SANTA CRUZ BIOTECHNOLOGY, INC.

GK1 (F-5): sc-393555

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 (glycerol kinase 1) 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. GK2 (glycerol kinase 2), also known as GKP2 or GKTA, is a 553 amino acid protein involved in the pathway of glycerol degradation. Localized to the outer membrane of the mitochondrion and expressed at high levels in testis, GK2 functions to catalyze the ATP-dependent conversion of glycerol to glycerol 3-phosphate. Via its catalytic activity, GK2 plays an essential role in the regulation of glycerol uptake and metabolism.

REFERENCES

1. Matsumoto, T., et al. 1988. Complex glycerol kinase deficiency: molecular-genetic, cytogenetic, and clinical studies of five Japanese patients. Am. J. Med. Genet. 31: 603-616.
2. Lee, R.T., et al. 1992. Cloning of a human galactokinase gene (GK2) on chromosome 15 by complementation in yeast. Proc. Natl. Acad. Sci. USA 89: 10887-10891.

CHROMOSOMAL LOCATION

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

SOURCE

GK1 (F-5) is a mouse monoclonal antibody raised against amino acids 1-132 mapping at the N-terminus of GK1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

GK1 (F-5) is available conjugated to agarose (sc-393555 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-393555 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-393555 PE), fluorescein (sc-393555 FITC), Alexa Fluor® 488 (sc-393555 AF488), Alexa Fluor® 546 (sc-393555 AF546), Alexa Fluor® 594 (sc-393555 AF594) or Alexa Fluor® 647 (sc-393555 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-393555 AF680) or Alexa Fluor® 790 (sc-393555 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

STORAGE

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

APPLICATIONS

GK1 (F-5) is recommended for detection of GK1 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

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.

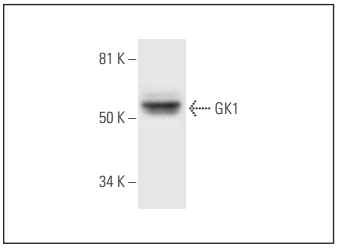
Molecular Weight of GK2: 61 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



GK1 (F-5): sc-393555. Western blot analysis of GK1 expression in Hep G2 whole cell lysate.

SELECT PRODUCT CITATIONS

1. Bodega, G., et al. 2018. Young and especially senescent endothelial microvesicles produce NADPH: the fuel for their antioxidant machinery. Oxid. Med. Cell. Longev. 2018: 3183794.
2. Lorenzetti, F., et al. 2020. Hepatic glycerol metabolism is early reprogrammed in rat liver cancer development. Biochimie 170: 88-93.

RESEARCH USE

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