SANTA CRUZ BIOTECHNOLOGY, INC.

MagT1 siRNA (h): sc-91352

BACKGROUND

Magnesium, a cofactor for ATP, plays a vital role in metabolic and biochemical processes. The transport of magnesium across membranes is essential for maintaining magnesium homeostasis and is fundamental to vertebrate metabolism. MagT1 (magnesium transporter 1), also known as IAP, MRX95 or OST3B, is a 335 amino acid multi-pass membrane protein that localizes to the endoplasmic reticulum. Expressed in placenta, liver, muscle and pancreas, MagT1 participates in N-glycosylation through its association with N-oligosaccharyl transferase and may be involved in Mg^{2+} transport in epithelial cells. Belonging to the OST3/OST6 family, MagT1 is critical for cellular magnesium uptake and vertebrate embryonic development. Defects in the gene encoding MagT1 are associated with mental retardation X-linked type 95, which is characterized by physical, neurological and/or psychiatric manifestations and intellectual deficiency.

REFERENCES

1. Goytain, A., et al. 2005. Identification and characterization of a novel mammalian Mg^{2+} transporter with channel-like properties. BMC Genomics 6: 48.
2. Schmitz, C., et al. 2007. Molecular components of vertebrate Mg^{2+}-homeostasis regulation. Magnes. Res. 20: 6-18.
3. Sontia, B., et al. 2007. Magnesium transport in hypertension. Pathophysiology 14: 205-211.
4. Molinari, F., et al. 2008. Oligosaccharyltransferase-subunit mutations in nonsyndromic mental retardation. Am. J. Hum. Genet. 82: 1150-1157.
5. Schweigel, M., et al. 2008. Expression and functional activity of the Na/Mg exchanger, TRPM7 and MagT1 are changed to regulate Mg homeostasis and transport in rumen epithelial cells. Magnes. Res. 21: 118-123.
6. Schweigel, M., et al. 2009. Rumen epithelial cells adapt magnesium transport to high and low extracellular magnesium conditions. Magnes. Res. 22: 133-150.
7. Zhou, H., et al. 2009. Mammalian MagT1 and TUSC3 are required for cellular magnesium uptake and vertebrate embryonic development. Proc. Natl. Acad. Sci. USA 106: 15750-15755.
8. Quamme, G.A. 2010. Molecular identification of ancient and modern mammalian magnesium transporters. Am. J. Physiol., Cell Physiol. 298: C407-C429.
9. Wolf, F.I., et al. 2010. Modulation of TRPM6 and Na^{+}/Mg^{2+} exchange in mammary epithelial cells in response to variations of magnesium availability. J. Cell. Physiol. 222: 374-381.

CHROMOSOMAL LOCATION

Genetic locus: MAGT1 (human) mapping to Xq21.1.

PROTOCOLS

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

PRODUCT

MagT1 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 MagT1 shRNA Plasmid (h): sc-91352-SH and MagT1 shRNA (h) Lentiviral Particles: sc-91352-V as alternate gene silencing products.

For independent verification of MagT1 (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-91352A, sc-91352B and sc-91352C.

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

MagT1 siRNA (h) is recommended for the inhibition of MagT1 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 MagT1 gene expression knockdown using RT-PCR Primer: MagT1 (h)-PR: sc-91352-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Zhu, D., et al. 2018. Magnesium reduces blood-brain barrier permeability and regulates amyloid-β transcytosis. Mol. Neurobiol. 55: 7118-7131.

RESEARCH USE

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