

L-xylulose reductase siRNA (h): sc-62536

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 multiple 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.

CHROMOSOMAL LOCATION

Genetic locus: DCXR (human) mapping to 17q25.3.

PRODUCT

L-xylulose reductase 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 L-xylulose reductase shRNA Plasmid (h): sc-62536-SH and L-xylulose reductase shRNA (h) Lentiviral Particles: sc-62536-V as alternate gene silencing products.

For independent verification of L-xylulose reductase (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-62536A, sc-62536B and sc-62536C.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

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

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

GENE EXPRESSION MONITORING

L-xylulose reductase (18-Q): sc-100552 is recommended as a control antibody for monitoring of L-xylulose reductase 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 L-xylulose reductase gene expression knockdown using RT-PCR Primer: L-xylulose reductase (h)-PR: sc-62536-PR (20 μ l). 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.