SANTA CRUZ BIOTECHNOLOGY, INC.

UDP-GlcDH siRNA (m): sc-44710

BACKGROUND

UDP-GlcDH (also called UDP-glucose 6-dehydrogenase, UGDH or UDPGDH) is a member of the UDP-glucose/GDP-mannose dehydrogenase family. UDP-GlcDH converts UDP-glucose to UDP-glucuronic acid, which is a crucial component in the biosynthesis of the glycosaminoglycans, hyaluronan, heparan sulfate and chondroitin sulfate. Found as common components of the extracellular matrix, these glycosaminoglycans are significant in signal transduction, cell migration, and cancer growth and metastasis. UDP-glucuronic acid (UDP-GlcA) is needed in liver for the excretion of toxic compounds. UDP-GlcDH is an ubiquitously expressed protein most abundant in the liver. The protein structure of UDP-GlcDH was first analyzed in bovine liver and found to be a homohexamer. This structure is well conserved between species and phyla with an overall 97% sequence identity shared between different species of mammals. Research indicates that UDP-GlcDH expression is upregulated by TGFβ and downregulated by hypoxia.

REFERENCES

1. Hempel, J., et al. 1994. UDP-glucose dehydrogenase from bovine liver: primary structure and relationship to other dehydrogenases. Protein Sci. 3: 1074-1080.
2. Spicer, A.P., et al. 1998. Molecular cloning and characterization of the human and mouse UDP-glucose dehydrogenase genes. J. Biol. Chem. 273: 25117-25124.
3. Marcu, O., et al. 1999. Assignment of the UGDH locus encoding UDP-glucose dehydrogenase to human chromosome band 4p15.1 by radiation hybrid mapping. Cytogenet. Cell Genet. 86: 244-245.
4. Johansson, H., et al. 2002. Molecular cloning and characterization of a cDNA encoding poplar UDP-glucose dehydrogenase, a key gene of hemicellulose/pectin formation. Biochim. Biophys. Acta 1576: 53-58.
5. Bontemps, Y., et al. 2003. Specific protein-1 is a universal regulator of UDP-glucose dehydrogenase expression: its positive involvement in transforming growth factor-β signaling and inhibition in hypoxia. J. Biol. Chem. 278: 21566-21575.
6. Vatsyayan, J., et al. 2005. Analysis of human UDP-glucose dehydrogenase gene promoter: identification of an Sp1 binding site crucial for the expression of the large transcript. J. Biochem. 137: 703-709.

CHROMOSOMAL LOCATION

Genetic locus: Ugdh (mouse) mapping to 5 C3.1.

PRODUCT

UDP-GlcDH 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 UDP-GlcDH shRNA Plasmid (m): sc-44710-SH and UDP-GlcDH shRNA (m) Lentiviral Particles: sc-44710-V as alternate gene silencing products.

For independent verification of UDP-GlcDH (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-44710A, sc-44710B and sc-44710C.

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

UDP-GlcDH siRNA (m) is recommended for the inhibition of UDP-GlcDH 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

UDP-GlcDH (B-4): sc-137058 is recommended as a control antibody for monitoring of UDP-GlcDH 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 UDP-GlcDH gene expression knockdown using RT-PCR Primer: UDP-GlcDH (m)-PR: sc-44710-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.