SANTA CRUZ BIOTECHNOLOGY, INC.

Lipin-1 siRNA (h): sc-60940

BACKGROUND

The Lipin family of nuclear proteins contains three members: Lipin-1, Lipin-2, and Lipin-3, all of which contain a nuclear signal sequence, a highly conserved amino-terminal (NLIP) domain, and a carboxy-terminal (CLIP) domain. Lipin-1 is crucial for normal adipose tissue development and metabolism. Lipin-1 selectively activates a subset of PGC-1α target pathways, including fatty acid oxidation and mitochondrial oxidative phosphorylation by inducing expression of the nuclear receptor PPARα. Lipin-1 also inactivates the lipogenic program and suppresses circulating lipid levels. An abundance of Lipin-1 promotes fat accumulation and Insulin sensitivity, whereas a deficiency in Lipin-1 may deter normal adipose tissue development, resulting in Insulin resistance and lipodystrophy, a heterogeneous group of disorders characterized by loss of body fat, fatty liver, hypertriglyceridemia, and Insulin resistance.

REFERENCES

1. Péterfy, M., et al. 2001. Lipodystrophy in the fld mouse a nuclear protein, lipin. Nat. Genet. 27: 121-124.
2. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 605518. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
3. Reitman, M.L. 2005. The fat and thin of lipin. Cell Metab. 1: 5-6.
4. Phan, J., et al. 2005. Lipin, a lipodystrophy and obesity gene. Cell Metab. 1: 73-83.
5. Phan, J., et al. 2005. Biphasic expression of lipin suggests dual roles in adipocyte development. Drug News Perspect. 18: 5-11.
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7. Han, G.S., et al. 2006. The *Saccharomyces cerevisiae* Lipin homolog is a Mg^{2+}-dependent phosphatidate phosphatase enzyme. J. Biol. Chem. 281: 9210-9218.
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CHROMOSOMAL LOCATION

Genetic locus: LPIN1 (human) mapping to 2p25.1.

PRODUCT

Lipin-1 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Lipin-1 shRNA Plasmid (h): sc-60940-SH and Lipin-1 shRNA (h) Lentiviral Particles: sc-60940-V as alternate gene silencing products.

For independent verification of Lipin-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-60940A, sc-60940B and sc-60940C.

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

Lipin-1 siRNA (h) is recommended for the inhibition of Lipin-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

Lipin-1 (B-12): sc-376874 is recommended as a control antibody for monitoring of Lipin-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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 Lipin-1 gene expression knockdown using RT-PCR Primer: Lipin-1 (h)-PR: sc-60940-PR (20 µl, 568 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Imai, H., et al. 2021. LPIN1 downregulation enhances anticancer activity of the novel HDAC/PI3K dual inhibitor FK-A11. Cancer Sci. 112: 792-802.

RESEARCH USE

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