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SANTA CRUZ BIOTECHNOLOGY, INC.

MiRP1 siRNA (h): sc-42509

BACKGROUND

Voltage-gated K^+ channels in the plasma membrane control the repolarization and the frequency of action potentials in neurons, muscles, and other excitable cells. KCNE1 and KCNE2 (also known as MiRP1) are two single transmembrane domain β subunits of the delayed rectifier potassium channel IKr. In cardiac tissue, MiRP1 assembles with HERG, the pore-forming α subunit of IKr. In the brain, MiRP1 associates with KCNQ2 and accelerates the dissociation of KCNQ2 from the KCNQ2-KCNQ3 complex. MiRP1 also regulates the current amplitude and gating properties of the KCNQ1 K^+ channel, and may assemble with KCNQ1 in the stomach to aid in K^+ recycling, which is necessary for gastric acid secretion. The gene encoding human MiRP1 maps to chromosome 21q22.11. Missense mutations in the gene for MiRP1 result in congenital long QT syndrome and drug-induced cardiac arrhythmia.

REFERENCES

1. Takumi, T., et al. 1988. Cloning of a membrane protein that induces a slow voltage-gated potassium current. Science 242: 1042-1045.
2. Wang, Q., et al. 1996. Positional cloning of a novel potassium channel gene: KVLQT1 mutations cause cardiac arrhythmias. Nat. Genet. 12: 17-23.
3. Abbott, G.W., et al. 1999. MiRP1 forms Ikr potassium channels with herg and is associated with cardiac arrhythmia. Cell 97: 175-187.
4. Schroeder, B.C., et al. 2000. A constitutively open potassium channel formed by KCNQ1 and KCNE3. Nature 13: 196-199.
5. Tinel, N., et al. 2000. M-type KCNQ2-KCNQ3 potassium channels are modulated by the KCNE2 subunit. FEBS Lett. 480: 137-141.
6. Tinel, N., et al. 2000. KCNE2 confers background current characterisitcs to the cardiac KCNQ1 potassium channel. EMBO J. 19: 9326-9330.
7. Sesti, F., et al. 2000. A common polymorphism associated with antibiotic-induced cardiac arrythmia. Proc. Natl. Acad. Sci. USA 97: 10613-10618.
8. Grahammer, F., et al. 2001. The cardiac K^+ channel KCNQ1 is essential for gastric acid secretion. Gastroenterology 120: 1363-1371.

CHROMOSOMAL LOCATION

Genetic locus: KCNE2 (human) mapping to 21q22.11.

PRODUCT

MiRP1 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 MiRP1 shRNA Plasmid (h): sc-42509-SH and MiRP1 shRNA (h) Lentiviral Particles: sc-42509-V as alternate gene silencing products.

For independent verification of MiRP1 (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-42509A, sc-42509B and sc-42509C.

RESEARCH USE

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

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

MiRP1 siRNA (h) is recommended for the inhibition of MiRP1 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.

GENE EXPRESSION MONITORING

MiRP1 (H-4): sc-374667 is recommended as a control antibody for monitoring of MiRP1 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 MiRP1 gene expression knockdown using RT-PCR Primer: MiRP1 (h)-PR: sc-42509-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

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