SANTA CRUZ BIOTECHNOLOGY, INC.

Myo-inositol oxygenase siRNA (h): sc-61117

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.

CHROMOSOMAL LOCATION

Genetic locus: MIOX (human) mapping to 22q13.33.

PRODUCT

Myo-inositol oxygenase 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Myo-inositol oxygenase shRNA Plasmid (h): sc-61117-SH and Myo-inositol oxygenase shRNA (h) Lentiviral Particles: sc-61117-V as alternate gene silencing products.

For independent verification of Myo-inositol oxygenase (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-61117A, sc-61117B and sc-61117C.

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 (h) is recommended for the inhibition of Myo-inositol oxygenase 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 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 (h)-PR: sc-61117-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Deng, F., et al. 2019. Myo-inositol oxygenase expression profile modulates pathogenic ferroptosis in the renal proximal tubule. J. Clin. Invest. 129: 5033-5049.

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.