

DEC R1 siRNA (h): sc-77514

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. DEC R1 (2,4-dienoyl-CoA reductase, mitochondrial), also known as DEC R, 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, DEC R1 functions as an auxiliary enzyme of β -oxidation where it participates in the metabolism of unsaturated fatty enoyl-CoA esters. Specifically, DEC R1 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, DEC R1 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 (DEC R). *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: DEC R1 (human) mapping to 8q21.3.

PRODUCT

DEC R1 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see DEC R1 shRNA Plasmid (h): sc-77514-SH and DEC R1 shRNA (h) Lentiviral Particles: sc-77514-V as alternate gene silencing products.

For independent verification of DEC R1 (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-77514A, sc-77514B and sc-77514C.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

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

DEC R1 siRNA (h) is recommended for the inhibition of DEC R1 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 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

DEC R1 (G-10): sc-393473 is recommended as a control antibody for monitoring of DEC R1 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-IgG κ BP-HRP: sc-516102 or m-IgG κ 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-IgG κ BP-FITC: sc-516140 or m-IgG κ 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 DEC R1 gene expression knockdown using RT-PCR Primer: DEC R1 (h)-PR: sc-77514-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

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