SANTA CRUZ BIOTECHNOLOGY, INC.

MCT12 siRNA (h): sc-90522

BACKGROUND

Monocarboxylates, such as lactate and pyruvate, play an integral role in cellular metabolism. Lactic acid is produced in large quantities as a result of glycolysis, which provides the majority of ATP to cells under normal physiological conditions. However, accumulation of lactic acid leads to a decrease in intracellular pH and, thus, to a cessation of glycolysis. In order for glycolysis to continue at a high rate, lactic acid must be transported out of the cell. This transport process is carried out by a family of monocarboxylate transporters (MCTs), which function as proton symports and are stereoselective for L-lactate. MCT12 (monocarboxylate transporter 12), also known as SLC16A12 (solute carrier family 16, member 12) or CJMG, is a 486 amino acid multi-pass membrane protein that belongs to the MCT family and functions as a proton-linked monocarboxylate transporter, effectively catalyzing the rapid transport of monocarboxylates across the membrane. MCT12 is highly expressed in lung, kidney, testis and retina and, when defective, is associated with the pathogenesis of cataract juvenile with microcornea and glucosuria (CJMG).

REFERENCES

1. Halestrap, A.P. and Price, N.T. 1999. The proton-linked monocarboxylate transporter (MCT) family: structure, function and regulation. Biochem. J. 343: 281-299.
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3. Koho, N.M., et al. 2006. Monocarboxylate transporters (MCT) as lactate carriers in equine muscle and red blood cells. Equine Vet. J. Suppl. 36: 354-358.
4. Morris, M.E. and Felmlee, M.A. 2008. Overview of the proton-coupled MCT (SLC16A) family of transporters: characterization, function and role in the transport of the drug of abuse γ-hydroxybutyric acid. AAPS J. 10: 311-321.
5. Kloeckener-Gruissem, B., et al. 2008. Mutation of solute carrier SLC16A12 associates with a syndrome combining juvenile cataract with microcornea and renal glucosuria. Am. J. Hum. Genet. 82: 772-779.
6. Meredith, D. and Christian, H.C. 2008. The SLC16 monocaboxylate transporter family. Xenobiotica 38: 1072-1106.

CHROMOSOMAL LOCATION

Genetic locus: SLC16A12 (human) mapping to 10q23.31.

PRODUCT

MCT12 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 MCT12 shRNA Plasmid (h): sc-90522-SH and MCT12 shRNA (h) Lentiviral Particles: sc-90522-V as alternate gene silencing products.

For independent verification of MCT12 (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-90522A, sc-90522B and sc-90522C.

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

MCT12 siRNA (h) is recommended for the inhibition of MCT12 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 MCT12 gene expression knockdown using RT-PCR Primer: MCT12 (h)-PR: sc-90522-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.