

PFK-1 (E-4): sc-377346

BACKGROUND

Phosphofructokinases (PFK) are regulatory glycolytic enzymes that convert fructose 6-phosphate and ATP into fructose 1,6-bisphosphate (through PFK-1), fructose 2,6-bisphosphate (through PFK-2), and ADP. Human PFK-1 is tetrameric and isoenzymes include, PFK-1 muscle (PFKM, PFK-A), PFK-1 liver (PFKL, PFK-B), and PFK-1 platelet (PFKP, PFK-C, PFKF). PFK-1 is inhibited by ATP and citrate (from the tricarboxylic acid cycle). PFK-1 undergoes activation in the presence of elevated AMP. The most potent activator is fructose-2,6-bisphosphate, which is produced by PFK-2 from the same substrate, fructose 6-phosphate. PFK-2 is bifunctional and a key regulator for PFK-1. PFK-2 catalyzes the synthesis of fructose-2,6-bisphosphate, and contains fructose-2,6-bisphosphatase activity that catalyzes the degradation of fructose-2,6-bisphosphate. PFK-2 is dimeric and isoenzymes include PFK-2 liver (PFKFB1, PFRX), PFK-2 cardiac (PFKFB2), PFK-2 placental (PFKFB3, inducible PFK-2) and PFK-2 testis (PFKFB4).

CHROMOSOMAL LOCATION

Genetic locus: PFKM (human) mapping to 12q13.11; PfkM (mouse) mapping to 15 F1.

SOURCE

PFK-1 (E-4) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 681-715 near the C-terminus of PFK-1 of human origin.

PRODUCT

Each vial contains 200 µg IgG₃ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-377346 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

PFK-1 (E-4) is recommended for detection of muscle type PFK-1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

PFK-1 (E-4) is also recommended for detection of muscle type PFK-1 in additional species, including equine, canine and porcine.

Suitable for use as control antibody for PFK-1 siRNA (h): sc-44561, PFK-1 siRNA (m): sc-44562, PFK-1 shRNA Plasmid (h): sc-44561-SH, PFK-1 shRNA Plasmid (m): sc-44562-SH, PFK-1 shRNA (h) Lentiviral Particles: sc-44561-V and PFK-1 shRNA (m) Lentiviral Particles: sc-44562-V.

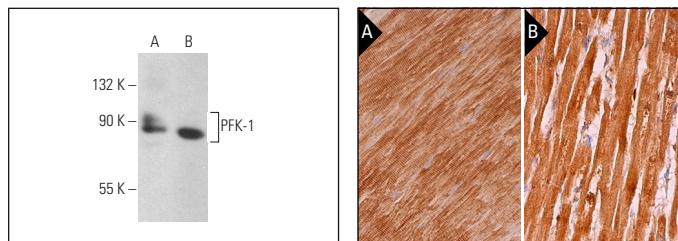
Molecular Weight of PFK-1: 85 kDa.

Positive Controls: rat skeletal muscle extract: sc-364810 or human skeletal muscle extract: sc-363776.

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

DATA



PFK-1 (E-4): sc-377346. Western blot analysis of PFK-1 expression in human skeletal muscle (A) and rat skeletal muscle (B) tissue extracts. Detection reagent used: m-IgGκ BP-HRP: sc-516102.

PFK-1 (E-4): sc-377346. Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse skeletal muscle tissue (A) and human heart muscle tissue (B) showing cytoplasmic staining of myocytes.

SELECT PRODUCT CITATIONS

- Hu, L., et al. 2017. Emodin and rhein decrease levels of hypoxia-inducible factor-1 α in human pancreatic cancer cells and attenuate cancer cachexia in athymic mice carrying these cells. *Oncotarget* 8: 88008-88020.
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- Tian, R.F., et al. 2020. siRNA targeting PFK-1 inhibits proliferation and migration and enhances radiosensitivity by suppressing glycolysis in colorectal cancer. *Am. J. Transl. Res.* 12: 4923-4940.
- Tian, W., et al. 2021. miR-218 inhibits glucose metabolism in non-small cell lung cancer via the NF κ B signaling pathway. *Exp. Ther. Med.* 21: 106.
- Yang, K., et al. 2021. Microarray expression profile of mRNAs and long noncoding RNAs and the potential role of PFK-1 in infantile hemangioma. *Cell Div.* 16: 1.
- Wu, J., et al. 2021. Melatonin reduces proliferation and promotes apoptosis of bladder cancer cells by suppressing O-GlcNAcylation of cyclin-dependent-like kinase 5. *J. Pineal Res.* 71: e12765.
- Zhou, W.J., et al. 2022. Fructose-1,6-bisphosphate prevents pregnancy loss by inducing decidual COX-2⁺ macrophage differentiation. *Sci. Adv.* 8: eabj2488.
- Ishfaq, M., et al. 2022. Expression of HK2, PKM2, and PFKM is associated with metastasis and late disease onset in breast cancer patients. *Genes* 13: 549.

RESEARCH USE

For research use only, not for use in diagnostic procedures.