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Product Information

Heregulin-β1 (EGF Domain), human recombinant, expressed in *E. coli*

Catalog Number **H7660**
Storage Temperature –20 °C

Synonym: HRG-β1

Product Description

Recombinant human Heregulin-β1 (EGF Domain) is produced from a DNA sequence encoding the EGF domain of heregulin-β1.[1] The 65 amino acid peptide has a predicted molecular mass of ~7.5 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 protooncogene erB2/HER-2/neu. HRG, 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 β1, β2, and β3 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 ~100-fold weaker than 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 G_2/M phase. They also have been found to induce expression of acetyl-choline receptors and possibly other molecules in muscle cells at newly formed neuromuscular synapses, suggesting a possible role in neuromuscular synapse maturation and maintenance.

Activity of recombinant human Heregulin-β1 (EGF Domain) is measured by its ability to stimulate the proliferation of human MCF-7 cells grown under serum-free conditions.[5] The ED_{50} 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 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 0.1 mg/ml. The solution can then be diluted into other aqueous buffers and stored at –20 °C.

Storage/Stability

Store the product at –20 °C. The lyophilized product may be stored at 2–8 °C for up to 4 weeks without noticeable loss of activity. Stock solutions should be stored in working aliquots at –20 °C. Avoid repeated freeze-thaw cycles. Do not store in a frost-free freezer.

References

1. Holmes, W.E. *et al*., Identification of heregulin, a specific activator of p185erbB2. *Science*, **256**, 1205-1210 (1992).
2. Baek, S.Y., and Kim, S.U., Prognostic value of apoptosis-related markers in urothelial cancer of the upper urinary tract. *Dev. Neurosci.*, **20**, 512-517 (1998).
3. Meyer, D., and Birchmeier, C., Multiple essential functions of neuregulin in development. *Nature*, **378**, 386-390 (1995).
4. Aguilar, Z. *et al*., Biologic effects of heregulin/neu differentiation factor on normal and malignant human breast and ovarian epithelial cells. *Oncogene*, **18**, 6050-6062 (1999).
5. Karey, K.P., and Sirbasku, D.A., Differential responsiveness of human breast cancer cell lines MCF-7 and T47D to growth factors and 17β-estradiol. *Cancer Res.*, **48**, 4083-4092 (1988).

SG,DT,GCY,KEK,KAA,MAM 12/15-1