SANTA CRUZ BIOTECHNOLOGY, INC.

EDG-3 siRNA (h): sc-35261

BACKGROUND

The EDG (endothelial differentiation gene) family of G protein-coupled receptors consists of eight family members that bind lysophospholipid (LPL) mediators, including sphingosine-1-phosphate (SPP) and lysophosphatidic acid (LPA). EDG-1, EDG-3, EDG-5 (also designated H218 and AGR16) and EDG-8 bind SPP with high affinity. EDG-6 is a low affinity receptor for SPP. LPA preferentially binds to EDG-2, EDG-4 and EDG-7. The EDG receptors couple to multiple G proteins to signal through Ras, MAP kinase, Rho, Phospholipase C or other tyrosine kinases, which lead to cell survival, growth, migration and differentiation. EDG-1 signals through G_i proteins to activate Akt and is expressed in glioma cells. EDG-2 is expressed in brain, especially in white matter tract regions, while EDG-3 is expressed in cardiovascular tissue and in cerebellum. EDG-4 is highly expressed on leukocytes and brain, and EDG-5 has wide tissue distribution, including cardiovascular tissue and brain. EDG-6, which is expressed in lymphoid and hematopoietic tissues and in lung, signals through $G_{i/o}$ proteins, which activate growth related pathways.

REFERENCES

1. Goetzl, E.J., et al. 1999. A subfamily of G protein-coupled cellular receptors for lysophospholipids and lysosphingolipids. Adv. Exp. Med. Biol. 469: 259-264.
2. Van Brocklyn, J.R., et al. 2000. Sphingosine 1-phosphate is a ligand for the G protein-coupled receptor EDG-6. Blood 95: 2624-2629.
3. Sato, K., et al. 2000. Differential roles of EDG-1 and EDG-5, sphingosine 1-phosphate receptors, in the signaling pathways in C6 glioma cells. Brain Res. Mol. Brain Res. 85: 151-160.
4. Pyne, S., et al. 2000. Sphingosine 1-phosphate signalling in mammalian cells. Biochem. J. 349: 385-402.
5. Zheng, Y., et al. 2001. Lysophosphatidic acid receptor-selective effects on Jurkat T cell migration through a matrigel model basement membrane. J. Immunol. 166: 2317-2322.
6. Morales-Ruiz, M., et al. 2001. Sphingosine-1-phosphate activates Akt, nitric oxide production and chemotaxis through a G_i-protein/phosphoinositide 3-kinase pathway in endothelial cells. J. Biol. Chem. 276: 19672-19677.

CHROMOSOMAL LOCATION

Genetic locus: S1PR3 (human) mapping to 9q22.1.

PRODUCT

EDG-3 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 EDG-3 shRNA Plasmid (h): sc-35261-SH and EDG-3 shRNA (h) Lentiviral Particles: sc-35261-V as alternate gene silencing products.

For independent verification of EDG-3 (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-35261A, sc-35261B and sc-35261C.

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

EDG-3 siRNA (h) is recommended for the inhibition of EDG-3 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 EDG-3 gene expression knockdown using RT-PCR Primer: EDG-3 (h)-PR: sc-35261-PR (20 µl, 409 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Lin, C.I., et al. 2007. Sphingosine 1-phosphate regulates inflammation-related genes in human endothelial cells through S1P1 and S1P3. Biochem. Biophys. Res. Commun. 355: 895-901.
2. Bu, S., et al. 2010. Dihydrosphingosine 1-phosphate has a potent antifibrotic effect in scleroderma fibroblasts via normalization of phosphatase and tensin homolog levels. Arthritis Rheum. 62: 2117-2126.
3. Kim, E.S., et al. 2011. Sphingosine 1-phosphate regulates matrix metalloproteinase-9 expression and breast cell invasion through S1P3-$G_{\alpha\ q}$ coupling. J. Cell Sci. 124: 2220-2230.
4. Zheng, Z., et al. 2019. S1P promotes inflammation-induced tube formation by HLECs via the S1PR1/NFκB pathway. Int. Immunopharmacol. 66: 224-235.
5. Fohmann, I., et al. 2023. Sphingosine kinase 1/S1P receptor signaling axis is essential for cellular uptake of Neisseria meningitidis in brain endothelial cells. PLoS Pathog. 19: e1011842.

RESEARCH USE

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