Recombinant Human Fibroblast Growth Factor-19 (FGF-19), Animal Component-Free

Cat. No. :	H096E
Alternative Names:	FGF19; FGF-19; Fibroblast growth factor 19; UNQ334; PRO533
Species:	Human
Accession No.:	O95750
Expression System:	E. coli
Protein Sequence:	Phe27-Lys216
Theoretical MW:	21.23 kDa
Theoretical pI:	6.14
Tag:	Tag-Free.
Formulation buffer:	20 mM Sodium acetate, 5% Trehalose and 0.01% Tween 80，pH2.5.
Appearance:	Lyophilized Powder.
Purity:	≥95% as determined by SDS-PAGE.
Bioactivity:	The activity was evaluated in a cell proliferation assay with NIH/3T3 mouse embryonic fibroblast cells. The ED_{50} for the proliferative effect was determined to be ≤100 ng/mL.
Endotoxin Level:	≤0.1 EU/μg, as determined by the LAL assay.
Application:	Cell Culture; Activity Assays.

Preparation & Storage

Reconstitution: Reconstitute with sterile double-distilled water (ddH_2O).

⚠ Centrifuge the vial briefly before opening to ensure full recovery of the solution. Avoid vortexing and minimize vigorous pipetting to maintain protein stability.

❄ Immediately aliquot the reconstituted protein solution and store under recommended conditions. Avoid repeated freeze-thaw cycles.

Shipping: Shipped on dry ice. Short-term transit on cold packs (2-8℃) is acceptable.

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

- 12 months from date of receipt, -20 to -80℃ as supplied.
- 2-7 days at 2 to 8℃ under sterile conditions after reconstitution.
- 3-6 months at -20 to -80℃ under sterile conditions after reconstitution.

Protein Description

Background: Fibroblast growth factor 19 (FGF19) is an endocrine hormone of the FGF19 subfamily (FGF19/21/23), functioning as a critical enterohepatic regulator of bile acid, glucose, and lipid metabolism. Synthesized as a 216-amino acid precursor (UniProt: O95750), mature FGF19 (~194 residues) is secreted predominantly by ileal enterocytes upon activation of the farnesoid X receptor (FXR) by postprandial bile acids. Unlike canonical paracrine FGFs, FGF19 acts hormonally via a receptor complex requiring the transmembrane co-receptor β-Klotho and fibroblast growth factor receptor 4 (FGFR4; primarily in hepatocytes), with minimal dependence on heparan sulfate. Signaling activates ERK1/2, STAT3, and other pathways to transcriptionally repress CYP7A1 (cholesterol 7α-hydroxylase), the rate-limiting enzyme in bile acid synthesis, thereby completing the negative feedback loop of the bile acid enterohepatic circulation. Additional metabolic roles include promoting hepatic glycogen synthesis, suppressing gluconeogenesis, enhancing energy expenditure, and modulating lipogenesis. Pathologically, genomic amplification of the FGF19 locus (11q13.3) occurs in 5–15% of hepatocellular carcinomas (HCC) and subsets of breast, gastric, and esophageal cancers, driving tumor proliferation via FGFR4-dependent activation of β-catenin and cyclin D1. Elevated serum FGF19 correlates with cholestasis severity and metabolic syndrome features. Clinically, engineered FGF19 analogues with attenuated mitogenic activity (e.g., NGM282/aldafutide, M70) demonstrate efficacy in Phase II trials for primary biliary cholangitis and non-alcoholic steatohepatitis (NASH), reducing bile acid synthesis and hepatic steatosis. Conversely, FGF19-neutralizing antibodies (e.g., 1A6) and selective FGFR4 inhibitors (e.g., fisogatinib, H3B-6527) are under active investigation for FGF19-amplified HCC. Notably, murine functional orthologue is FGF15; direct extrapolation from murine models requires caution due to species-specific sequence and regulatory differences.

References:

1. Holt JA, Luo G, Billin AN, et al. Definition of a novel growth factor-dependent signal for the suppression of bile acid biosynthesis. Proc Natl Acad Sci U S A. 2003;100(24):14315-14320.

2. Kurosu H, Choi M, Ogawa Y, et al. Tissue-specific expression of βKlotho and fibroblast growth factor (FGF) receptor isoforms determines metabolic activity of FGF19 and FGF21. J Biol Chem. 2007;282(37):26687-26695.

3. Sawey ET, Chanrion M, Cai C, et al. Identification of a therapeutic strategy targeting amplified FGF19 in liver cancer by oncogenomic screening. Cancer Cell. 2011;19(3):347-358.

4. Potthoff MJ, Kliewer SA, Mangelsdorf DJ. Endocrine fibroblast growth factors 15/19 and 21: from feast to famine. Genes Dev. 2012;26(4):312-324.
5. Harrison SA, Neff G, Guy CD, et al. NGM282, an FGF19 analogue, in the treatment of patients with non-alcoholic steatohepatitis: a multicentre, double-blind, randomised, placebo-controlled phase 2 trial. Lancet. 2019;394(10213):2016-2024.

Product Disclaimer

- This product is intended for research use only and is not for use in diagnostic, therapeutic, or clinical procedures.
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