



3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

Product Information

Heregulin- β 1 (EGF Domain) human, recombinant expressed in *E. coli*

Catalog Number **H7660**
Storage Temperature $-20\text{ }^{\circ}\text{C}$

Synonym: HRG- β 1

Product Description

Recombinant, human Heregulin- β 1 (EGF Domain) is produced from a DNA sequence encoding the EGF domain of heregulin- β 1 (amino acids 176 to 246).¹ The 71 amino acid protein has a predicted molecular mass of \sim 8 kDa.

Human heregulin (HRG) and its rat homolog, neu differentiation factor (NDF) were originally isolated on the basis of their ability to activate the 185 kDa transmembrane tyrosine kinase encoded by the proto-oncogene *erbB2/HER-2/neu*. Heregulin (HRG), neu differentiation factor (NDF), and glial growth factors are members of the neuregulin family that contain one EGF-like motif and an IgD-like motif in the extracellular domain.²

HRG- α and HRG- β isoforms differ slightly in the EGF domain due to alternate splicing. HRG- β isoforms are further subdivided into β 1, β 2, and β 3 isoforms that show identical binding and activation characteristics. HRGs bind directly to the receptors *erbB-3* and *erbB-4* and apparently activate *erbB-2* only indirectly as a result of receptor heterodimerization. HRG- α binding to each of these two receptors is reported to be \sim 100-fold weaker than that of HRG- β . When *erbB-2* is combined into a heterodimer with *erbB-3* or *erbB-4*, the binding affinities of both α and β isoforms are substantially improved.

HRGs are mitogenic for Schwann cells, various epithelial cells, and a number of tumor cell lines. HRGs inhibit proliferation and induce the differentiation of tumor cells such as mammary,⁴ ovarian,⁴ lung, and gastric cells that are arrested at the G₂/M phase. They also have been found to induce expression of acetylcholine receptors and possibly other molecules in muscle cells at newly formed neuromuscular synapses, suggesting they may play a role in neuromuscular synapse maturation and maintenance.

The product is lyophilized from a 0.2 μ m filtered solution containing 2.5 mg bovine serum albumin.

Purity: >98% (SDS-PAGE and HPLC)

Recombinant, human Heregulin- β 1 (EGF Domain) is measured by its ability to stimulate the proliferation of human MCF-7 cells grown under serum-free conditions.⁵ The ED₅₀ is defined as the effective concentration of growth factor that elicits a 50% increase in cell growth in a cell based bioassay.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Reconstitute the contents of the vial with water to a concentration of 1.0 mg/mL. The solution can then be diluted into other aqueous buffers and stored at $-20\text{ }^{\circ}\text{C}$.

Storage/Stability

Store the product at $-20\text{ }^{\circ}\text{C}$. Upon reconstitution, the product may be stored at $2\text{--}8\text{ }^{\circ}\text{C}$ for up to one week. For extended storage, freeze in working aliquots and store at $-20\text{ }^{\circ}\text{C}$. Repeated freezing and thawing is not recommended. Do not store in a frost-free freezer.

References

1. Holmes, W.E., *et al.*, *Science*, **256**, 1205-1210 (1992).
2. Baek, S.Y., and Kim, S.U., *Dev. Neurosci.*, **20**, 512-517 (1998).
3. Meyer, D., and Birchmeier, C., *Nature*, **378**, 386-390 (1995).
4. Aguilar, Z., *et al.*, *Oncogene*, **18**, 6050-6062 (1999).
5. Kary, K.P., and Sirbasku, D.A., *Cancer Res.* **48**, 4083 (1988).

KAA,MAM 03/07-1

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.