SANTA CRUZ BIOTECHNOLOGY, INC.

SREBP-1 siRNA (h): sc-36557

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 (human) mapping to 17p11.2.

PRODUCT

SREBP-1 siRNA (h) is a pool of 4 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 (h): sc-36557-SH and SREBP-1 shRNA (h) Lentiviral Particles: sc-36557-V as alternate gene silencing products.

For independent verification of SREBP-1 (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-36557A, sc-36557B, sc-36557C and sc-36557D.

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 (h) is recommended for the inhibition of SREBP-1 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 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.

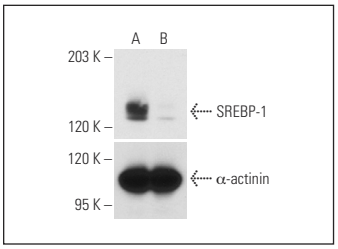
GENE EXPRESSION MONITORING

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 (h)-PR: sc-36557-PR (20 µl, 533 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

DATA



SREBP-1 siRNA (h): sc-36557. Western blot analysis of SREBP-1 expression in non-transfected control (**A**) and SREBP-1 siRNA transfected (**B**) HeLa cells. Blot probed with SREBP-1 (2A4): sc-13551. α-actinin (H-2): sc-17829 used as specificity and loading control.

SELECT PRODUCT CITATIONS

1. Campia, I., et al. 2009. Digoxin and ouabain increase the synthesis of cholesterol in human liver cells. Cell. Mol. Life Sci. 66: 1580-1594.
2. Madak-Erdogan, Z., et al. 2019. Free fatty acids rewire cancer metabolism in obesity-associated breast cancer via estrogen receptor and mTOR signaling. Cancer Res. 79: 2494-2510.
3. Sohrabi, Y., et al. 2020. LXR activation induces a proinflammatory trained innate immunity-phenotype in human monocytes. Front. Immunol. 11: 353.

RESEARCH USE

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