Recombinant Human FGF-4 Heat Stable

Catalog Number: BT-FGF4HS

DESCRIPTION

Source	*E. coli*-derived human FGF-4 protein Proprietary, engineered based on P08620

SPECIFICATIONS

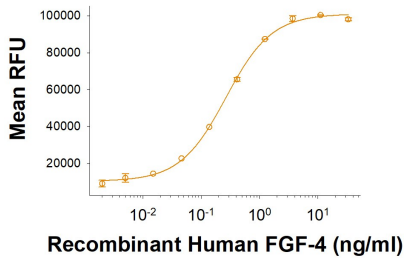
SDS-PAGE	12-15 kDa, under reducing conditions.
Activity	Measured by its ability to activate SRE-SEAP reporter in HEK293 human embryonic kidney cells. The ED_{50} for this effect is 0.100-1.00 ng/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in MOPS, Na_2SO_4 and EDTA with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 500 µg/mL in water.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

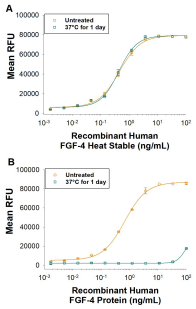
DATA

Bioactivity



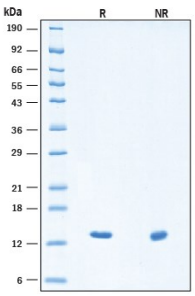
Recombinant Human FGF-4 Protein Bioactivity. Measured by its ability to activate SRE-SEAP reporter in HEK293 human embryonic kidney cells. The ED_{50} for this effect is 0.100-1.00 ng/mL.

Bioactivity



Recombinant Human FGF-4 Heat Stable Protein Bioactivity. Recombinant human FGF-4 protein activates SEAP reporter activity in HEK293 human embryonic kidney cells stably transfected with the secreted alkaline phosphatase (SEAP) reporter gene. (A) Recombinant human FGF-4 heat-stable (Catalog # BT-FGF4HS) or (B) recombinant human FGF-4 (Catalog # 7460-F4) were either untreated or incubated at 37 °C for 1 day in culture media. The heat-stable (HS) FGF-4 retained comparable bioactivity after incubation compared with the untreated HS protein, indicating increased thermal stability. In contrast, the wild-type (WT) FGF-4 protein showed a significant loss of activity following heat-stress incubation. suggesting less thermal stability.

SDS-PAGE



Recombinant Human FGF-4 Heat Stable Protein SDS-PAGE. 2 µg/lane of Recombinant Human FGF-4 Heat Stable Protein (Catalog # BT-FGF4HS) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing bands at 12-15 kDa, under reducing conditions.

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Recombinant Human FGF-4 Heat Stable

Catalog Number: BT-FGF4HS

BACKGROUND

FGF-4 (fibroblast growth factor-4), also known as FGF-K or K-FGF (Kaposi's sarcoma-associated FGF), is a 25 kDa secreted, heparin-binding member of the FGF family (1, 2). The human FGF-4 cDNA encodes 206 amino acids (aa) with a 33 aa signal sequence and a 173 aa mature protein with an FGF homology domain that contains a heparin binding region near the C-terminus (2). Mature human FGF-4 (aa 71-206) shares 91%, 82%, 94% and 91% aa identity with mouse, rat, canine and bovine FGF-4, respectively. Human FGF-4 has been shown to exhibit cross species activity. Expression of FGF-4 and its receptors, FGF R1c, 2c, 3c and 4, is spatially and temporally regulated during embryonic development (1, 3). Its expression in the mouse trophoblast inner cell mass promotes expression of FGF R2, and is required for maintenance of the trophectoderm and primitive endoderm (3-5). Later in mouse development, FGF-4 works together with FGF-8 to mediate the activities of the apical ectodermal ridge, which direct the outgrowth and patterning of vertebrate limbs (3, 6-9). FGF-4 is proposed to play a physiologically relevant role in human embryonic stem cell self-renewal. It promotes stem cell proliferation, but may also aid differentiation depending on context and concentration, and is often included in embryonic stem cell media *in vitro* (10-12). A C-terminally truncated 15 kDa isoform that opposes full-length FGF-4 and promotes differentiation is endogenously expressed in human embryonic stem cells. FGF-4 is mitogenic for fibroblasts and endothelial cells *in vitro* and has autocrine transforming potential (13). It is a potent angiogenesis promoter *in vivo* and has been investigated as therapy for coronary artery disease (14). Advances in predictive analytics have allowed us to design more reliable and efficient growth factor reagents for complex cell culture systems. Our Heat Stable FGF4 incorporates precise point mutations that increase structural stability without compromising biological activity. This enhanced stability supports more consistent culture conditions and reduces the need for repeated growth factor additions—ideal for workflows such as intestinal organoid generation, where dependable FGF4 signaling drives reproducible results.

References:

1. Reuss, B. and O. von Bohlen und Halbach (2003) Cell Tiss. Res. **313**:139.
2. Hebert, J.M. *et al.* (1990) Dev. Biol. **138**:454.
3. Niswander, L. and G.R. Martin (1992) Development **114**:755.
4. Feldman, B. *et al.* (1995) Science **267**:246.
5. Goldin, S.N. and V.E. Papaioannou (2003) Genesis **36**:40.
6. Sun, X. *et al.* (2002) Nature **418**:501.
7. Boulet, A.M. *et al.* (2004) Dev. Biol. **273**:361.
8. Yu, K and D.M. Ornitz (2008) Development **135**:483.
9. Mariani, F.V. *et al.* (2008) Nature **453**:401.
10. Johannesson, M. *et al.* (2009) PLoS ONE **4**:e4794.
11. Kunath, T. *et al.* (2007) Development **134**:2895.
12. Mayshar, Y. *et al.* (2008) Stem Cells **26**:767.
13. Hajitou, A. *et al.* (1998) Oncogene **17**:2059.
14. Flynn, A. and T. O'Brien (2008) IDrugs **11**:283.

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