SANTA CRUZ BIOTECHNOLOGY, INC.

Myo-inositol oxygenase siRNA (m): sc-61118

BACKGROUND

Myo-inositol oxygenase (MIOX), also known as ALDRL6, is a renal-specific member of the Aldo-keto reductase family. It catalyzes the first committed step in the Myo-inositol metabolism pathway and is widely distributed in mammalian tissues. Human Myo-inositol oxygenase shares 91% and 96% sequence homology with mouse and pig Myo-inositol oxygenase homologs, respectively. Myo-inositol oxygenase is responsible for the oxidative cleavage of Myo-inositol (MI) and its epimer D-chiro inositol (DCI) to D-glucuronate. The dioxygen-dependent cleavage of the C1-C6 bond in Myo-inositol is accomplished through the utilization of the Fe(II)/Fe(III) binuclear iron center of MIOX. Myo-inositol oxygenase has also been implicated in complications of diabetes, including diabetic nephropathy.

REFERENCES

1. Yang, Q., et al. 2000. Identification of a renal-specific oxido-reductase in newborn diabetic mice. Proc. Natl. Acad. Sci. USA 97: 9896-9901.
2. Arner, R.J., et al. 2001. Myo-inositol oxygenase: molecular cloning and expression of a unique enzyme that oxidizes myo-inositol and D-chiro-inositol. Biochem. J. 360: 313-320.
3. Lorence, A., et al. 2004. Myo-inositol oxygenase offers a possible entry point into plant ascorbate biosynthesis. Plant Physiol. 134: 1200-1205.
4. Arner, R.J., et al. 2005. Expression of Myo-inositol oxygenase in tissues susceptible to diabetic complications. Biochem. Biophys. Res. Commun. 339: 816-820.
5. Prabhu, K.S., et al. 2005. Up-regulation of human Myo-inositol oxygenase by hyperosmotic stress in renal proximal tubular epithelial cells. J. Biol. Chem. 280: 19895-19901.
6. Brown, P.M., et al. 2006. Purification, crystallization and preliminary crystallographic analysis of mouse Myo-inositol oxygenase. Acta Crystallogr. Sect. F Struct. Biol. Cryst. Commun. 62: 811-813.
7. Xing, G., et al. 2006. Oxygen activation by a mixed-valent, diiron(II/III) cluster in the glycol cleavage reaction catalyzed by Myo-inositol oxygenase. Biochemistry 45: 5402-5412.

CHROMOSOMAL LOCATION

Genetic locus: Miox (mouse) mapping to 15 E3.

PRODUCT

Myo-inositol oxygenase 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 Myo-inositol oxygenase shRNA Plasmid (m): sc-61118-SH and Myo-inositol oxygenase shRNA (m) Lentiviral Particles: sc-61118-V as alternate gene silencing products.

For independent verification of Myo-inositol oxygenase (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-61118A, sc-61118B and sc-61118C.

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

Myo-inositol oxygenase siRNA (m) is recommended for the inhibition of Myo-inositol oxygenase 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

Myo-inositol oxygenase (E-11): sc-376080 is recommended as a control antibody for monitoring of Myo-inositol oxygenase 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 Myo-inositol oxygenase gene expression knockdown using RT-PCR Primer: Myo-inositol oxygenase (m)-PR: sc-61118-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.