SANTA CRUZ BIOTECHNOLOGY, INC.

MLYCD siRNA (h): sc-93181

BACKGROUND

MLYCD (malonyl-CoA decarboxylase), also known as MCD, is a 493 amino acid protein that is expressed as two isoforms, one of which is localized to mitochondria and the other of which is localized to the cytoplasm and to peroxisomes. MLYCD functions to catalyze the conversion of malonyl-CoA to acetyl-CoA and carbon dioxide, thus regulating the levels of malonyl-CoA within the cell. Controlling the amount of intracellular malonyl-CoA is crucial for ensuring that methyl-malonyl-CoA, a version of malonyl-CoA with one or more methyl side chains, is the only chain elongating substrate present for the enzyme Fatty Acid Synthase. Via its ability to reduce the concentration of malonyl-CoA within the cell, MLYCD effectively increases the rate of fatty acid oxidation. Defects in the gene encoding MLYCD are the cause of malonyl-CoA decarboxylase deficiency (MLYCD deficiency), a recessive disease characterized by episodic vomiting, malonic aciduria and chronic constipation.

REFERENCES

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2. Sacksteder, K.A., et al. 1999. MCD encodes peroxisomal and cytoplasmic forms of malonyl-CoA decarboxylase and is mutated in malonyl-CoA decarboxylase deficiency. J. Biol. Chem. 274: 24461-24468.
3. Gao, J., et al. 1999. Cloning and mutational analysis of human malonyl-coenzyme A decarboxylase. J. Lipid Res. 40: 178-182.
4. Wightman, P.J., et al. 2003. MLYCD mutation analysis: evidence for protein mistargeting as a cause of MLYCD deficiency. Hum. Mutat. 22: 288-300.
5. Zhou, D., et al. 2004. Expression, purification, and characterization of human malonyl-CoA decarboxylase. Protein Expr. Purif. 34: 261-269.
6. Cuthbert, K.D., et al. 2005. Malonyl-CoA decarboxylase is a major regulator of myocardial fatty acid oxidation. Curr. Hypertens. Rep. 7: 407-411.
7. Kuhl, J.E., et al. 2006. Exercise training decreases the concentration of malonyl-CoA and increases the expression and activity of malonyl-CoA decarboxylase in human muscle. Am. J. Physiol. Endocrinol. Metab. 290: E1296-E1303.

CHROMOSOMAL LOCATION

Genetic locus: MLYCD (human) mapping to 16q23.3.

PRODUCT

MLYCD 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 MLYCD shRNA Plasmid (h): sc-93181-SH and MLYCD shRNA (h) Lentiviral Particles: sc-93181-V as alternate gene silencing products.

For independent verification of MLYCD (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-93181A, sc-93181B and sc-93181C.

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

MLYCD siRNA (h) is recommended for the inhibition of MLYCD 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor MLYCD gene expression knockdown using RT-PCR Primer: MLYCD (h)-PR: sc-93181-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.