SANTA CRUZ BIOTECHNOLOGY, INC.

GPD2 siRNA (m): sc-145685

BACKGROUND

GPD2 (glycerol-3-phosphate dehydrogenase 2, mitochondrial), also known as GDH2 or GPDM, is a 727 amino acid protein belonging to the FAD-dependent glycerol-3-phosphate dehydrogenase family. GPD2 is involved in the conversion of glycerol-3-phosphate (G-3-P) to dihydroxyacetone phosphate (DHAP) while reducing enzyme-bound FAD. Localizing to the outer surface of the inner mitochondrial membrane, GPD2 acts in conjunction with GPD1 (a cytosolic NAD-linked GPD) to form a glycerol phosphate shuttle that ultimately results in the reoxidation of NADH formed during glycolysis. While widely expressed in adult and fetal tissue, GPD2 is found at highest levels found in human pancreatic islets where it is essential for pancreatic B-cell glucose-sensory function. Decreased levels of GPD2 leads to impaired glucose-stimulated Insulin release in noninsulin-dependent diabetes mellitus. Existing as two alternatively spliced isoforms, GPD2 contains two EF-hand domains and maps to human chromosome 2q24.1.

REFERENCES

1. Shaw, M.A., et al. 1982. Human mitochondrial glycerol phosphate dehydrogenase (GPDm) isozymes. Ann. Hum. Genet. 46: 11-23.
2. Ferrer, J., et al. 1996. Mitochondrial glycerol-3-phosphate dehydrogenase. Cloning of an alternatively spliced human islet-cell cDNA, tissue distribution, physical mapping, and identification of a polymorphic genetic marker. Diabetes 45: 262-266.
3. MacDonald, M.J., et al. 1996. Normalization by Insulin treatment of low mitochondrial glycerol phosphate dehydrogenase and pyruvate carboxylase in pancreatic islets of the GK rat. Diabetes 45: 886-890.
4. Brown, L.J., et al. 1996. Structural organization and mapping of the human mitochondrial glycerol phosphate dehydrogenase-encoding gene and pseudogene. Gene 172: 309-312.
5. Novials, A., et al. 1997. Mutation in the calcium-binding domain of the mitochondrial glycerophosphate dehydrogenase gene in a family of diabetic subjects. Biochem. Biophys. Res. Commun. 231: 570-572.
6. Gong, Q., et al. 2000. Functional analysis of two promoters for the human mitochondrial glycerol phosphate dehydrogenase gene. J. Biol. Chem. 275: 38012-38021.
7. Brown, L.J., et al. 2002. Normal thyroid thermogenesis but reduced viability and adiposity in mice lacking the mitochondrial glycerol phosphate dehydrogenase. J. Biol. Chem. 277: 32892-32898.

CHROMOSOMAL LOCATION

Genetic locus: Gpd2 (mouse) mapping to 2 C1.1.

PRODUCT

GPD2 siRNA (m) is a target-specific 19-25 nt siRNA 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 GPD2 shRNA Plasmid (m): sc-145685-SH and GPD2 shRNA (m) Lentiviral Particles: sc-145685-V as alternate gene silencing 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

GPD2 siRNA (m) is recommended for the inhibition of GPD2 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.

GENE EXPRESSION MONITORING

GPD2 (D-12): sc-390830 is recommended as a control antibody for monitoring of GPD2 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

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) 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor GPD2 gene expression knockdown using RT-PCR Primer: GPD2 (m)-PR: sc-145685-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.

PROTOCOLS

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