and Lai, C. (2000) Glia **29**:104.
3. Garratt, A.N. *et al.* (2000) BioEssays **22**:987.

MANUFACTURING SPECIFICATIONS

GMP Proteins

R&D Systems, a Bio-Techne Brand's GMP proteins are produced according to relevant sections of the following documents: WHO TRS, No. 822, 1992 Annex 1, Good Manufacturing Practices for Biological Products; USP Chapter 1043, Ancillary Materials for Cell, Gene and Tissue-Engineered Products and USP Chapter 92, Growth Factors and Cytokines Used in Cell Therapy Manufacturing.

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- Material review process for variances
- Monitoring of stability over product shelf-life

R&D Systems strives to provide our customers with the analytical characteristics of each product so that customers may determine whether our products are appropriate for their research. The Certificate of Analysis provided contains the following lot specific information:

- N-terminal amino acid analysis, SDS-PAGE analysis, and endotoxin level (as determined by LAL assay) performed on each bulk QC lot, not on individual bottlings of each QC lot
- Post-bottling lot-specific bioassay results (compliance with an established range) and results of microbial bioburden testing (using broth culture, Sabourand's dextrose and blood agar plates with results reported at 3 days and at 7 days)
- Host Cell Protein testing performed by ELISA
- Mycoplasma testing by ribosomal RNA hybridization assay

Additional testing and documentation requested by the customer can be arranged at an additional cost. Testing may include, but is not limited to, USP <61> bioburden testing, positive identity testing, testing for adventitious agents and testing for residual host cell content.

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