

ALDH6A1 siRNA (m): sc-141004

BACKGROUND

Aldehyde dehydrogenases (ALDHs) mediate the NADP⁺-dependent oxidation of aldehydes into acids and play an important role in the detoxification of alcohol-derived acetaldehyde, as well as in lipid peroxidation and in the metabolism of corticosteroids, biogenic amines and neurotransmitters. ALDH6A1 (aldehyde dehydrogenase family 6 member A1), also known as MMSDH or MMSADHA, is a 535 amino acid mitochondrial protein that belongs to the aldehyde dehydrogenase family. Considered a mitochondrial methylmalonate semialdehyde dehydrogenase, ALDH6A1 catalyzes the irreversible oxidative decarboxylation of malonate and methylmalonate semi-aldehydes to acetyl- and propionyl-CoA. It is suggested that ALDH6A1 plays a role in the valine and pyrimidine catabolic pathways.

REFERENCES

1. Goodwin, G.W., Rougraff, P.M., Davis, E.J. and Harris, R.A. 1989. Purification and characterization of methylmalonate-semialdehyde dehydrogenase from rat liver. Identity to malonate-semialdehyde dehydrogenase. *J. Biol. Chem.* 264: 14965-14971.
2. Deichaite, I., Berthiaume, L., Peseckis, S.M., Patton, W.F. and Resh, M.D. 1993. Novel use of an iodo-myristyl-CoA analog identifies a semialdehyde dehydrogenase in bovine liver. *J. Biol. Chem.* 268: 13738-13747.
3. Berthiaume, L., Deichaite, I., Peseckis, S. and Resh, M.D. 1994. Regulation of enzymatic activity by active site fatty acylation. A new role for long chain fatty acid acylation of proteins. *J. Biol. Chem.* 269: 6498-6505.
4. Kedishvili, N.Y., Goodwin, G.W., Popov, K.M. and Harris, R.A. 2000. Mammalian methylmalonate-semialdehyde dehydrogenase. *Meth. Enzymol.* 324: 207-218.
5. Vasiliou, V. and Pappa, A. 2000. Polymorphisms of human aldehyde dehydrogenases. Consequences for drug metabolism and disease. *Pharmacology* 61: 192-198.

CHROMOSOMAL LOCATION

Genetic locus: Aldh6a1 (mouse) mapping to 12 D1.

PRODUCT

ALDH6A1 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see ALDH6A1 shRNA Plasmid (m): sc-141004-SH and ALDH6A1 shRNA (m) Lentiviral Particles: sc-141004-V as alternate gene silencing products.

For independent verification of ALDH6A1 (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-141004A, sc-141004B and sc-141004C.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

ALDH6A1 siRNA (m) is recommended for the inhibition of ALDH6A1 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 μ M in 66 μ l. 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

ALDH6A1 (C-9): sc-271582 is recommended as a control antibody for monitoring of ALDH6A1 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-IgG κ BP-HRP: sc-516102 or m-IgG κ 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-IgG κ BP-FITC: sc-516140 or m-IgG κ 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 ALDH6A1 gene expression knockdown using RT-PCR Primer: ALDH6A1 (m)-PR: sc-141004-PR (20 μ l). 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.