

ADH4 siRNA (m): sc-140879

BACKGROUND

ADH4 (alcohol dehydrogenase 4) is a 380 amino acid protein that belongs to the zinc-containing alcohol dehydrogenase family of enzymes that function to metabolize a wide variety of substrates, including retinol, hydroxysteroids, ethanol, aliphatic alcohols and lipid peroxidation products. Localized to the cytoplasm and existing as a homodimer, ADH4 uses zinc as a cofactor to catalyze the NAD⁺-dependent conversion of an alcohol to an aldehyde or a ketone, thereby participating in the metabolic degradation of alcohols within the body. Multiple isoforms of ADH4 exist due to alternative splicing events. The gene encoding ADH4 maps to a cluster of alcohol dehydrogenase genes on human chromosome 4, a chromosome that encodes nearly 6% of the human genome and has the largest gene deserts (regions of the genome with no protein encoding genes) of all of the human chromosomes.

REFERENCES

1. Li, T.K., et al. 1977. Isolation of pi-alcohol dehydrogenase of human liver: is it a determinant of alcoholism? *Proc. Natl. Acad. Sci. USA* 74: 4378-4381.
2. Mardh, G., et al. 1986. Human class II (pi) alcohol dehydrogenase has a redox-specific function in norepinephrine metabolism. *Proc. Natl. Acad. Sci. USA* 83: 8908-8912.
3. von Bahr-Lindström, H., et al. 1991. Cloning and characterization of the human ADH4 gene. *Gene* 103: 269-274.
4. Edman, K. and Maret, W. 1992. Alcohol dehydrogenase genes: restriction fragment length polymorphisms for ADH4 (pi-ADH) and ADH5 (chi-ADH) and construction of haplotypes among different ADH classes. *Hum. Genet.* 90: 395-401.
5. Kuo, P.H., et al. 2008. Association of ADH and ALDH genes with alcohol dependence in the Irish Affected Sib Pair Study of alcohol dependence (IASPSAD) sample. *Alcohol Clin. Exp. Res.* 32: 785-795.
6. Luo, X., et al. 2008. Recessive genetic mode of an ADH4 variant in substance dependence in African-Americans: A model of utility of the HWD test. *Behav. Brain Funct.* 4: 42.

CHROMOSOMAL LOCATION

Genetic locus: Adh4 (mouse) mapping to 3 G3.

PRODUCT

ADH4 siRNA (m) is a pool of 2 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 ADH4 shRNA Plasmid (m): sc-140879-SH and ADH4 shRNA (m) Lentiviral Particles: sc-140879-V as alternate gene silencing products.

For independent verification of ADH4 (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-140879A and sc-140879B.

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 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

ADH4 siRNA (m) is recommended for the inhibition of ADH4 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

ADH4 (F-6): sc-515217 is recommended as a control antibody for monitoring of ADH4 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 ADH4 gene expression knockdown using RT-PCR Primer: ADH4 (m)-PR: sc-140879-PR (20 μ l). 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.