SANTA CRUZ BIOTECHNOLOGY, INC.

SK1 siRNA (h): sc-36494

BACKGROUND

Small-conductance, calcium-activated K^+ channels (SK channels) are activated in a voltage-independent manner, and have a small unit conductance and high sensitivity to calcium. Structural characteristics of SK channels include intracellular N- and C-termini and six conserved transmembrane segments. SK channels aid in after hyperpolarization and spike-frequency adaptation. SK1 expression is most abundant in the brain, whereas SK2 and SK3 are more widely expressed throughout peripheral tissues. Alternative splicing of human SK1 results in two truncated variants with diminished calmodulin binding. The three isoforms of human SK1 include the full-length isoform, SK1-34b and SK1-25b. The full-length isoform is the most predominant form of SK1 in human hippocampus, while the SK1-34b isoform is the most abundant form in human reticulocytes. Human SK2 is the most predominant SK channel in the liver and pituitary gland. Human SK3 is a 731 amino acid protein that is expressed in muscles upon denervation, and is a component of the presynaptic compartment in mature neuromuscular junctions. SK3 may also play a regulatory role in synaptic transmission.

REFERENCES

1. Imbert, G., et al. 1996. Cloning of the gene for spinocerebellar ataxia 2 reveals a locus with high sensitivity to expanded CAG/glutamine repeats. Nat. Genet. 14: 285-291.
2. Kohler, M., et al. 1996. Small-conductance, calcium-activated potassium channels from mammalian brain. Science 273: 1709-1714.
3. Rimini, R., et al. 2000. Quantitative expression analysis of the small conductance calcium-activated potassium channels, SK1, SK2 and SK3, in human brain. Brain Res. Mol. Brain Res. 85: 218-220.
4. Stocker, M., et al. 2000. Differential distribution of three Ca^{2+}-activated K^+ channel subunits, SK1, SK2, and SK3, in the adult rat central nervous system. Mol. Cell. Neurosci. 15: 476-493.
5. Grunnet, M., et al. 2001. Pharmacological modulation of SK3 channels. Neuropharmacology 40: 879-887.
6. Zhang, B.M., et al. 2001. Calmodulin binding to the C-terminus of the small-conductance Ca^{2+}-activated K^+ channel hSK1 is affected by alternative splicing. Biochemistry 20: 3189-3195.

CHROMOSOMAL LOCATION

Genetic locus: KCNN1 (human) mapping to 19p13.11.

PRODUCT

SK1 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 SK1 shRNA Plasmid (h): sc-36494-SH and SK1 shRNA (h) Lentiviral Particles: sc-36494-V as alternate gene silencing products.

For independent verification of SK1 (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-36494A, sc-36494B and sc-36494C.

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

SK1 siRNA (h) is recommended for the inhibition of SK1 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 SK1 gene expression knockdown using RT-PCR Primer: SK1 (h)-PR: sc-36494-PR (20 µl, 507 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Du, C., et al. 2017. Sphingosine kinase 1 protects renal tubular epithelial cells from renal fibrosis via induction of autophagy. Int. J. Biochem. Cell Biol. 90: 17-28.

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.