SANTA CRUZ BIOTECHNOLOGY, INC.

MTR siRNA (h): sc-78838

BACKGROUND

MTR (5-methyltetrahydrofolate-homocysteine methyltransferase), also known as MS (methionine synthase) or vitamin-B12 dependent methionine synthase, is a 1,265 amino acid cytoplasmic protein that catalyzes the transfer of a methyl group from methyl-cobalamin to homocysteine, producing enzyme-bound cob(I) alamin and methionine. Widely expressed, MTR is found at highest levels in placenta, heart, brain, skeletal muscle and pancreas, with low levels in kidney, lung and liver. MTR is a member of the vitamin-B12 dependent methionine synthase family. Defects in the gene encoding MTR are the cause of methylcobalamin deficiency type G (cblG), an autosomal recessive disease characterized by homocystinuria, mental retardation and macrocytic anemia, as well as an increased susceptibility to folate-sensitive neural tube defects.

REFERENCES

1. Li, Y.N., et al. 1996. Cloning, mapping and RNA analysis of the human methionine synthase gene. Hum. Mol. Genet. 5: 1851-1858.
2. Gulati, S., et al. 1996. Defects in human methionine synthase in cblG patients. Hum. Mol. Genet. 5: 1859-1865.
3. Leclerc, D., et al. 1996. Human methionine synthase: cDNA cloning and identification of mutations in patients of the cblG complementation group of folate/cobalamin disorders. Hum. Mol. Genet. 5: 1867-1874.
4. Christensen, B., et al. 1999. Genetic polymorphisms in methylenetetrahydrofolate reductase and methionine synthase, folate levels in red blood cells, and risk of neural tube defects. Am. J. Med. Genet. 84: 151-157.
5. Doolin, M.T., et al. 2002. Maternal genetic effects, exerted by genes involved in homocysteine remethylation, influence the risk of spina bifida. Am. J. Hum. Genet. 71: 1222-1226.
6. O'Leary, V.B., et al. 2005. Analysis of methionine synthase reductase polymorphisms for neural tube defects risk association. Mol. Genet. Metab. 85: 220-227.
7. Yamada, K., et al. 2006. Human methionine synthase reductase is a molecular chaperone for human methionine synthase. Proc. Natl. Acad. Sci. USA 103: 9476-9481.

CHROMOSOMAL LOCATION

Genetic locus: MTR (human) mapping to 1q43.

PRODUCT

MTR 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 MTR shRNA Plasmid (h): sc-78838-SH and MTR shRNA (h) Lentiviral Particles: sc-78838-V as alternate gene silencing products.

For independent verification of MTR (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-78838A, sc-78838B and sc-78838C.

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

MTR siRNA (h) is recommended for the inhibition of MTR 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 MTR gene expression knockdown using RT-PCR Primer: MTR (h)-PR: sc-78838-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.