SANTA CRUZ BIOTECHNOLOGY, INC.

MaxiKβ siRNA (h): sc-42513

BACKGROUND

The KCNMB1 gene, located on chromosome 5q35.1, contains four exons and encodes the 191 amino-acid protein MaxiKβ subunit 1 (also designated calcium-activated potassium channel β subunit, BK channel β subunit, Slo-β and KVCAβ). MaxiKβ subunit 1 consists of two putative transmembrane domains, an extracellular loop containing three consensus sequences for N-linked glycosylation and four cysteine residues that might form disulfide bridges. One of four subunits in the MaxiKβ family, MaxiKβ subunit 1 is expressed predominately in smooth muscle tissue but is also found in brain, liver and lymphatic tissues. MaxiKβ subunit 1 associates with MaxiKα to form a calcium-activated potassium channel (also designated MaxiK and BK channel) and increases the sensitivity of the MaxiKα to calcium and voltage. The α/β1 channel is the most sensitive of all Maxi channels to calcium. MaxiKβ plays an important role in vasoregulation by controlling the sensitivity of MaxiK channels to calcium, which leads to the proper amount of arterial relaxation.

REFERENCES

1. Knaus, H.G., et al. 1994. Primary sequence and immunological characterization of β-subunit of high conductance Ca^{2+}-activated K^+ channel from smooth muscle. J. Biol. Chem. 269: 17274-17278.
2. Tseng-Crank, J., et al. 1996. Cloning, expression, and distribution of a Ca^{2+}-activated K^+ channel β-subunit from human brain. Proc. Natl. Acad. Sci. USA 93: 9200-9205.
3. Tanaka, Y., et al. 1997. Molecular constituents of maxi KCa channels in human coronary smooth muscle: predominant α + β subunit complexes. J. Physiol. 502: 545-557.
4. Jiang, Z., et al. 1999. Human and rodent MaxiK channel β-subunit genes: cloning and characterization. Genomics 55: 57-67.
5. Wallner, M., et al. 1999. Molecular basis of fast inactivation in voltage and Ca^{2+}-activated K^+ channels: a transmembrane β-subunit homolog. Proc. Natl. Acad. Sci. USA 96: 4137-4142.
6. Brenner, R., et al. 2000. Cloning and functional characterization of novel large conductance calcium-activated potassium channel β subunits, hKCNMB3 and hKCNMB4. J. Biol. Chem. 275: 6453-6461.

CHROMOSOMAL LOCATION

Genetic locus: KCNMB1 (human) mapping to 5q35.1.

PRODUCT

MaxiKβ 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 MaxiKβ shRNA Plasmid (h): sc-42513-SH and MaxiKβ shRNA (h) Lentiviral Particles: sc-42513-V as alternate gene silencing products.

For independent verification of MaxiKβ (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-42513A, sc-42513B and sc-42513C.

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

MaxiKβ siRNA (h) is recommended for the inhibition of MaxiKβ 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

MaxiKβ (A-5): sc-377023 is recommended as a control antibody for monitoring of MaxiKβ 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 MaxiKβ gene expression knockdown using RT-PCR Primer: MaxiKβ (h)-PR: sc-42513-PR (20 µl). 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.