SANTA CRUZ BIOTECHNOLOGY, INC.

SP-lyase siRNA (h): sc-72291

BACKGROUND

Sphingosine-1-phosphate lyase (SP-lyase) is a member of the group II decarboxylase family that is involved in lipid metabolism. SP-lyase has a variety of functions contributing to normal development, including maintenance of the reproductive system, stress responses, tissue integrity and cell survival. Located in the membrane of the endoplasmic reticulum, SP-lyase is responsible for the irreversible degradation of sphingosine-1-phosphate (S1P). S1P is a lipid important in cell proliferation and migration and, once cleaved by SP-lyase, is degraded into fatty acids and phosphoethanolamine. Through its ability to regulate S1P expression, SP-lyase may play a role in stress-induced apoptosis and is thought to exhibit tumor suppressor activity by silencing S1P activity. Current research suggests that SP-lyase may be a useful target for cancer therapy drugs, as increasing its expression during tumorigenesis may help to regulate cell proliferation.

REFERENCES

1. Zhou, J. and Saba, J.D. 1998. Identification of the first mammalian sphingosine phosphate lyase gene and its functional expression in yeast. Biochem. Biophys. Res. Commun. 242: 502-507.
2. Van Veldhoven, P.P., et al. 2000. Human sphingosine-1-phosphate lyase: cDNA cloning, functional expression studies and mapping to chromosome 10q22. Biochim. Biophys. Acta 1487: 128-134.
3. Ikeda, M., et al. 2004. Sphingosine-1-phosphate lyase SPL is an endoplasmic reticulum-resident, integral membrane protein with the pyridoxal 5'-phosphate binding domain exposed to the cytosol. Biochem. Biophys. Res. Commun. 325: 338-343.
4. Oskouian, B., et al. 2005. Regulation of sphingosine-1-phosphate lyase gene expression by members of the GATA family of transcription factors. J. Biol. Chem. 280: 18403-18410.
5. Min, J., et al. 2005. Sphingosine-1-phosphate lyase regulates sensitivity of human cells to select chemotherapy drugs in a p38-dependent manner. Mol. Cancer Res. 3: 287-296.
6. Kariya, Y., et al. 2005. Products by the sphingosine kinase/sphingosine 1-phosphate (S1P) lyase pathway but not S1P stimulate mitogenesis. Genes Cells 10: 605-615.
7. Schwab, S.R., et al. 2005. Lymphocyte sequestration through S1P lyase inhibition and disruption of S1P gradients. Science 309: 1735-1739.
8. Bassi, R., et al. 2006. Sphingosine-1-phosphate is released by cerebellar astrocytes in response to βFGF and induces astrocyte proliferation through G_i protein-coupled receptors. Glia 53: 621-630.
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CHROMOSOMAL LOCATION

Genetic locus: SGPL1 (human) mapping to 10q22.1.

PROTOCOLS

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

PRODUCT

SP-lyase 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 SP-lyase shRNA Plasmid (h): sc-72291-SH and SP-lyase shRNA (h) Lentiviral Particles: sc-72291-V as alternate gene silencing products.

For independent verification of SP-lyase (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-72291A, sc-72291B and sc-72291C.

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

SP-lyase siRNA (h) is recommended for the inhibition of SP-lyase 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor SP-lyase gene expression knockdown using RT-PCR Primer: SP-lyase (h)-PR: sc-72291-PR (20 µl, 500 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Berdyshev, E.V., et al. 2011. Intracellular S1P generation is essential for S1P-induced motility of human lung endothelial cells: role of sphingosine kinase 1 and S1P lyase. PLoS ONE 6: e16571.

RESEARCH USE

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