

THIK-1 siRNA (h): sc-61680

BACKGROUND

Potassium channels play an important role in cell excitability and plasticity. The pore loop domain, a highly conserved region common to all potassium channels, is involved in determining potassium ion selectivity. The family of potassium channels possessing two-pore loop domains consists of both inward and outwardly rectifying channels and includes THIK-1, THIK-2, TRESK, TALK-1 and TALK-2. Members of this family are all characterized by four transmembrane domains and may function to help influence the resting membrane potential of cells. TWIK-related halothane-inhibited K⁺ 1 (THIK-1) is a 405 amino acid protein that localizes to the outer membrane and is abundantly expressed in the central nervous system. THIK-1 has a strong sensitivity to oxygen and may play a physiological and/or pathological role during brain ischemia.

REFERENCES

1. Rajan, S., et al. 2001. THIK-1 and THIK-2, a novel subfamily of tandem pore domain K⁺ channels. *J. Biol. Chem.* 276: 7302-7311.
2. Bushell, T., et al. 2002. Pharmacological characterization of a non-inactivating outward current observed in mouse cerebellar purkinje neurones. *Br. J. Pharmacol.* 135: 705-712.
3. Online Mendelian Inheritance in Man, OMIM[™]. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 607367. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
4. Gardener, M.J., et al. 2004. Functional evidence of a role for two-pore domain potassium channels in rat mesenteric and pulmonary arteries. *Br. J. Pharmacol.* 142: 192-202.
5. Jezini, S.H. and Moroz, L.L. 2004. Identification and distribution of a two-pore domain potassium channel in the CNS of *Aplysia californica*. *Brain Res. Mol. Brain Res.* 127: 27-38.
6. Campanucci, V.A., et al. 2005. O₂ sensing by recombinant TWIK-related halothane-inhibitable K⁺ channel-1 background K⁺ channels heterologously expressed in human embryonic kidney cells. *Neuroscience* 135: 1087-1094.
7. Bryan, R.M., et al. 2006. Evidence for two-pore domain potassium channels in rat cerebral arteries. *Am. J. Physiol. Heart Circ. Physiol.* 291: H770-H780.

CHROMOSOMAL LOCATION

Genetic locus: KCNK13 (human) mapping to 14q32.11.

PRODUCT

THIK-1 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 THIK-1 shRNA Plasmid (h): sc-61680-SH and THIK-1 shRNA (h) Lentiviral Particles: sc-61680-V as alternate gene silencing products.

For independent verification of THIK-1 (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-61680A, sc-61680B and sc-61680C.

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

THIK-1 siRNA (h) is recommended for the inhibition of THIK-1 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor THIK-1 gene expression knockdown using RT-PCR Primer: THIK-1 (h)-PR: sc-61680-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Chai, S., et al. 2017. Contribution of two-pore K⁺ channels to cardiac ventricular action potential revealed using human iPSC-derived cardiomyocytes. *Am. J. Physiol. Heart Circ. Physiol.* 312: H1144-H1153.

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.