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DEC1 siRNA (m): sc-142951

BACKGROUND

β oxidation refers to the enzymatic process by which Acyl-CoA is catalytically broken down to yield Acetyl-CoA, the first molecule required for the Krebs cycle. DEC1 (2,4-dienoyl-CoA reductase, mitochondrial), also known as DEC1, is a 335 amino acid mitochondrial protein that exists as a homotetramer and belongs to the family of short-chain dehydrogenases/reductases. Expressed in heart, pancreas, liver, lung, kidney and skeletal muscle, DEC1 functions as an auxiliary enzyme of β -oxidation where it participates in the metabolism of unsaturated fatty enoyl-CoA esters. Specifically, DEC1 uses NADP⁺ to catalyze the reduction of 2,4-dienoyl-CoA to yield *trans*-3-enoyl-CoA, which can then be used as an intermediate in the Krebs cycle. Additionally, DEC1 is thought to function as a tumor suppressor, possibly down regulating the expression of Neu and slowing the rate of tumorigenesis.

REFERENCES

1. Roe, C.R., et al. 1990. 2,4-Dienoyl-coenzyme A reductase deficiency: a possible new disorder of fatty acid oxidation. *J. Clin. Invest.* 85: 1703-1707.
2. Koivuranta, K.T., et al. 1994. Isolation and characterization of cDNA for human 120 kDa mitochondrial 2,4-dienoyl-coenzyme A reductase. *Biochem. J.* 304: 787-792.
3. Helander, H.M., et al. 1997. Molecular cloning and characterization of the human mitochondrial 2,4-dienoyl-CoA reductase gene (DEC1). *Genomics* 46: 112-119.
4. Fillgrove, K.L., et al. 1999. Cloning, expression, and purification of the functional 2,4-dienoyl-CoA reductase from rat liver mitochondria. *Protein Expr. Purif.* 17: 57-63.
5. Fillgrove, K.L., et al. 2001. The mechanism of dienoyl-CoA reduction by 2,4-dienoyl-CoA reductase is stepwise: observation of a dienolate intermediate. *Biochemistry* 40: 12412-12421.
6. Ren, Y., et al. 2003. Metabolic functions of the two pathways of oleate β -oxidation double bond metabolism during the β -oxidation of oleic acid in rat heart mitochondria. *J. Biol. Chem.* 278: 111-116.

CHROMOSOMAL LOCATION

Genetic locus: Dec1 (mouse) mapping to 4 A2.

PRODUCT

DEC1 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see DEC1 shRNA Plasmid (m): sc-142951-SH and DEC1 shRNA (m) Lentiviral Particles: sc-142951-V as alternate gene silencing products.

PROTOCOLS

See our web site at www.scbt.com or our catalog 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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

DEC1 siRNA (m) is recommended for the inhibition of DEC1 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 μ M in 66 μ l. 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

DEC1 (H-246): sc-366484 is recommended as a control antibody for monitoring of DEC1 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 (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor DEC1 gene expression knockdown using RT-PCR Primer: DEC1 (m)-PR: sc-142951-PR (20 μ l). 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.