

MCT11 siRNA (h): sc-93713

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 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. Proteins belonging to the MCT family contain between 10-12 transmembrane-helical domains, with the amino and carboxy termini located in the cytoplasm. MCT11 (Monocarboxylate transporter 11), also known as SLC16A11 (Solute carrier family 16 member 11), is a 471 proton-linked monocarboxylate transporter that catalyzes the rapid transport of monocarboxylates across the plasma membrane.

REFERENCES

1. Halestrap, A.P. and Price, N.T. 1999. The proton-linked monocarboxylate transporter (MCT) family: structure, function and regulation. *Biochem. J.* 2: 281-299.
2. Juel, C. and Halestrap, A.P. 1999. Lactate transport in skeletal muscle-role and regulation of the monocarboxylate transporter. *J. Physiol.* 517: 633-642.
3. Enerson, B.E. and Drewes, L.R. 2003. Molecular features, regulation, and function of monocarboxylate transporters: implications for drug delivery. *J. Pharm. Sci.* 92: 1531-1544.
4. Halestrap, A.P. and Meredith, D. 2004. The SLC16 gene family-from monocarboxylate transporters (MCTs) to aromatic amino acid transporters and beyond. *Pflugers Arch.* 447: 619-628.
5. Pierre, K. and Pellerin, L. 2005. Monocarboxylate transporters in the central nervous system: distribution, regulation and function. *J. Neurochem.* 94: 1-14.
6. Lam, W.K., et al. 2009. Monocarboxylate transporter (MCT)-mediated transport of γ -hydroxybutyric acid in human intestinal Caco-2 cells. *Drug Metab. Dispos.* 38: 441-447.

CHROMOSOMAL LOCATION

Genetic locus: SLC16A11 (human) mapping to 17p13.1.

PRODUCT

MCT11 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 MCT11 shRNA Plasmid (h): sc-93713-SH and MCT11 shRNA (h) Lentiviral Particles: sc-93713-V as alternate gene silencing products.

For independent verification of MCT11 (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-93713A, sc-93713B and sc-93713C.

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

MCT11 siRNA (h) is recommended for the inhibition of MCT11 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.

GENE EXPRESSION MONITORING

MCT11 (G-4): sc-515145 is recommended as a control antibody for monitoring of MCT11 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-IgG κ BP-HRP: sc-516102 or m-IgG κ 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-IgG κ BP-FITC: sc-516140 or m-IgG κ 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 MCT11 gene expression knockdown using RT-PCR Primer: MCT11 (h)-PR: sc-93713-PR (20 μ l). 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.