Recombinant Rat Fibroblast Growth Factor-2

20200116DS

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Cat.-no:	**R20-060**
Size:	50 µg
Lot. No.:	According to product label
Country of origin:	Germany

Scientific Background

Gene:	*fgf2*
Synonyms:	basic Fibroblast growth factor (bFGF), Heparin binding growth factor-2 (HBGF-2)

The FGF family is composed of at least 23 polypeptides that show a variety of biological activities towards cells of mesenchymal, neuronal and epithelial origin. All members are heparin-binding growth factors (HB-GF). Until the structure of basic fibroblast growth factor (bFGF/FGF-2) was determined, a number of synonyms were used to describe this growth factor. As is often the case, the nomenclature reflected the observed activities reported by individual groups.
Basic FGF has been reported as leukemia growth factor, macrophage growth factor, endothelial growth factor and tumor angiogenesis factor. The eventual isolation and characterization of bFGF was done from soluble brain extracts. bFGF was found to have a molecular mass of 16.5kDa and to be 154 amino acids in length. Interestingly, bFGF contains no hydrophobic leader sequence previously thought to be required for cell secretion. Basic FGF bears 55% homology to acidic FGF and also seems to exist in three forms: the 154 amino-acid form and two other truncated versions of 146 and 131 amino acids lacking the N-terminal 9 and 24 residues. Acidic and basic FGF compete for the binding to 125kDa and 145kDa receptor species. However, acidic FGF has a higher affinity for the 125kDa species, while basic FGF has a higher affinity for the 145kDa species. FGF receptor activation leads to the activation of MAP kinase and protein kinase C. FGF's induce the proliferative response in cells derived from mesoderm and neuroectoderm. Perhaps one of the most potentially significant applications of bFGF is related to its reported ability to induce angiogenesis.
The cDNA of native rat FGF-2 (Ala11-Ser154) was cloned from total RNA derived from a rat embryo using standard protocols.

References

1. Hisaoka K et al, J Biol Chem 286, 2011
2. Florkiewicz RZ et al, Biochem Biophys Res Commun 409, 2011
3. Sun Y et al, J Cell Sci 124, 2011
4. Turner CA et al, Proc Natl Acad Sci 108, 2011
5. Eckenstein FP et al, Biochem Pharmacol 47, 1994
6. el-Husseini AE, Biochim Biophys Acta 1131, 1992
7. Fujimoto K et al, Biochem Biophys Res Commun 180, 1991
8. Shimasaki S et al, Biochem Biophys Res Commun 157, 1988
9. Kurokawa et al, Nucleic Acids Res 16, 1988

Sequence

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ALPEDGGGAFPPGHFKDPKRLYCKNGGFFLRIHPDGRVDGVREKSDPHVKLQ
LQAEERGVVSIKGVCANRYLAMKEDGRLLASKCVTEECFFFERLESNNYNTY
RSRKYSSWYVALKRTGQYKLGSKTGPGQKAILFLPMSAKS
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Database References

Protein RefSeq:	NP_062178.1
Uniprot ID:	P13109
mRNA RefSeq:	NM_019305.2

Product Specifications

Expressed in	E.coli
Purity	> 98% by SDS-PAGE
Endotoxin level	< 0.1ng per µg of rat FGF-2
Buffer	0,5X PBS
Stabilizer	None
Formulation	freeze dried
Length (aa):	145
MW:	16,34 kDa
Result by N-terminal sequencing	ALPEDGGGAFPP

Stability: The lyophilized rat FGF-2, though stable at room temperature, is best stored in working aliquots at –20°C to –70°C.

Reconstitution: The rat FGF-2 is supplied in lyophilized form and can be reconstituted with ddH_2O at 50 µg/mL. This solution can be diluted into other buffered solutions or stored frozen for future use. For long term storage we would recommend to add at least 0.1% human or bovine serum albumin.

AVOID REPEATED FREEZE AND THAW CYCLES!

Biological Activity: The ED_{50} for stimulation of cell proliferation in human umbilical vein endothelial cells (HUVEC) by rat FGF-2 has been determined to be in the range of 0.1-2 ng/ml.

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Handling/Applications

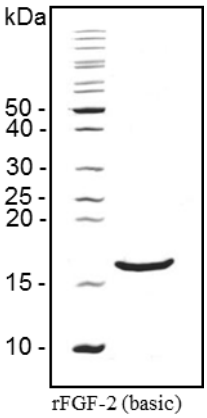

Figure 1: SDS-PAGE analysis of recombinant rat FGF-2 (basic). Sample was loaded in 15% SDS-polyacrylamide gel under reducing conditions and stained with Coomassie blue.

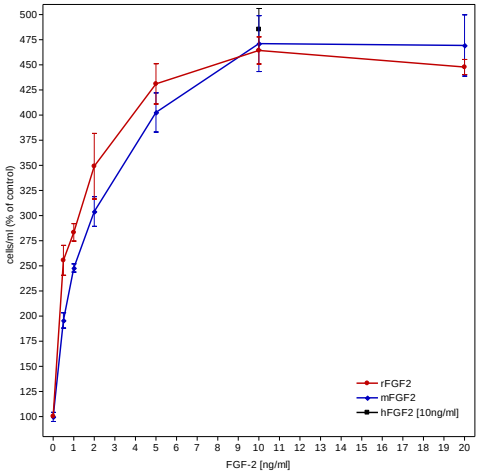

Fig. 2: Dose-dependent stimulation of cell proliferation in HUVE cells by recombinant rat and mouse FGF-2 (basic). Values are the means (±SD) of triplicate determinations and expressed as percentage of control.

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