SANTA CRUZ BIOTECHNOLOGY, INC.

SMVT siRNA (h): sc-61573

BACKGROUND

The sodium-dependent multivitamin transporter (SMVT) is a 635 amino acid protein that belongs to the sodium-coupled glucose transporter family. SMVT contains 12 putative transmembrane domains with the N and C termini both facing towards the cytoplasm. Its function is to transport the essential vitamins pantothenate, biotin, and the metabolite lipoate into cells of various human tissues. Biotin, also known as vitamin B6, is important in synthesizing fatty acids gluconeogenesis, and metabolizing leucine, while pantothenate, or vitamin B5, is critical in the metabolism and synthesis of carbohydrates, proteins, and fats. Lipoate is involved in oxidative metabolism. SMVT uses a specialized carrier-mediated system to take up these vitamins and metabolites into the cells. This process is active and uses energy from the transmembrane sodium ion gradient as well as the membrane potential.

REFERENCES

1. Prasad, P.D., et al. 1998. Clonin vitamin transporter mediating the uptake of pantothenate, Biotin, and lipoate. J. Biol. Chem. 273: 7501-7506.
2. Prasad, P.D., et al. 1999. Molecular and functional characterization of the intestinal Na^+-dependent multivitamin transporter. Arch. Biochem. Biophys. 366: 95-106.
3. Wang, H., et al. 1999. Human placental Na^+-dependent multivitamin transporter. Cloning, functional expression, gene structure, and chromosomal localization. J. Biol. Chem. 274: 14875-14883.
4. Prasad, P.D., et al. 2000. Structure and function of mammalian sodium-dependent multivitamin transporter. Curr. Opin. Clin. Nutr. Metab. Care 3: 263-266.
5. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 604024. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
6. Balamurugan, K., et al. 2003. Biotin uptake by human intestinal and liver epithelial cells: role of the SMVT system. Am. J. Physiol. Gastrointest. Liver Physiol. 285: 73-77.

CHROMOSOMAL LOCATION

Genetic locus: SLC5A6 (human) mapping to 2p23.3.

PRODUCT

SMVT siRNA (h) 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 SMVT shRNA Plasmid (h): sc-61573-SH and SMVT shRNA (h) Lentiviral Particles: sc-61573-V as alternate gene silencing products.

For independent verification of SMVT (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-61573A, sc-61573B and sc-61573C.

RESEARCH USE

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

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

SMVT siRNA (h) is recommended for the inhibition of SMVT expression in human 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

SMVT (D-11): sc-390080 is recommended as a control antibody for monitoring of SMVT 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 SMVT gene expression knockdown using RT-PCR Primer: SMVT (h)-PR: sc-61573-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

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