SANTA CRUZ BIOTECHNOLOGY, INC.

Akt1 siRNA (m): sc-29196

BACKGROUND

The serine/threonine kinase Akt family contains several members, including Akt1 (also designated PKB or RacPK), Akt2 (also designated PKBβ or RacPK-βb) and Akt 3 (also designated PKBγ or thyoma viral proto-oncogene 3), which exhibit sequence homology with the protein kinase A and C families and are encoded by the c-Akt proto-oncogene. All members of the Akt family have a pleckstrin homology domain. Akt1 and Akt2 are activated by PDGF stimulation. Activation is dependent on PDGFR-β Tyr residues 740 and 751, which bind the subunit of the phosphatidylinositol 3-kinase (PI 3-kinase) complex. Activation of Akt1 by Insulin or Insulin-growth factor-1(IGF-1) results in phosphorylation of both Thr 308 and Ser 473. Phosphorylation of both residues is important to generate a high level of Akt1 activity. The phosphorylation of Thr 308 is not dependent on phosphorylation of Ser 473 *in vivo*. Thus, Akt proteins become phosphorylated and activated in Insulin/IGF-1-stimulated cells by an upstream kinase(s). The activation of Akt1 and Akt2 is inhibited by the PI kinase inhibitor wortmannin, suggesting that the protein signals downstream of the PI kinases.

CHROMOSOMAL LOCATION

Genetic locus: Akt1 (mouse) mapping to 12 F1.

PRODUCT

Akt1 siRNA (m) is a target-specific 19-25 nt siRNA 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 Akt1 shRNA Plasmid (m): sc-29196-SH and Akt1 shRNA (m) Lentiviral Particles: sc-29196-V as alternate gene silencing products.

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

Akt1 siRNA (m) is recommended for the inhibition of Akt1 expression in mouse 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.

GENE EXPRESSION MONITORING

Akt1 (G-5): sc-55523 is recommended as a control antibody for monitoring of Akt1 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Akt1 gene expression knockdown using RT-PCR Primer: Akt1 (m)-PR: sc-29196-PR (20 µl, 571 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Li, W., et al. 2012. SBF-1, a synthetic steroidal glycoside, inhibits melanoma growth and metastasis through blocking interaction between PDK1 and Akt3. Biochem. Pharmacol. 84: 172-181.
2. Ding, L., et al. 2012. Akt3 deficiency in macrophages promotes foam cell formation and atherosclerosis in mice. Cell Metab. 15: 861-872.
3. Zeng, L., et al. 2013. Histone deacetylase 3 unconventional splicing mediates endothelial-to-mesenchymal transition through transforming growth factor β2. J. Biol. Chem. 288: 31853-31866.
4. Wu, C.M., et al. 2013. Si-Wu-Tang extract stimulates bone formation through PI3K/Akt/NFκB signaling pathways in osteoblasts. BMC Complement. Altern. Med. 13: 277.
5. Tian, J., et al. 2015. Blocking the PI3K/AKT pathway enhances mammalian reovirus replication by repressing IFN-stimulated genes. Front. Microbiol. 6: 886.
6. Gao, Y., et al. 2015. Differential IKK/NFκB activity is mediated by TSC2 through mTORC1 in PTEN-null prostate cancer and tuberous sclerosis complex tumor cells. Mol. Cancer Res. 13: 1602-1614.
7. Wu, D., et al. 2016. F-Actin rearrangement is regulated by mTORC2/Akt/girdin in mouse fertilized eggs. Cell Prolif. 49: 740-750.
8. Ding, L., et al. 2017. Akt3 inhibits adipogenesis and protects from diet-induced obesity via WNK1/SGK1 signaling. JCI Insight 2: e95687.
9. Halon-Golabek, M., et al. 2018. hmSOD1 gene mutation-induced disturbance in iron metabolism is mediated by impairment of Akt signalling pathway. J. Cachexia Sarcopenia Muscle 9: 557-569.
10. Meng, L., et al. 2018. Survivin is critically involved in VEGFR2 signaling-mediated esophageal cancer cell survival. Biomed. Pharmacother. 107: 139-145.
11. Wu, S., et al. 2019. The effect of a high-calorie diet on bone growth is mediated by the Insulin receptor. Bone 122: 166-175.

RESEARCH USE

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