SANTA CRUZ BIOTECHNOLOGY, INC.

MDR1 siRNA (m): sc-35891

BACKGROUND

Cells selected for resistance to a single cytotoxic drug may become cross-resistant to a broad range of drugs with different structures and cellular targets. This phenomenon is called multiple drug resistance (MDR). MDR proteins (Mdrs) are members of a highly conserved superfamily of ATP-binding cassette transport proteins. MDR1 is an apical transmembrane protein that is an integral part of the blood-brain barrier and functions as a drug-transport pump transporting a variety of drugs from the brain back into the blood. The MDR1 gene is also known as ABCB1 and is located on human chromosome 7. The mouse homolog of MDR1 is known as Mdr-3. Interestingly, a murine protein by the name of Mdr-1 exists and is encoded by the murine Abcb1b gene, but it is not homologous with human Mdr-1.

REFERENCES

1. Banerjee, S., et al. 1992. Down-regulation of Ras and Myc expression associated with Mdr-1 overexpression in adriamycin-resistant tumor cells. Cell. Mol. Biol. 38: 561-570.
2. Gupta, S., et al. 1993. P-glycoprotein (MDR1 gene product) in cells of the immune system: its possible physiologic role and alteration in aging and human immunodeficiency virus-1 (HIV-1) infection. J. Clin. Immunol. 13: 289-301.

CHROMOSOMAL LOCATION

Genetic locus: Abcb1b (mouse) mapping to 5 A1.

PRODUCT

MDR1 siRNA (m) 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 MDR1 shRNA Plasmid (m): sc-35891-SH and MDR1 shRNA (m) Lentiviral Particles: sc-35891-V as alternate gene silencing products.

For independent verification of MDR1 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-35891A, sc-35891B and sc-35891C.

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

MDR1 siRNA (m) is recommended for the inhibition of MDR1 expression in mouse 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.

GENE EXPRESSION MONITORING

MDR1 (D-11): sc-55510 is recommended as a control antibody for monitoring of MDR1 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-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 MDR1 gene expression knockdown using RT-PCR Primer: MDR1 (m)-PR: sc-35891-PR (20 µl, 513 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Dong, Y., et al. 2009. Reversal effect of Raf-1/Mdr-1 siRNAs co-transfection on multidrug resistance in KBv200 cell line. Oral Oncol. 45: 991-997.
2. Sankaran, D., et al. 2012. Mechanism of MTA1 protein overexpression-linked invasion: MTA1 regulation of hyaluronan-mediated motility receptor (HMMR) expression and function. J. Biol. Chem. 287: 5483-5491.
3. Im, W., et al. 2015. Multidrug resistance protein 1 reduces the aggregation of mutant huntingtin in neuronal cells derived from the Huntington's disease R6/2 model. Sci. Rep. 5: 16887.
4. Xu, H., et al. 2017. Efflux transporters regulate arsenite-induced genotoxicity in double negative and double positive T cells. Toxicol. Sci. 158: 127-139.
5. Qu, Y.Q., et al. 2023. Pomiferin targets SERCA, mTOR, and P-gp to induce autophagic cell death in apoptosis-resistant cancer cells, and reverses the MDR phenotype in cisplatin-resistant tumors *in vivo*. Pharmacol. Res. 191: 106769.

RESEARCH USE

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