SANTA CRUZ BIOTECHNOLOGY, INC.

HAO1 siRNA (m): sc-145894

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The Power to Question

BACKGROUND

HAO1 (hydroxyacid oxidase 1) is also known as GOX1 (glycolate oxidase 1) or HAOX1 and is a 370 amino acid protein that is expressed in liver and pancreas. HAO1 is localized to peroxisomes and aids in organic acid metabolism via 2-hydroxyacid oxidase activity. 2-hydroxyacid oxidases, such as HAO1, are enzymes that require a flavin cofactor to oxidize 2-hydroxyacids to 2-ketoacids while reducing oxygen to hydrogen peroxide. HAO1 prefenentially oxidizes the substrate glycolate and also oxidizes other substrates, including 2-hydroxy fatty acids as well as L-α-hydroxy acids of moderately short chain lengths. The oxidation of glycolate yields glyoxylate which is utilized for peroxisomal synthesis of glycine. HAO1 is also able to convert glyoxylate to oxalate. HAO1 is thought to play a role in the pathophysiology of hyperoxaluria type 1, which is caused by defects in AGXT, a peroxisomal enzyme, leading to accumulation of glyoxylate. Hyperoxaluria type 1 is characterized by an accumulation of oxalate that is thought to lead to precipitates of calcium oxalate in kidneys which can be fatal.

REFERENCES

1. Williams, E., Cregeen, D. and Rumsby, G. 2000. Identification and expression of a cDNA for human glycolate oxidase. Biochim. Biophys. Acta 1493: 246-248.
2. Jones, J.M., Morrell, J.C. and Gould, S.J. 2000. Identification and characterization of HAOX1, HAOX2, and HAOX3, three human peroxisomal 2-hydroxy acid oxidases. J. Biol. Chem. 275: 12590-12597.
3. Recalcati, S., Menotti, E. and Kühn, L.C. 2001. Peroxisomal targeting of mammalian hydroxyacid oxidase 1 requires the C-terminal tripeptide SKI. J. Cell Sci. 114: 1625-1629.
4. Recalcati, S., Tacchini, L., Alberghini, A., Conte, D. and Cairo, G. 2003. Oxidative stress-mediated down-regulation of rat hydroxyacid oxidase 1, a liver-specific peroxisomal enzyme. Hepatology 38: 1159-1166.
5. Online Mendelian Inheritance in Man, OMIM™. 2004. Johns Hopkins University, Baltimore, MD. MIM Number: 605023. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
6. Murray, M.S., Holmes, R.P. and Lowther, W.T. 2008. Active site and loop 4 movements within human glycolate oxidase: implications for substrate specificity and drug design. Biochemistry 47: 2439-2449.
7. Fahnenstich, H., Scarpeci, T.E., Valle, E.M., Flügge, U.I. and Maurino, V.G. 2008. Generation of hydrogen peroxide in chloroplasts of *Arabidopsis* overexpressing glycolate oxidase as an inducible system to study oxidative stress. Plant Physiol. 148: 719-729.

CHROMOSOMAL LOCATION

Genetic locus: Hao1 (mouse) mapping to 2 F2.

PROTOCOLS

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

PRODUCT

HAO1 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 HAO1 shRNA Plasmid (m): sc-145894-SH and HAO1 shRNA (m) Lentiviral Particles: sc-145894-V as alternate gene silencing products.

For independent verification of HAO1 (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-145894A, sc-145894B and sc-145894C.

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

HAO1 siRNA (m) is recommended for the inhibition of HAO1 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

HAO1 (7A1-8H3B): sc-517552 is recommended as a control antibody for monitoring of HAO1 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor HAO1 gene expression knockdown using RT-PCR Primer: HAO1 (m)-PR: sc-145894-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.