SANTA CRUZ BIOTECHNOLOGY, INC.

LPCAT1 siRNA (m): sc-149020

BACKGROUND

LPCAT1 (lysophosphatidylcholine acyltransferase 1), also known as AYTL2 (acyltransferase-like 2) or PFAAP3 (phosphonoformate immuno-associated protein 3), is a 534 amino acid single-pass type II membrane protein that contains two EF-hand domains and belongs to the 1-acyl-sn-glycerol-3-phosphate acyltransferase family. While its activity is calcium-independent, LPCAT1 possesses both acyltransferase and acetyltransferase activities, and mediates the conversion of 1-acyl-sn-glycero-3-phosphocholine (LPC) into phosphatidylcholine (PC). LPCAT1 displays a clear preference for saturated fatty acyl-CoAs, and 1-myristoyl or 1-palmitoyl LPC as acyl donors and acceptors, respectively. Playing a pivotal role in respiratory physiology, LPCAT1 may synthesize phosphatidylcholine in pulmonary surfactant. LPCAT1 contains an HXXXXD motif, which is essential for acyltransferase activity and may constitute the binding site for the phosphate moiety of the glycerol-3-phosphate.

REFERENCES

1. Nakanishi, H., Shindou, H., Hishikawa, D., Harayama, T., Ogasawara, R., Suwabe, A., Taguchi, R. and Shimizu, T. 2006. Cloning and characterization of mouse lung-type acyl-CoA:lysophosphatidylcholine acyltransferase 1 (LPCAT1). Expression in alveolar type II cells and possible involvement in surfactant production. J. Biol. Chem. 281: 20140-20147.
2. Chen, X., Hyatt, B.A., Mucenski, M.L., Mason, R.J. and Shannon, J.M. 2006. Identification and characterization of a lysophosphatidylcholine acyltransferase in alveolar type II cells. Proc. Natl. Acad. Sci. USA 103: 11724-11729.
3. Online Mendelian Inheritance in Man, OMIM™. 2006. Johns Hopkins University, Baltimore, MD. MIM Number: 610472. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
4. Soupene, E., Fyrst, H. and Kuypers, F.A. 2008. Mammalian acyl-CoA:lysophosphatidylcholine acyltransferase enzymes. Proc. Natl. Acad. Sci. USA 105: 88-93.
5. Harayama, T., Shindou, H. and Shimizu, T. 2009. Biosynthesis of phosphatidylcholine by human lysophosphatidylcholine acyltransferase 1. J. Lipid Res. 50: 1824-1831.
6. Mansilla, F., da Costa, K.A., Wang, S., Kruhøffer, M., Lewin, T.M., Orntoft, T.F., Coleman, R.A. and Birkenkamp-Demtröder, K. 2009. Lysophosphatidylcholine acyltransferase 1 (LPCAT1) overexpression in human colorectal cancer. J. Mol. Med. 87: 85-97.
7. Bridges, J.P., Ikegami, M., Brilli, L.L., Chen, X., Mason, R.J. and Shannon, J.M. 2010. LPCAT1 regulates surfactant phospholipid synthesis and is required for transitioning to air breathing in mice. J. Clin. Invest. 120: 1736-1748.
8. Moessinger, C., Kuerschner, L., Spandl, J., Shevchenko, A. and Thiele, C. 2011. Human lysophosphatidylcholine acyltransferases 1 and 2 are located in lipid droplets where they catalyze the formation of phosphatidylcholine. J. Biol. Chem. 286: 21330-21339.

CHROMOSOMAL LOCATION

Genetic locus: Lpcat1 (mouse) mapping to 13 C1.

PRODUCT

LPCAT1 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 LPCAT1 shRNA Plasmid (m): sc-149020-SH and LPCAT1 shRNA (m) Lentiviral Particles: sc-149020-V as alternate gene silencing products.

For independent verification of LPCAT1 (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-149020A, sc-149020B and sc-149020C.

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

LPCAT1 siRNA (m) is recommended for the inhibition of LPCAT1 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor LPCAT1 gene expression knockdown using RT-PCR Primer: LPCAT1 (m)-PR: sc-149020-PR (20 µl). 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.

PROTOCOLS

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