SANTA CRUZ BIOTECHNOLOGY, INC.

ACADL siRNA (m): sc-72426

BACKGROUND

The acyl-CoA dehydrogenase (ACAD) family of enzymes are involved in the catabolism of fatty acids and amino acids and they provide a major source of energy for the heart and skeletal muscle. ACADL (acyl-coenzyme A dehydrogenase, long chain), also known as LCAD or ACAD4, is a 430 amino acid protein that localizes to the mitochondrial matrix and belongs to the acyl-CoA dehydrogenase family. Existing as a homotetramer, ACADL uses FAD as a cofactor to catalyze the initial step of mitochondrial β-oxidation of straight-chain fatty acids. Defects in the gene encoding ACADL are the cause of long-chain acyl-CoA dehydrogenase (LCAD) deficiency, which leads to non-ketotic hypoglycemia and hypotonia.

REFERENCES

1. Indo, Y., et al. 1991. Molecular cloning and nucleotide sequence of cDNAs encoding human long-chain acyl-CoA dehydrogenase and assignment of the location of its gene (ACADL) to chromosome 2. Genomics 11: 609-620.
2. Hinsdale, M.E., et al. 1995. RNA expression and chromosomal location of the mouse long-chain acyl-CoA dehydrogenase gene. Genomics 28: 163-170.
3. Wanders, R.J., et al. 1998. 2,6-dimethylheptanoyl-CoA is a specific substrate for long-chain acyl-CoA dehydrogenase (LCAD): evidence for a major role of LCAD in branched-chain fatty acid oxidation. Biochim. Biophys. Acta 1393: 35-40.
4. Guerra, C., et al. 1998. Abnormal nonshivering thermogenesis in mice with inherited defects of fatty acid oxidation. J. Clin. Invest. 102: 1724-1731.
5. Kurtz, D.M., et al. 1998. Targeted disruption of mouse long-chain acyl-CoA dehydrogenase gene reveals crucial roles for fatty acid oxidation. Proc. Natl. Acad. Sci. USA 95: 15592-15597.
6. Lea, W., et al. 2000. Long-chain acyl-CoA dehydrogenase is a key enzyme in the mitochondrial β-oxidation of unsaturated fatty acids. Biochim. Biophys. Acta 1485: 121-128.
7. Zhang, D., et al. 2007. Mitochondrial dysfunction due to long-chain acyl-CoA dehydrogenase deficiency causes hepatic steatosis and hepatic insulin resistance. Proc. Natl. Acad. Sci. USA 104: 17075-17080.
8. Online Mendelian Inheritance in Man, OMIM™. 2008. Johns Hopkins University, Baltimore, MD. MIM Number: 609576. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/

CHROMOSOMAL LOCATION

Genetic locus: Acadl (mouse) mapping to 1 C3.

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.

PRODUCT

ACADL 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. Suit-able for 50-100 transfections. Also see ACADL shRNA Plasmid (m): sc-72426-SH and ACADL shRNA (m) Lentiviral Particles: sc-72426-V as alternate gene silencing products.

For independent verification of ACADL (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-72426A, sc-72426B and sc-72426C.

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

ACADL siRNA (m) is recommended for the inhibition of ACADL 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 ACADL gene expression knockdown using RT-PCR Primer: ACADL (m)-PR: sc-72426-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.