SANTA CRUZ BIOTECHNOLOGY, INC.

GFAT2 siRNA (m): sc-145383

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.

CHROMOSOMAL LOCATION

Genetic locus: Gfpt2 (mouse) mapping to 11 B1.2.

PRODUCT

GFAT2 siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see GFAT2 shRNA Plasmid (m): sc-145383-SH and GFAT2 shRNA (m) Lentiviral Particles: sc-145383-V as alternate gene silencing products.

For independent verification of GFAT2 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-145383A, sc-145383B and sc-145383C.

PROTOCOLS

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

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

GFAT2 siRNA (m) is recommended for the inhibition of GFAT2 expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor GFAT2 gene expression knockdown using RT-PCR Primer: GFAT2 (m)-PR: sc-145383-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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