Product Information

Fibroblast Growth Factor 10, Human

Recombinant, Expressed in *E. coli*

F8924

Storage Temperature: −20 °C

Synonym: FGF-10

Product Description

Fibroblast Growth Factor 10 (FGF-10) is produced from a DNA sequence encoding human FGF-10 amino acid residues 37–208.[1] Recombinant FGF-10 contains both the 172 amino acid residue mature FGF-10 and a N-terminal truncated form of FGF-10 (signal peptide) lacking 4 additional amino acid residues. FGF-10 migrates as a 19 kDa protein in SDS-PAGE. Human FGF-10 shares ~92% and 95% amino acid sequence identity with mouse FGF-10 and rat FGF-10, respectively.

Fibroblast growth factors (FGFs) are members of a large family of structurally related polypeptides (17–38 kDa) that exert biological activities toward cells of mesenchymal, neuronal, and epithelial origin.[2,3] All members of the FGF superfamily have two conserved cysteine residues and a conserved 120 amino acid core region that contains six identical, interspersed amino acids.[4-6] All FGFs share 30-50% amino acid sequence identity. FGFs are involved in normal development, wound healing and repair, angiogenesis, and a variety of neurotrophic activities. They are also involved in hematopoiesis as well as in tissue remodeling and maintenance. FGFs are potent physiological regulators of growth and differentiation for a variety of cells of mesodermal, ectodermal, and endodermal origin. They have been implicated in pathological conditions such as tumorigenesis and metastasis. To date, the FGF family consists of 23 members (FGF-1 through FGF-23).[6]

Four distinct tyrosine kinase FGF receptors (FGFRs) from four separate genes have been identified: FGFR-1 (flg, cek-1), FGFR-2 (bek, cek-3), FGFR-3 (cek-2), and FGFR-4.[7-9] The high affinity cell surface FGF receptors have an extracellular region containing three immunoglobulin-like domains, a transmembrane region, and a cytosolic tyrosine kinase domain activated by ligand binding. Multiple additional variants (isoforms) arising from alternative splicing have also been reported.[8] Ligand binding specificity, signal transduction, and membrane attachment may be modified by alternative splicings.

Fibroblast Growth Factor 10 was originally identified from rat embryos by homology-based polymerase chain reaction. Subsequently, human and mouse FGF-10 were also cloned. FGF-10 has unique roles in the brain, in lung development, in wound healing, and limb bud formation.[10-12] FGF-10 is mitogenic for epithelial and epidermal cells but not fibroblasts.[1] FGF-10 is predominantly expressed in the embryo and adult lung.[13] In the adult, fibroblasts and pre-adipocytes also express FGF-10. In the fetus, posterior limb mesoderm and mesenchyme associated with the development of the seminal vesicle and prostate express FGF-10.

This product is lyophilized from 34.8 µL of a 0.2 µm filtered solution containing 20 mM MOPS, 50 mM Na_2SO_4, 1 mM DTT, and 0.5 mM EDTA, pH 7.2, with 50 µg bovine serum albumin per 1 µg as a carrier protein.

Measured in a cell proliferation assay using 4MBr-5 Rhesus monkey epithelial cells.[14] The ED_{50} for this effect is 20-100 ng/mL. 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.

Purity: >97% (SDS-Page, visualized with Silver Staining and quantitative densitometry by Coomassie Blue Staining).

Endotoxin level: <0.10 EU per 1 µg of the protein by the LAL method.

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 at 100 µg/mL in sterile PBS containing at least 0.1% human or bovine serum albumin.

Storage/Stability

Use a manual defrost freezer and avoid repeated freeze-thaw cycles.

Store the product at −20 °C. Upon reconstitution, store at 2-8 °C for up to one month. After reconstitution, store at −20 to −70 °C under sterile conditions.

References

1. Emoto, H. et al., J. Biol. Chem., 272, 23191 (1997).
2. Givol, D., and Yayon, A., FASEB. J., 6, 3362 (1992).
3. Baird, A. et al., Curr. Opin. Neurobiol., 4, 78 (1994).
4. Fernig, F.G., and Gallagher, J.T., Prog. Growth Factor Res., 5, 353 (1994).
5. Kirkoshi, J. et al., Biochem. Biophys. Res. Commun., 274, 337 (2000).
6. Nishimura, T. et al., Biochem. Biophys. Acta, 1492, 203 (2000).
7. Bernard, O., and Matthew, P., Guidebook to Cytokines and Their Receptors, Oxford Press (New York, NY: 1994).
8. Galzie, Z. et al., Biochem. Cell Biol., 75, 669 (1997).
9. Callard, R., and Gearing, A., The Cytokine Facts Book, Academic Press (New York, NY: 1994).
10. Bellusci, S. et al., Development, 124, 4867 (1997).
11. Tagashire, S. et al., Gene, 197, 399 (1997).
12. Ohuchi, H. et al., Developmemt, 124, 2235 (1997).
13. Yamasaki, M. et al., J. Biol. Chem., 271, 15918 (1996).
14. Rubin, J.S. et al., Proc. Natl. Acad. Sci. USA, 86, 802 (1989).

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