

PFK-2 liv (E-16): sc-10096

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).

REFERENCES

1. Tsuura, Y., et al. 1998. Endogenous nitric oxide inhibits glucose-induced Insulin secretion by suppression of phosphofructokinase activity in pancreatic islets. *Biochem. Biophys. Res. Commun.* 252: 34-38.
2. Chang, S.H., et al. 2002. Role of Ser 530, Arg 292, and His 662 in the allosteric behavior of rabbit muscle phosphofructokinase. *Biochem. Biophys. Res. Commun.* 290: 670-675.
3. Zeitschel, U., et al. 2002. Changes in activity and expression of phosphofructokinase in different rat brain regions after basal forebrain cholinergic lesion. *J. Neurochem.* 83: 371-380.
4. Su, Y., et al. 2003. The α -subunit of the V-type H⁺-ATPase interacts with phosphofructokinase-1 in humans. *J. Biol. Chem.* 278: 20013-20018.
5. Sotgia, F., et al. 2003. Phosphofructokinase muscle-specific isoform requires caveolin-3 expression for plasma membrane recruitment and caveolar targeting: implications for the pathogenesis of caveolin-related muscle diseases. *Am. J. Pathol.* 163: 2619-2634.
6. Haller, R.G., et al. 2004. No spontaneous second wind in muscle phosphofructokinase deficiency. *Neurology* 62: 82-86.
7. Martin, S.R., et al. 2004. Interaction of calmodulin with the phosphofructokinase target sequence. *FEBS Lett.* 577: 284-288.
8. Yamada, S., et al. 2004. Novel testis- and embryo-specific isoforms of the phosphofructokinase-1 muscle type gene. *Biochem. Biophys. Res. Commun.* 316: 580-587.
9. Vallejo, J., et al. 2005. Expression of caveolin-1 in lymphocytes induces caveolae formation and recruitment of phosphofructokinase to the plasma membrane. *FASEB J.* 19: 586-587.

CHROMOSOMAL LOCATION

Genetic locus: PFKFB1 (human) mapping to Xq13; Pfkfb1 (mouse) mapping to X F2.

RESEARCH USE

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

SOURCE

PFK-2 liv (E-16) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of PFK-2 liv of human origin.

PRODUCT

Each vial contains 200 μ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-10096 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

PFK-2 liv (E-16) is recommended for detection of liver and testis PFK-2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for PFK-2 liv siRNA (h): sc-39032, PFK-2 liv siRNA (m): sc-39033, PFK-2 liv shRNA Plasmid (h): sc-39032-SH, PFK-2 liv shRNA Plasmid (m): sc-39033-SH, PFK-2 liv shRNA (h) Lentiviral Particles: sc-39032-V and PFK-2 liv shRNA (m) Lentiviral Particles: sc-39033-V.

Molecular Weight of PFK: 51 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Bensaad, K., et al. 2006. TIGAR, a p53-inducible regulator of glycolysis and apoptosis. *Cell* 126: 107-120.
2. Rodríguez-Prados, J.C., et al. 2010. Substrate fate in activated macrophages: a comparison between innate, classic, and alternative activation. *J. Immunol.* 185: 605-614.

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.