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MaxiK α siRNA (h): sc-42511

BACKGROUND

The KCNMA1 gene, located on chromosome 10q22.3, encodes MaxiK α (also designated calcium-activated potassium channel, large conductance calcium- and voltage-dependent potassium channel α subunit, Slo α subunit and BKCA α subunit). MaxiK α carboxyl terminal is spliced to form nine transcripts. MaxiK α is expressed in neurons and smooth muscle tissue. It associates with MaxiK β to form Ca²⁺-activated K⁺ channels (also designated Maxi-K or BK channels) and forms the potassium-permeable pore in these channels, which respond primarily to increases in intracellular calcium ion concentrations. Maxi-K channels are also known to interact with hormones, such as estradiol. MaxiK β can regulate the sensitivity of MaxiK α to calcium. Maxi-K channels may be involved in cell shrinkage and caspase activation, which leads to pulmonary vascular smooth muscle cell apoptosis.

REFERENCES

1. Tseng-Crank, J., et al. 1994. Cloning, expression and distribution of functionally distinct Ca²⁺-activated K⁺ channel isoforms from human brain. *Neuron* 13: 1315-1330.
2. Pallanck, L., et al. 1994. Cloning and characterization of human and mouse homologs of the *Drosophila* calcium-activated potassium channel gene, slowpoke. *Hum. Molec. Genet.* 3: 1239-1243.
3. Valverde, M.A., et al. 1999. Acute activation of MaxiK channels (hSlo) by estradiol binding to the β subunit. *Science* 285: 1929-1931.
4. Dhulipala, P.D., et al. 1999. Cloning and characterization of the promoters of the MaxiK channel α and β subunits. *Biochim. Biophys. Acta* 1444: 254-262.

CHROMOSOMAL LOCATION

Genetic locus: KCNMA1 (human) mapping to 10q22.3.

PRODUCT

MaxiK α 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 MaxiK α shRNA Plasmid (h): sc-42511-SH and MaxiK α shRNA (h) Lentiviral Particles: sc-42511-V as alternate gene silencing products.

For independent verification of MaxiK α (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-42511A, sc-42511B and sc-42511C.

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

MaxiK α siRNA (h) is recommended for the inhibition of MaxiK α 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

MaxiK α (B-1): sc-374142 is recommended as a control antibody for monitoring of MaxiK α 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 MaxiK α gene expression knockdown using RT-PCR Primer: MaxiK α (h)-PR: sc-42511-PR (20 μ l, 587 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Hu, H., et al. 2009. Characterization of ion channels in human preadipocytes. *J. Cell. Physiol.* 218: 427-435.
2. He, M.L., et al. 2011. Effects of ion channels on proliferation in cultured human cardiac fibroblasts. *J. Mol. Cell. Cardiol.* 51: 198-206.
3. Zhang, Y.Y., et al. 2015. Effects of BKCa and Kir2.1 channels on cell cycling progression and migration in human cardiac c-Kit⁺ progenitor cells. *PLoS ONE* 10: e0138581.

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.