SANTA CRUZ BIOTECHNOLOGY, INC.

L-xylulose reductase siRNA (m): sc-62537

BACKGROUND

L-xylulose reductase (XR), also called kidney dicarbonyl reductase (kiDCR) or sperm surface protein P34H, is a 244 amino acid member of the short-chain dehydrogenases/reductases family. This peripheral membrane protein catalyzes NADPH-dependent reduction of mulitple sugars, including L-xylulose, to the osmolyte xylitol. Producing xylitol in the renal tubules can prevent osmotic stress. L-xylulose reductase functions as a homotetramer and is expressed highly in kidney, liver and epididymis. Essential pentosuria is the result of a partial deficiency of L-xylulose reductase. Red blood cells of normal individuals contain two L-xylulose reductases: a major and a minor isozyme. Red cells from patients with pentosuria contain only one isozyme. Due to its role in the uronate cycle of glucose metabolism, L-xylulose reductase has been implicated in the management of the long term complications of diabetes.

REFERENCES

1. Lane, A.B. 1985. On the nature of L-xylulose reductase deficiency in essential pentosuria. Biochem. Genet. 23: 61-72.
2. Ishikura, S., et al. 2003. Structural determinant for cold inactivation of rodent L-xylulose reductase. Biochem. Biophys. Res. Commun. 308: 68-72.
3. Ishikura, S., et al. 2003. Identification of amino acid residues involved in substrate recognition of L-xylulose reductase by site-directed mutagenesis. Chem. Biol. Interact. 143-144: 543-550.
4. Carbone, V., et al. 2004. Structure-based discovery of human L-xylulose reductase inhibitors from database screening and molecular docking. Bioorg. Med. Chem. 13: 301-312.
5. St-Cyr, A., et al. 2004. P26H and dicarbonyl/L-xylulose reductase are two distinct proteins present in the hamster epididymis. Mol. Reprod. Dev. 69: 137-145.
6. El-Kabbani, O., et al. 2004. Crystal structure of human L-xylulose reductase holoenzyme: probing the role of Asn107 with site-directed mutagenesis. Proteins 55: 724-732.
7. Martin, P., et al. 2004. Different clinical and morphological phenotypes in monozygotic twins with identical DCX mutation. J. Neurol. 251: 108-110.

CHROMOSOMAL LOCATION

Genetic locus: Dcxr (mouse) mapping to 11 E2.

PRODUCT

L-xylulose reductase 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see L-xylulose reductase shRNA Plasmid (m): sc-62537-SH and L-xylulose reductase shRNA (m) Lentiviral Particles: sc-62537-V as alternate gene silencing products.

For independent verification of L-xylulose reductase (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-62537A and sc-62537B.

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

L-xylulose reductase siRNA (m) is recommended for the inhibition of L-xylulose reductase 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor L-xylulose reductase gene expression knockdown using RT-PCR Primer: L-xylulose reductase (m)-PR: sc-62537-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.