Product Information

Epidermal Growth Factor, Human

Xeno-free, Recombinant, Expressed in HEK 293 cells

Suitable for cell culture

E1235

Storage Temperature –20 °C

Synonyms: EGF, Urogastrone, URG

Uniprot: P01133

Product Description

Recombinant human Epidermal Growth Factor is a small polypeptide of 6.2 kDa protein containing 53 amino acid residues, containing three intramolecular disulfide bonds which are required for a proper tertiary structure.[1, 2] The EGF gene encodes for a large type I membrane-anchored precursor protein which is cleaved into pro-EGF for generation of peptide hormone EGF. EGF can be found in human platelets,[3] most epithelial tissues, fibroblasts, glial cells, macrophages, urine, saliva, milk, and plasma. It is also found to be mitogenic in vascular and corneal endothelial cells, bovine granulosa, rabbit chondrocytes, HeLa and SV40-3T3 cells.[4]

EGF is a growth factor that plays an important role in the regulation of cell growth, proliferation, and differentiation by binding to its receptor EGFR.[4] When EGF binds to its receptor, it triggers dimerization, which activates the intrinsic tyrosine kinase activity of this receptor. Upon activation, a series of downstream intracellular signaling transduction proceeds which control gene transcription, cell-cycle progression, and activates a cascade of antiapoptotic and pro survival signals.[5] Biological activities ascribed to EGF include epithelial development, angiogenesis, inhibition of gastric acid secretion, fibroblast proliferation, and colony formation of epidermal cells in culture.

EGF activates at least 4 major downstream signaling cascades: RAS-RAF-MEK-ERK, PI3 kinase-AKT, PLC gamma-PKC and STAT modules. Research studies suggest the protein may also play an important role in activating the NF-kappa-B signaling cascade.

The protein belongs to an Epidermal growth factor family which consists of transforming growth factor-α (TGF-α), heparin-binding EGF (HB-EGF), amphiregulin, betacellulin, epiregulin, epigen and some other members. The members of the EGF family share structural and functional properties.[6]

This product is Xeno-free and made with raw materials that are certified as animal component free (ACF). The protein purification steps are performed under animal free conditions. It is also lyophilized from a solution containing phosphate buffered saline (PBS), pH 7.4, with no carrier proteins. It is aseptically filled.

Specificity

Purity: ≥ 95% (SDS-PAGE)

EC_{50}: 0.5-5 ng/mL

The biological activity of recombinant human EGF measures its ability to inhibit proliferation of human epithelial A431 cells. EC_{50} is defined as the effective concentration of growth factor that elicits a 50% inhibition of cell growth in a cell-based bioassay.

Precautions And Disclaimer

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

Briefly centrifuge the vial before opening. Reconstitute in water to a concentration of 0.1 mg/mL. Do not vortex.

Storage/Stability

Store the lyophilized product at −20 °C. The product is stable for at least 2 years in its supplied form.

For extended storage of the reconstituted form, it is recommended to store in working aliquots at −20 °C to −80 °C.

References

1. S Cohen. J Biol Chem.237:1555-62 (1962)
2. J Boonstra et. al., Cell Biol Int.19(5):413-30 (1995)
3. Rui Chen et. al., J Immunol. 2, 201(7): 2154–2164. (2018)
4. G Carpenter,S Cohen. Annu. Rev.Biochem., 48, 193 (1979)
5. Sun Hye Shin et.al., Int Wound J.20(6): 2414–2423 (2023)
6. Hanna Bjorkelund et. al., Mol Clin Oncol.1(2): 343–352 (2013)
7. Fenghua Zeng and Raymond C.Harris.Semin Cell Dev Biol. 28, 2-11 (2014)

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