SANTA CRUZ BIOTECHNOLOGY, INC.

GFAT2 (E-13): sc-162857

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

GFPT2 (glutamine-fructose-6-phosphate transaminase 2), also known as D-fructose-6-phosphate amidotransferase 2 or hexosephosphate aminotransferase 2, is a 682 amino acid protein and isoenzyme of GFAT1, the first and rate-limiting enzyme for the entry of glucose into the hexosamine biosynthetic pathway (HBP), which is a relatively minor branch of glycolysis. Expressed in spinal cord, heart and placenta, GFAT2 regulates glucose entry into the HBP and likely controls the availability of precursors for N- and O-linked protein glycosylation. Containing one glutamine amidotransferase type-2 domain and two SIS domains. GFAT2 is encoded by a gene that maps to human chromosome 5q35.3. GFAT2 gene variants have been linked to type 2 diabetes, diabetic nephropathy, and increased GFPT2 mRNA levels.

REFERENCES

1. Oki, T., Yamazaki, K., Kuromitsu, J., Okada, M. and Tanaka, I. 1999. cDNA cloning and mapping of a novel subtype of glutamine: fructose-6-phosphate amidotransferase (GFAT2) in human and mouse. Genomics 57: 227-234.
2. Schleicher, E.D. and Weigert, C. 2000. Role of the hexosamine biosynthetic pathway in diabetic nephropathy. Kidney Int. Suppl. 77: S13-S18.
3. Hu, Y., Riesland, L., Paterson, A.J. and Kudlow, J.E. 2004. Phosphorylation of mouse glutamine-fructose-6-phosphate amidotransferase 2 (GFAT2) by cAMP-dependent protein kinase increases the enzyme activity. J. Biol. Chem. 279: 29988-29993.
4. Zhang, H., Jia, Y., Cooper, J.J., Hale, T., Zhang, Z. and Elbein, S.C. 2004. Common variants in glutamine:fructose-6-phosphate amidotransferase 2 (GFPT2) gene are associated with type 2 diabetes, diabetic nephropathy, and increased GFPT2 mRNA levels. J. Clin. Endocrinol. Metab. 89: 748-755.
5. Buse, M.G. 2006. Hexosamines, Insulin resistance, and the complications of diabetes: current status. Am. J. Physiol. Endocrinol. Metab. 290: E1-E8.
6. Srinivasan, V., Sandhya, N., Sampathkumar, R., Farooq, S., Mohan, V. and Balasubramanyam, M. 2007. Glutamine fructose-6-phosphate amidotransferase (GFAT) gene expression and activity in patients with type 2 diabetes: inter-relationships with hyperglycaemia and oxidative stress. Clin. Biochem. 40: 952-957.
7. Yang, C.T., Hindes, A.E., Hultman, K.A. and Johnson, S.L. 2007. Mutations in gfpt1 and skiv2l2 cause distinct stage-specific defects in larval melanocyte regeneration in zebrafish. PLoS Genet. 3: e88.
8. Online Mendelian Inheritance in Man, OMIM™. 2009. Johns Hopkins University, Baltimore, MD. MIM Number: 603865. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/

CHROMOSOMAL LOCATION

Genetic locus: GFPT2 (human) mapping to 5q35.3; Gfpt2 (mouse) mapping to 11 B1.2.

STORAGE

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

SOURCE

GFAT2 (E-13) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of GFAT2 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-162857 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

GFAT2 (E-13) is recommended for detection of GFAT2 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 GFAT1.

Suitable for use as control antibody for GFAT2 siRNA (h): sc-91875, GFAT2 siRNA (m): sc-145383, GFAT2 shRNA Plasmid (h): sc-91875-SH, GFAT2 shRNA Plasmid (m): sc-145383-SH, GFAT2 shRNA (h) Lentiviral Particles: sc-91875-V and GFAT2 shRNA (m) Lentiviral Particles: sc-145383-V.

Molecular Weight of GFAT2: 77 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200 or A549 cell lysate: sc-2413.

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.

RESEARCH USE

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

PROTOCOLS

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