

L-xylulose reductase (S-14): sc-54834

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

- Lane, A.B. 1985. On the nature of L-xylulose reductase deficiency in essential pentosuria. *Biochem. Genet.* 23: 61-72.
- Ishikura, S., et al. 2003. Structural determinant for cold inactivation of rodent L-xylulose reductase. *Biochem. Biophys. Res. Commun.* 308: 68-72.
- 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.
- 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.
- 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.
- 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.
- Martin, P., et al. 2004. Different clinical and morphological phenotypes in monozygotic twins with identical DCX mutation. *J. Neurol.* 251: 108-110.
- El-Kabbani, O., et al. 2005. Structure of the tetrameric form of human L-xylulose reductase: probing the inhibitor-binding site with molecular modeling and site-directed mutagenesis. *Proteins* 60: 424-432.
- Asami, J., et al. 2006. Suppression of AGE precursor formation following unilateral ureteral obstruction in mouse kidneys by transgenic expression of alpha-dicarbonyl/L-xylulose reductase. *Biosci. Biotechnol. Biochem.* 70: 2899-2905.

CHROMOSOMAL LOCATION

Genetic locus: DCXR (human) mapping to 17q25.3; Dcxl/Cbr2 (mouse) mapping to 11 E2.

RESEARCH USE

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

SOURCE

L-xylulose reductase (S-14) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of L-xylulose reductase of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-54834 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

L-xylulose reductase (S-14) is recommended for detection of L-xylulose reductase of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000); also recommended for detection of lung NADPH-dependent carbonyl reductase in mouse.

Suitable for use as control antibody for L-xylulose reductase siRNA (h): sc-62536, L-xylulose reductase siRNA (m): sc-62537, L-xylulose reductase shRNA Plasmid (h): sc-62536-SH, L-xylulose reductase shRNA Plasmid (m): sc-62537-SH, L-xylulose reductase shRNA (h) Lentiviral Particles: sc-62536-V and L-xylulose reductase shRNA (m) Lentiviral Particles: sc-62537-V.

Molecular Weight of L-xylulose reductase: 34 kDa.

Positive Controls: A-431 whole cell lysate: sc-2201.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.



Try **L-xylulose reductase (18-Q): sc-100552**, our highly recommended monoclonal alternative to L-xylulose reductase (S-14).