SANTA CRUZ BIOTECHNOLOGY, INC.

ECHS1 siRNA (m): sc-143286

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The Power to Question

BACKGROUND

ECHS1 (enoyl-CoA hydratase 1), also known as SCEH (short chain enoyl-CoA hydratase), is a 290 amino acid protein that localizes to the mitochondrial matrix and belongs to the enoyl-CoA hydratase family. Expressed in muscle, liver and fibroblasts, with low expression in kidney and spleen, ECHS1 exists as a homohexamer that functions in the second step of the mitochondrial fatty acid β-oxidation pathway. Specifically, ECHS1 catalyzes the hydration of 2-*trans*-enoyl-coenzyme A (CoA) intermediates to L-3-hydroxyacyl-CoAs, a reaction that is essential for proper lipid metabolism. Human ECHS1 shares 87% homology with its rat counterpart, suggesting a conserved function between species. Multiple isoforms of ECHS1 exist as a result of alternative splicing events. The gene encoding ECHS1 maps to human chromosome 10, which houses over 1,200 genes and comprises nearly 4.5% of the human genome.

REFERENCES

1. Stern, J.R., et al. 1956. Enzymes of fatty acid metabolism. II. Properties of crystalline crotonase. J. Biol. Chem. 218: 985-1002.
2. Li, J., et al. 1991. Mitochondrial metabolism of valproic acid. Biochemistry 30: 388-394.
3. Kanazawa, M., et al. 1993. Molecular cloning and sequence analysis of the cDNA for human mitochondrial short-chain enoyl-CoA hydratase. Enzyme Protein 47: 9-13.
4. Jackson, S., et al. 1995. Characterisation of a novel enzyme of human fatty acid β-oxidation: a matrix-associated, mitochondrial 2-enoyl-CoA hydratase. Biochem. Biophys. Res. Commun. 214: 247-253.
5. Janssen, U., et al. 1997. Human mitochondrial enoyl-CoA hydratase gene (ECHS1): structural organization and assignment to chromosome 10q26.2-q26.3. Genomics 40: 470-475.
6. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 602292. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
7. Takahashi, M., et al. 2007. Suppression of virus replication via down-modulation of mitochondrial short chain enoyl-CoA hydratase in human glioblastoma cells. Antiviral Res. 75: 152-158.

CHROMOSOMAL LOCATION

Genetic locus: Echs1 (mouse) mapping to 7 F4.

PRODUCT

ECHS1 siRNA (m) is a target-specific 19-25 nt siRNA 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 ECHS1 shRNA Plasmid (m): sc-143286-SH and ECHS1 shRNA (m) Lentiviral Particles: sc-143286-V as alternate gene silencing products.

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 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

ECHS1 siRNA (m) is recommended for the inhibition of ECHS1 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor ECHS1 gene expression knockdown using RT-PCR Primer: ECHS1 (m)-PR: sc-143286-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.