SANTA CRUZ BIOTECHNOLOGY, INC.

SIK1 siRNA (h): sc-91428

BACKGROUND

The phosphorylation and dephosphorylation of proteins on serine and threonine residues is an essential means of regulating a broad range of cellular functions in eukaryotes, including cell division, homeostasis and apoptosis. A group of proteins that are intimately involved in this process are the serine/threonine (Ser/Thr) protein kinases. SIK1 (salt-inducible kinase 1), also known as SNF1LK or MSK, is a 783 amino acid protein that contains one UBA domain and one protein kinase domain and belongs to the Ser/Thr protein kinase family. Localized to both the nucleus and the cytoplasm, SIK1 uses magnesium as a cofactor to catalyze the ATP-dependent phosphorylation of target proteins and is thought to be important for the early stages of skeletal muscle growth and myocardial cell differentiation. Additionally, SIK1 has a potential role in regulation of the G_2/M cell cycle transition, as well as in inhibitory control of CREB protein function.

REFERENCES

1. Ruiz, J.C., et al. 1994. Identification of novel protein kinases expressed in the myocardium of the developing mouse heart. Mech. Dev. 48: 153-164.
2. Nishimura, Y., et al. 1999. Molecular cloning and characterization of mammalian homologues of vesicle-associated membrane protein-associated (VAMP-associated) proteins. Biochem. Biophys. Res. Commun. 254: 21-26.
3. Lizcano, J.M., et al. 2004. LKB1 is a master kinase that activates 13 kinases of the AMPK subfamily, including MARK/PAR-1. EMBO J. 23: 833-843.
4. Stephenson, A., et al. 2004. SNF1LK encodes a protein kinase that may function in cell cycle regulation. Genomics 83: 1105-1115.
5. Al-Hakim, A.K., et al. 2005. 14-3-3 cooperates with LKB1 to regulate the activity and localization of QSK and SIK. J. Cell Sci. 118: 5661-5673.
6. Takemori, H., et al. 2007. TORC-SIK cascade regulates CREB activity through the basic leucine zipper domain. FEBS J. 274: 3202-3209.
7. Sjöström, M., et al. 2007. SIK1 is part of a cell sodium-sensing network that regulates active sodium transport through a calcium-dependent process. Proc. Natl. Acad. Sci. USA 104: 16922-16927.

CHROMOSOMAL LOCATION

Genetic locus: SIK1 (human) mapping to 21q22.3.

PRODUCT

SIK1 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 SIK1 shRNA Plasmid (h): sc-91428-SH and SIK1 shRNA (h) Lentiviral Particles: sc-91428-V as alternate gene silencing products.

For independent verification of SIK1 (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-91428A, sc-91428B and sc-91428C.

RESEARCH USE

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

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

SIK1 siRNA (h) is recommended for the inhibition of SIK1 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 SIK1 gene expression knockdown using RT-PCR Primer: SIK1 (h)-PR: sc-91428-PR (20 µl, 572 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Eneling, K., et al. 2012. Salt-inducible kinase 1 regulates E-cadherin expression and intercellular junction stability. FASEB J. 26: 3230-3239.
2. Bertorello, A.M., et al. 2015. Increased arterial blood pressure and vascular remodeling in mice lacking salt-inducible kinase 1 (SIK1). Circ. Res. 116: 642-652.
3. Gradek, F., et al. 2019. Sodium channel Nav1.5 controls epithelial-to-mesenchymal transition and invasiveness in breast cancer cells through its regulation by the salt-inducible kinase-1. Sci. Rep. 9: 18652.

PROTOCOLS

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