

ADH7 siRNA (h): sc-89101

BACKGROUND

ADH7 (alcohol dehydrogenase 7 (class IV), μ or σ polypeptide), also known as ADH4, retinol dehydrogenase or gastric alcohol dehydrogenase, is a 386 amino acid protein belonging to the zinc-containing alcohol dehydrogenase family and the class-IV subfamily. Eight different human ADH isozymes exist: three belong to class-I: α , β and γ ; one to class-II: π ; one to class-III: χ ; one to class-IV; one to class-V; and one to class-VI. Encoded by a gene that maps to human chromosome 4q23, ADH7 localizes to the cytoplasm and is preferentially expressed in stomach, but, unlike other family members, is absent from liver. ADH7 is a homodimer that binds two zinc ions per subunit and contains nine exons. ADH7 participates in the synthesis of retinoic acid, a hormone important for cellular differentiation. Variations in ADH7 may be associated with alcohol dependence. ADH7 may also play a role in protection against aerodigestive tract cancer.

REFERENCES

1. Satre, M.A., et al. 1994. The complete structure of human class IV alcohol dehydrogenase (retinol dehydrogenase) determined from the ADH7 gene. *J. Biol. Chem.* 269: 15606-15612.
2. Yokoyama, H., et al. 1995. Upstream structure of human ADH7 gene and the organ distribution of its expression. *Biochem. Biophys. Res. Commun.* 216: 216-222.
3. Zgombic-Knight, M., et al. 1995. Genomic structure and expression of the ADH7 gene encoding human class IV alcohol dehydrogenase, the form most efficient for retinol metabolism *in vitro*. *J. Biol. Chem.* 270: 4305-4311.
4. Yokoyama, H., et al. 1996. Molecular cloning and chromosomal localization of the ADH7 gene encoding human class IV (σ) ADH. *Genomics* 31: 243-245.
5. Osier, M.V., et al. 2002. A global perspective on genetic variation at the ADH genes reveals unusual patterns of linkage disequilibrium and diversity. *Am. J. Hum. Genet.* 71: 84-99.
6. Osier, M.V., et al. 2004. Possible epistatic role of ADH7 in the protection against alcoholism. *Am. J. Med. Genet. B Neuropsychiatr. Genet.* 126B: 19-22.
7. Lee, J., et al. 2007. A small-molecule antagonist of the hedgehog signaling pathway. *Chembiochem* 8: 1916-1919.
8. Oze, I., et al. 2009. Impact of multiple alcohol dehydrogenase gene polymorphisms on risk of upper aerodigestive tract cancers in a Japanese population. *Cancer Epidemiol. Biomarkers Prev.* 18: 3097-3102.
9. Wei, S., et al. 2010. A single nucleotide polymorphism in the alcohol dehydrogenase 7 gene (alanine to glycine substitution at amino acid 92) is associated with the risk of squamous cell carcinoma of the head and neck. *Cancer* 116: 2984-2992.

CHROMOSOMAL LOCATION

Genetic locus: ADH7 (human) mapping to 4q23.

RESEARCH USE

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

PRODUCT

ADH7 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see ADH7 shRNA Plasmid (h): sc-89101-SH and ADH7 shRNA (h) Lentiviral Particles: sc-89101-V as alternate gene silencing products.

For independent verification of ADH7 (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-89101A, sc-89101B and sc-89101C.

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

ADH7 siRNA (h) is recommended for the inhibition of ADH7 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 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor ADH7 gene expression knockdown using RT-PCR Primer: ADH7 (h)-PR: sc-89101-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.