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- Mindermengenzuschlag
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SANTA CRUZ BIOTECHNOLOGY, INC.

THTR2 siRNA (m): sc-154262

BACKGROUND

Humans lack biosynthesis pathways for the micronutrients thiamine and folate, however, regulation of these vitamins is necessary for normal cellular function. The SLC19A gene family products mediate membrane transport of these molecules across the membrane to meet cellular requirements; in particular, two transporter proteins differentially import and export thiamine. THTR2 (thiamine transporter 2), also known as SLC19A3 (solute carrier family 19, member 3), is a 496 amino acid multi-pass membrane protein that is responsible for thiamine uptake in epithelial cells. THTR2 is widely expressed but most abundant in placenta, kidney and liver. Defects in THTR2 is thought to cause Biotin-responsive basal ganglia disease (BBGD), a recessive disorder that presents as a subacute encephalopathy, with confusion, dysarthria and dysphagia. BBGD progresses to severe rigidity, dystonia, quadriparesis and death if not treated.

REFERENCES

1. Rajgopal, A., et al. 2001. SLC19A3 encodes a second thiamine transporter THTR2. Biochim. Biophys. Acta 1537: 175-178.
2. Liu, S., et al. 2004. Thiamine transporter gene expression and exogenous thiamine modulate the expression of genes involved in drug and prostaglandin metabolism in breast cancer cells. Mol. Cancer Res. 2: 477-487.
3. Zeng, W.Q., et al. 2005. Biotin-responsive basal ganglia disease maps to 2q36.3 and is due to mutations in SLC19A3. Am. J. Hum. Genet. 77: 16-26.
4. Nabokina, S.M., et al. 2005. Differentiation-dependent up-regulation of intestinal thiamin uptake: cellular and molecular mechanisms. J. Biol. Chem. 280: 32676-32682.
5. Vlasova, T.I., et al. 2005. Biotin deficiency reduces expression of SLC19A3, a potential Biotin transporter, in leukocytes from human blood. J. Nutr. 135: 42-47.
6. Ashokkumar, B., et al. 2006. Thiamin uptake by the human-derived renal epithelial (HEK293) cells: cellular and molecular mechanisms. Am. J. Physiol. Renal Physiol. 291: F796-F805.

CHROMOSOMAL LOCATION

Genetic locus: Slc19a3 (mouse) mapping to 1 C5.

PRODUCT

THTR2 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 THTR2 shRNA Plasmid (m): sc-154262-SH and THTR2 shRNA (m) Lentiviral Particles: sc-154262-V as alternate gene silencing products.

For independent verification of THTR2 (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-154262A, sc-154262B and sc-154262C.

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

THTR2 siRNA (m) is recommended for the inhibition of THTR2 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 THTR2 gene expression knockdown using RT-PCR Primer: THTR2 (m)-PR: sc-154262-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.