SANTA CRUZ BIOTECHNOLOGY, INC.

KV1.7 siRNA (h): sc-97461

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. The KV gene family encodes more than 30 genes that comprise the subunits of the K^+ channels which vary in their gating and permeation properties, subcellular distribution and expression patterns. Functional KV channels assemble as tetramers consisting of pore-forming α-subunits (KVα), which include the KV1, KV2, KV3 and KV4 proteins, and accessory or KVβ subunits that modify the gating properties of the coexpressed KVα subunits. KV1.7 is a 456 amino acid voltage-gated K^+ channel protein highly expressed in heart, skeletal muscle and kidney. The tail of KV1.7 is thought to modulate channel activity while the N-terminus may be important for the activation rate of the channel.

REFERENCES

1. Kalman, K., Nguyen, A., Tseng-Crank, J., Dukes, I.D., Chandy, G., Hustad, C.M., Copeland, N.G., Jenkins, N.A., Mohrenweiser, H., Brandriff, B., Cahalan, M., Gutman, G.A. and Chandy, K.G. 1998. Genomic organization, chromosomal localization, tissue distribution, and biophysical characterization of a novel mammalian Shaker-related voltage-gated potassium channel, Kv1.7. J. Biol. Chem. 273: 5851-5857.
2. Kashuba, V.I., Kvasha, S.M., Protopopov, A.I., Gizatullin, R.Z., Rynditch, A.V., Wahlestedt, C., Wasserman, W.W. and Zabarovsky, E.R. 2001. Initial isolation and analysis of the human Kv1.7 (KCNA7) gene, a member of the voltage-gated potassium channel gene family. Gene 268: 115-122.
3. Bardien-Kruger, S., Wulff, H., Arieff, Z., Brink, P., Chandy, K.G. and Corfield, V. 2002. Characterisation of the human voltage-gated potassium channel gene, KCNA7, a candidate gene for inherited cardiac disorders, and its exclusion as cause of progressive familial heart block I (PFHBI). Eur. J. Hum. Genet. 10: 36-43.
4. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 176268. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
5. Ding, Q., Zhao, Y.Y., Dong, L.Y., Sun, Z.J. and Guo, L. 2003. Distribution and significance of cSNP in KCNA7 gene as a novel NIDDM candidate gene in the population of northeast China. Yi Chuan 25: 129-132.
6. Gutman, G.A., Chandy, K.G., Grissmer, S., Lazdunski, M., McKinnon, D., Pardo, L.A., Robertson, G.A., Rudy, B., Sanguinetti, M.C., Stühmer, W. and Wang, X. 2005. International Union of Pharmacology. LIII. Nomenclature and molecular relationships of voltage-gated potassium channels. Pharmacol. Rev. 57: 473-508.
7. Lu, Z., Abe, J.I., Taunton, J., Lu, Y., Shishido, T., McClain, C., Yan, C., Xu, S.P., Spangenberg, T.M. and Xu, H. 2008. Reactive oxygen species-induced activation of p90 ribosomal S6 kinase prolongs cardiac repolarization through inhibiting outward K^+ channel activity. Circ. Res. 103: 269-278.

PROTOCOLS

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

CHROMOSOMAL LOCATION

Genetic locus: KCNA7 (human) mapping to 19q13.33.

PRODUCT

KV1.7 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 KV1.7 shRNA Plasmid (h): sc-97461-SH and KV1.7 shRNA (h) Lentiviral Particles: sc-97461-V as alternate gene silencing products.

For independent verification of KV1.7 (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-97461A, sc-97461B and sc-97461C.

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

KV1.7 siRNA (h) is recommended for the inhibition of KV1.7 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 KV1.7 gene expression knockdown using RT-PCR Primer: KV1.7 (h)-PR: sc-97461-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.