SANTA CRUZ BIOTECHNOLOGY, INC.

TRPV4 siRNA (h): sc-61726

BACKGROUND

The transient receptor potential (TRP) protein family consists of a diverse group of cation channels functioning in a variety of homeostatic and regulatory pathways. Four subfamilies exist, based on channel domain homology, not activating stimuli: C type (canonical or classical), V type (vanilloid receptor related), M type (melastatin related) and P type (PKD). TRPV4, also designated VRL-2, TRP12, VR-OAC and OTRPC4, belongs to the V type subfamily, and plays a role in systemic osmoregulation. TRPV4 is a calcium channel activated by various stimuli, including thermal stress, fatty acid metabolites and hypotonicity. TRPV4 is highly expressed in lung and kidney.

REFERENCES

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2. Nilius, B., et al. 2004. TRPV4 calcium entry channel: a paradigm for gating diversity. Am. J. Physiol., Cell Physiol. 286: C195-C205.
3. Tian, W., et al. 2004. Renal expression of osmotically responsive cation channel TRPV4 is restricted to water-impermeant nephron segments. Am. J. Physiol. Renal Physiol. 287: F17-F24.
4. Alessandri-Haber, N., et al. 2004. Transient receptor potential vanilloid 4 is essential in chemotherapy-induced neuropathic pain in the rat. J. Neurosci. 24: 4444-4452.
5. Vriens, J., et al. 2004. Cell swelling, heat, and chemical agonists use distinct pathways for the activation of the cation channel TRPV4. Proc. Natl. Acad. Sci. USA 101: 396-401.
6. Liedtke, W. 2005. TRPV4 plays an evolutionary conserved role in the transduction of osmotic and mechanical stimuli in live animals. J. Physiol. 567: 53-58.
7. Cohen, D.M. 2005. TRPV4 and the mammalian kidney. Pflugers Arch. 451: 168-175.
8. Kunert-Keil, C., et al. 2006. Tissue-specific expression of TRP channel genes in the mouse and its variation in three different mouse strains. BMC Genomics 7: 159.

CHROMOSOMAL LOCATION

Genetic locus: TRPV4 (human) mapping to 12q24.11.

PRODUCT

TRPV4 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 TRPV4 shRNA Plasmid (h): sc-61726-SH and TRPV4 shRNA (h) Lentiviral Particles: sc-61726-V as alternate gene silencing products.

For independent verification of TRPV4 (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-61726A, sc-61726B and sc-61726C.

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

TRPV4 siRNA (h) is recommended for the inhibition of TRPV4 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 TRPV4 gene expression knockdown using RT-PCR Primer: TRPV4 (h)-PR: sc-61726-PR (20 µl, 531 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. D'Aldebert, E., et al. 2011. Transient receptor potential vanilloid 4 activated inflammatory signals by intestinal epithelial cells and colitis in mice. Gastroenterology 140: 275-285.
2. Alkozi, H.A., et al. 2017. Melatonin synthesis in the human ciliary body triggered by TRPV4 activation: involvement of AANAT phosphorylation. Exp. Eye Res. 162: 1-8.
3. Lee, Y.J., et al. 2018. *Aster glehni* extract containing caffeoylquinic compounds protects human keratinocytes through the TRPV4-PPARδ-AMPK pathway. Evid. Based Complement. Alternat. Med. 2018: 9616574.
4. Pozo, A., et al. 2019. Cyclic adenosine monophosphate-dependent activation of transient receptor potential vanilloid 4 (TRPV4) channels in osteoblast-like MG-63 cells. Cell. Signal. 66: 109486.

RESEARCH USE

For research use only, not for use in diagnostic procedures.