



MFT siRNA (h): sc-77512

BACKGROUND

Folate is an essential vitamin that must be obtained from food intake through intestinal absorption in mammals. Folate and reduced folic acid derivatives bind to the folate receptor (FR) family, which mediates the endocytosis of 5-methyltetrahydrofolate into the cell. MFT (mitochondrial folate transporter/carrier), also known as Solute carrier family 25 member 32 (SLC25A32), is a 315 amino acid multi-pass membrane protein that regulates the influx of folate into the mitochondria. MFT also functions to complement glycine auxotrophy. Mutations in the gene encoding MFT may be involved in certain cases of multiple acyl-CoA dehydrogenase deficiency (MADD), in which there is no mutation in EFTA or EFTB genes. MADD is a autosomal recessively inherited disorder in which fatty acid, amino acid and choline metabolism is disrupted, leading to a clinical manifestation of hypoglycemia, hypotonia, hepatomegaly, metabolic acidosis and dysplastic kidneys.

REFERENCES

1. Sirotnak, F.M. and Tolner, B. 1999. Carrier-mediated membrane transport of folates in mammalian cells. *Annu. Rev. Nutr.* 19: 91-122.
2. Titus, S.A. and Moran, R.G. 2000. Retrovirally mediated complementation of the glyB phenotype. Cloning of a human gene encoding the carrier for entry of folates into mitochondria. *J. Biol. Chem.* 275: 36811-36817.
3. Matherly, L.H. and Goldman, D.I. 2003. Membrane transport of folates. *Vitam. Horm.* 66: 403-456.
4. McCarthy, E.A., Titus, S.A., Taylor, S.M., Jackson-Cook, C. and Moran, R.G. 2004. A mutation inactivating the mitochondrial inner membrane folate transporter creates a glycine requirement for survival of chinese hamster cells. *J. Biol. Chem.* 279: 33829-33836.
5. Bedhomme, M., Hoffmann, M., McCarthy, E.A., Gambonnet, B., Moran, R.G., Rebeille, F. and Ravel, S. 2005. Folate metabolism in plants: an *Arabidopsis* homolog of the mammalian mitochondrial folate transporter mediates folate import into chloroplasts. *J. Biol. Chem.* 280: 34823-34831.
6. Haitina, T., Lindblom, J., Renström, T. and Fredriksson, R. 2006. Fourteen novel human members of mitochondrial solute carrier family 25 (SLC25) widely expressed in the central nervous system. *Genomics* 88: 779-790.
7. Perchiniak, E., Lawrence, S.A., Kasten, S., Woodard, B.A., Taylor, S.M. and Moran, R.G. 2007. Probing the mechanism of the hamster mitochondrial folate transporter by mutagenesis and homology modeling. *Biochemistry* 46: 1557-1567.
8. Haferkamp, I. 2007. The diverse members of the mitochondrial carrier family in plants. *FEBS Lett.* 581: 2375-2379.
9. Online Mendelian Inheritance in Man, OMIM™. 2009. Johns Hopkins University, Baltimore, MD. MIM Number: 231680. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>

CHROMOSOMAL LOCATION

Genetic locus: SLC25A32 (human) mapping to 8q22.3.

RESEARCH USE

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

PRODUCT

MFT 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see MFT shRNA Plasmid (h): sc-77512-SH and MFT shRNA (h) Lentiviral Particles: sc-77512-V as alternate gene silencing products.

For independent verification of MFT (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-77512A, sc-77512B and sc-77512C.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

MFT siRNA (h) is recommended for the inhibition of MFT 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 μ M in 66 μ l. 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 MFT gene expression knockdown using RT-PCR Primer: MFT (h)-PR: sc-77512-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

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