SANTA CRUZ BIOTECHNOLOGY, INC.

SREBP-1 siRNA (m): sc-36558

BACKGROUND

The low density lipoprotein (LDL) receptor mediates the endocytic uptake of cholesterol-carrying lipoproteins, thereby controlling cholesterol levels in cells and plasma. Transcription of the LDL receptor gene is controlled by a ten base pair sequence in the 5' flanking region, designated sterol regulatory element 1 (SRE-1). When cellular sterol stores are depleted, the element is activated, the gene is transcribed and the cellular uptake of LDL increases. A set of SRE-binding proteins (SREBPs) have been identified, including two basic helix-loop-helix leucine zipper (bHLH-Zip) transcription factors, designated SREBP-1 and SREBP-2. SREBP-1 (also designated ADD1, for adipocyte determination and differentiation factor) is synthesized as a precursor that is attached to the nuclear envelope and endoplasmic reticulum. In sterol-depleted cells, the membrane-bound precursor is cleaved to generate a soluble NH_2-terminal fragment that translocates to the nucleus to activate transcription. Sterols inhibit the cleavage of SREBP-1.

REFERENCES

1. Brown, M.S., et al. 1986. A receptor-mediated pathway for cholesterol homeostasis. Science 232: 34-47.
2. Smith, J.R., et al. 1990. Identification of nucleotides responsible for enhancer activity of sterol regulatory element in low density lipoprotein receptor gene. J. Biol. Chem. 265: 2306-2310.

CHROMOSOMAL LOCATION

Genetic locus: Srebf1 (mouse) mapping to 11 B2.

PRODUCT

SREBP-1 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 SREBP-1 shRNA Plasmid (m): sc-36558-SH and SREBP-1 shRNA (m) Lentiviral Particles: sc-36558-V as alternate gene silencing products.

For independent verification of SREBP-1 (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-36558A, sc-36558B and sc-36558C.

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

SREBP-1 siRNA (m) is recommended for the inhibition of SREBP-1 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

SREBP-1 (A-4): sc-365513 is recommended as a control antibody for monitoring of SREBP-1 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 SREBP-1 gene expression knockdown using RT-PCR Primer: SREBP-1 (m)-PR: sc-36558-PR (20 µl, 563 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Yoshida, M., et al. 2009. Identification of *cis*-acting promoter sequences required for expression of the glycerol-3-phosphate acyltransferase 1 gene in mice. Biochim. Biophys. Acta 1791: 39-52.
2. Chin, H.J., et al. 2010. Omacor, n-3 polyunsaturated fatty acid, attenuated albuminuria and renal dysfunction with decrease of SREBP-1 expression and triglyceride amount in the kidney of type II diabetic animals. Nephrol. Dial. Transplant. 25: 1450-1457.
3. Ning, J., et al. 2011. Constitutive role for IRE1-XBP1 signaling pathway in the Insulin-mediated hepatic lipogenic program. Endocrinology 152: 2247-2255.
4. Mohamed, J.S., et al. 2013. Ankyrin repeat domain protein 2 and inhibitor of DNA binding 3 cooperatively inhibit myoblast differentiation by physical interaction. J. Biol. Chem. 288: 24560-24568.
5. Yamanaka, Y., et al. 2015. Antisense RNA controls LRP1 sense transcript expression through interaction with a chromatin-associated protein, HMGB2. Cell Rep. 11: 967-976.
6. Abd Eldaim, M.A., et al. 2017. Retinoic acid modulates lipid accumulation glucose concentration dependently through inverse regulation of SREBP-1 expression in 3T3L1 adipocytes. Genes Cells 22: 568-582.
7. Sun, X., et al. 2020. Nrf2 mediates oxidative stress-induced lipid accumulation in adipocytes by increasing adipogenesis and decreasing lipolysis. Antioxid. Redox Signal. 32: 173-192.

RESEARCH USE

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