SANTA CRUZ BIOTECHNOLOGY, INC.

ALDH5A1 siRNA (m): sc-72481

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. ALDH5A1 (aldehyde dehydrogenase 5 family, member A1), also known as SSDH or SSADH, is a 535 amino acid protein that localizes to the mitochondria and belongs to the aldehyde dehydrogenase family. Expressed in a variety of tissues, including liver, heart, lung, brain, kidney and placenta, ALDH5A1 is required for gamma-aminobutyric acid (GABA) recycling from the synaptic cleft. Mutations of ALDH5A1 leads to succinate semialdehyde dehydrogenase deficiency (SSADH deficiency) that is characterized by severe ataxia and by mildly retarded psychomotor development.

REFERENCES

1. Kang, J.H., et al. 2005. High-level expression and characterization of the recombinant enzyme, and tissue distribution of human succinic semialdehyde dehydrogenase. Protein Expr. Purif. 44: 16-22.
2. Leone, O., et al. 2006. A human derived SSADH coding variant is replacing the ancestral allele shared with primates. Ann. Hum. Biol. 33: 593-603.
3. Jansen, E.E., et al. 2006. Increased guanidino species in murine and human succinate semialdehyde dehydrogenase (SSADH) deficiency. Biochim. Biophys. Acta 1762: 494-498.
4. Blasi, P., et al. 2006. SSADH variation in primates: intra- and interspecific data on a gene with a potential role in human cognitive functions. J. Mol. Evol. 63: 54-68.
5. Mehta, A.K., et al. 2006. Succinate semialdehyde dehydrogenase deficiency does not downregulate γ-hydroxybutyric acid binding sites in the mouse brain. Mol. Genet. Metab. 88: 86-89.
6. Barcelo-Coblijn, G., et al. 2007. Lipid abnormalities in succinate semialdehyde dehydrogenase ($ALDH5A1^{-/-}$) deficient mouse brain provide additional evidence for myelin alterations. Biochim. Biophys. Acta 1772: 556-562.

CHROMOSOMAL LOCATION

Genetic locus: Aldh5a1 (mouse) mapping to 13 A3.1.

PRODUCT

ALDH5A1 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 ALDH5A1 shRNA Plasmid (m): sc-72481-SH and ALDH5A1 shRNA (m) Lentiviral Particles: sc-72481-V as alternate gene silencing products.

For independent verification of ALDH5A1 (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-72481A, sc-72481B and sc-72481C.

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

ALDH5A1 siRNA (m) is recommended for the inhibition of ALDH5A1 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

ALDH5A1 (D-3): sc-390754 is recommended as a control antibody for monitoring of ALDH5A1 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 ALDH5A1 gene expression knockdown using RT-PCR Primer: ALDH5A1 (m)-PR: sc-72481-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.