SANTA CRUZ BIOTECHNOLOGY, INC.

GK1 (C-12): sc-161647

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

As the central structural component of the major classes of biological lipids, trigylcerides and phosphatidyl phospholipids, glycerol is an essential intermediate in carbohydrate and lipid metabolism. Glycerol kinases (GKs) function to catalyze the transfer of a phosphate group from ATP to glycerol, thereby forming glycerol phosphate. This intermediate can then be converted to dihydroxyacetone phosphate (DHAP), which is utilized in either glycolysis or gluconeogenesis. Mutations in the genes encoding GK family members can result in glycerol kinase deficiency, which is characterized by hyperglycerolemia, psycomotor retardation and osteoporosis. GK1 is a 559 amino acid mitochondrial peripheral membrane protein that belongs to the FGGY kinase family and is a key enzyme involved in the regulation of glycerol uptake and metabolism. GK1 shows high expression in kidney, testis and liver and exists as three isoforms, which are produced as a result of alternative splicing events.

REFERENCES

1. Sargent, C.A., Young, C., Marsh, S., Ferguson-Smith, M.A. and Affara, N.A. 1994. The glycerol kinase gene family: structure of the Xp gene, and related intronless retroposons. Hum. Mol. Genet. 3: 1317-1324.
2. Walker, A.P., Muscatelli, F., Stafford, A.N., Chelly, J., Dahl, N., Blomquist, H.K., Delanghe, J., Willems, P.J., Steinmann, B. and Monaco, A.P. 1996. Mutations and phenotype in isolated glycerol kinase deficiency. Am. J. Hum. Genet. 58: 1205-1211.
3. Gaudet, D., Arsenault, S., Perusse, L., Vohl, M.C., St-Pierre, J., Bergeron, J., Desprεs, J.P., Dewar, K., Daly, M.J., Hudson, T. and Rioux, J.D. 2000. Glycerol as a correlate of impaired glucose tolerance: dissection of a complex system by use of a simple genetic trait. Am. J. Hum. Genet. 66: 1558-1568.
4. Guo, X., Zhuge, B. and Zhuge, J. 2002. Research progress on the glycerol kinase. Wei Sheng Wu Xue Bao 42: 510-513.
5. Wang, S., Soni, K.G., Semache, M., Casavant, S., Fortier, M., Pan, L. and Mitchell, G.A. 2008. Lipolysis and the integrated physiology of lipid energy metabolism. Mol. Genet. Metab. 95: 117-126.
6. Online Mendelian Inheritance in Man, OMIM™. 2008. Johns Hopkins University, Baltimore, MD. MIM Number: 300474. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
7. Rahib, L., Sriram, G., Harada, M.K., Liao, J.C. and Dipple, K.M. 2009. Transcriptomic and network component analysis of glycerol kinase in skeletal muscle using a mouse model of glycerol kinase deficiency. Mol. Genet. Metab. 96: 106-112
8. McCrea, H.J. and De Camilli, P. 2009. Mutations in phosphoinositide metabolizing enzymes and human disease. Physiology 24: 8-16.

CHROMOSOMAL LOCATION

Genetic locus: GK (human) mapping to Xp21.2; Gyk (mouse) mapping to X C1.

RESEARCH USE

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

SOURCE

GK1 (C-12) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of GK1 of human origin.

PRODUCT

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

Blocking peptide available for competition studies, sc-161647 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

GK1 (C-12) is recommended for detection of GK1 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); non cross-reactive with human GK2 or GK5; may cross-react with murine GK2.

GK1 (C-12) is also recommended for detection of GK1 in additional species, including equine, canine and bovine.

Suitable for use as control antibody for GK1 siRNA (h): sc-91167, GK1 siRNA (m): sc-145410, GK1 shRNA Plasmid (h): sc-91167-SH, GK1 shRNA Plasmid (m): sc-145410-SH, GK1 shRNA (h) Lentiviral Particles: sc-91167-V and GK1 shRNA (m) Lentiviral Particles: sc-145410-V.

Molecular Weight of GK1: 61 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.

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.