

DESCRIPTION

Source *E. coli*-derived human FGF acidic/FGF1 protein
Phe16-Asp155, with an N-terminal Met
Accession # NP_000791

N-terminal Sequence Analysis Met

Predicted Molecular Mass 15.5 kDa

SPECIFICATIONS

Activity Measured in a cell proliferation assay using NR6R-3T3 mouse fibroblast cells. Rizzino, A. *et al.* (1988) *Cancer Res.* **48**:4266; Thomas, K. *et al.* (1987) *Methods Enzymol.* **147**:120.
The ED₅₀ for this effect is 0.015-0.15 ng/mL in the presence of 10 µg/mL of heparin.

Endotoxin Level <0.01 EU per 1 µg of the protein by the LAL method.

Purity >97%, by SDS-PAGE under reducing conditions and visualized by silver stain.

Formulation Lyophilized from a 0.2 µm filtered solution in MOPS, Na₂SO₄ and EDTA. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution Reconstitute at 100 µg/mL in sterile PBS.

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 °C under sterile conditions after reconstitution.

BACKGROUND

FGF acidic, also known as FGF1, ECGF, and HBGF-1, is a 17 kDa nonglycosylated member of the FGF family of mitogenic peptides. FGF acidic, which is produced by multiple cell types, stimulates the proliferation of all cells of mesodermal origin and many cells of neuroectodermal, ectodermal, and endodermal origin. It plays a number of roles in development, regeneration, and angiogenesis (1-3). Human FGF acidic shares 54% amino acid sequence identity with FGF basic and 17%-33% with other human FGFs. It shares 92%, 96%, 96%, and 96% aa sequence identity with bovine, mouse, porcine, and rat FGF acidic, respectively, and exhibits considerable species crossreactivity. Alternate splicing generates a truncated isoform of human FGF acidic that consists of the N-terminal 40% of the molecule and functions as a receptor antagonist (4). During its nonclassical secretion, FGF acidic associates with S100A13, copper ions, and the C2A domain of synaptotagmin 1 (5). It is released extracellularly as a disulfide-linked homodimer and is stored in complex with extracellular heparan sulfate (6). The ability of heparan sulfate to bind FGF acidic is determined by its pattern of sulfation, and alterations in this pattern during embryogenesis thereby regulate FGF acidic bioactivity (7). The association of FGF acidic with heparan sulfate is a prerequisite for its subsequent interaction with FGF receptors (8, 9). Ligation triggers receptor dimerization, transphosphorylation, and internalization of receptor/FGF complexes (10). Internalized FGF acidic can translocate to the cytosol with the assistance of Hsp90 and then migrate to the nucleus by means of its two nuclear localization signals (11-13). The phosphorylation of FGF acidic by nuclear PKC delta triggers its active export to the cytosol where it is dephosphorylated and degraded (14, 15). Intracellular FGF acidic functions as a survival factor by inhibiting p53 activity and proapoptotic signaling (16).

References:

1. Jaye, M. *et al.* (1986) *Science* **233**:541.
2. Galzie, Z. *et al.* (1997) *Biochem. Cell Biol.* **75**:669.
3. Presta, M. *et al.* (2005) *Cytokine Growth Factor Rev.* **16**:159.
4. Yu, Y.L. *et al.* (1992) *J. Exp. Med.* **175**:1073.
5. Rajalingam, D. *et al.* (2007) *Biochemistry* **46**:9225.
6. Guerrini, M. *et al.* (2007) *Curr. Pharm. Des.* **13**:2045.
7. Allen, B.L. and A.C. Rapraeger (2003) *J. Cell Biol.* **163**:637.
8. Robinson, C.J. *et al.* (2005) *J. Biol. Chem.* **280**:42274.
9. Mohammadi, M. *et al.* (2005) *Cytokine Growth Factor Rev.* **16**:107.
10. Wiedlocha, A. and V. Sorensen (2004) *Curr. Top. Microbiol. Immunol.* **286**:45.
11. Wesche, J. *et al.* (2006) *J. Biol. Chem.* **281**:11405.
12. Imamura, T. *et al.* (1990) *Science* **249**:1567.
13. Wesche, J. *et al.* (2005) *Biochemistry* **44**:6071.
14. Wiedlocha, A. *et al.* (2005) *Mol. Biol. Cell* **16**:794.
15. Nilsen, T. *et al.* (2007) *J. Biol. Chem.* **282**:26245.
16. Bouleau, S. *et al.* (2005) *Oncogene* **24**:7839.