SANTA CRUZ BIOTECHNOLOGY, INC.

GM3 Synthase siRNA (h): sc-72297

BACKGROUND

GM3 Synthase, also known as Sialyltransferase 9 or ST3Gal V, is a Golgi type II transmembrane glycosyltransferase predominantly expressed in brain and placenta. It belongs to the glycosyltransferase family 29 and is involved in the biosynthesis of complex gangliosides. In particular, GM3 Synthase catalyzes the transfer of α sialic acid to the terminal galactose of lactosylceramide to form the ganglioside GM3. GM3 is the simplest ganglioside and it participates in cell differentiation, signal transduction, and modulation of cell proliferation. The synthesis of GM3 by GM3 Synthase is the first major step in the formation of almost all other gangliosides. For this reason, GM3 Synthase acts as a key regulatory enzyme in the biosynthesis of gangliosides. A mutation in the gene encoding GM3 Synthase can lead to the inability to synthesize α- and β-series gangliosides and may result in Amish infantile epilepsy syndrome.

REFERENCES

1. Kapitonov, D., et al. 1999. Combinatorial PCR approach to homology-based cloning: cloning and expression of mouse and human GM3-Synthase. Glycoconj. J. 16: 337-350.
2. Allende, M.L., et al. 2000. Evidence supporting a late Golgi location for lactosylceramide to ganglioside GM3 conversion. Glycobiology 10: 1025-1032.
3. Kim, K.W., et al. 2001. Genomic structure of human GM3 Synthase gene (hST3Gal V) and identification of mRNA isoforms in the 5'-untranslated region. Gene 273: 163-171.
4. Kim, S.W., et al. 2002. Isolation and characterization of the promoter region of the human GM3 Synthase gene. Biochim. Biophys. Acta 1578: 84-89.
5. Simpson, M.A., et al. 2004. Infantile-onset symptomatic epilepsy syndrome caused by a homozygous loss-of-function mutation of GM3 Synthase. Nat. Genet. 36: 1225-1229.

CHROMOSOMAL LOCATION

Genetic locus: ST3GAL5 (human) mapping to 2p11.2.

PRODUCT

GM3 Synthase 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 GM3 Synthase shRNA Plasmid (h): sc-72297-SH and GM3 Synthase shRNA (h) Lentiviral Particles: sc-72297-V as alternate gene silencing products.

For independent verification of GM3 Synthase (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-72297A, sc-72297B and sc-72297C.

PROTOCOLS

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

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

GM3 Synthase siRNA (h) is recommended for the inhibition of GM3 Synthase 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

GM3 Synthase (B-12): sc-365329 is recommended as a control antibody for monitoring of GM3 Synthase 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 GM3 Synthase gene expression knockdown using RT-PCR Primer: GM3 Synthase (h)-PR: sc-72297-PR (20 µl, 437 bp). 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.