SANTA CRUZ BIOTECHNOLOGY, INC.

RACK1 siRNA (h): sc-36354

BACKGROUND

Members of the protein kinase C (PKC) family play a key regulatory role in a variety of cellular functions, including cell growth and differentiation, gene expression, hormone secretion and membrane function. Receptor for activated C kinases, termed RACKs, are intracellular receptors for activated PKC that may be involved in the activation-induced translocation of PKC. RACK1 (receptor for activated C kinase 1) is a 317 amino acid G protein β subunit-like protein that functions as a RACK and inhibits the activity of Src tyrosine kinases. In response to PKC activation, the intracellular localization of RACK1 and PKC βII changes, and RACK1 and PKC βII co-localize to the same sites. RACK1 is therefore thought to be a shuttling protein for PKC βII. A deficit in RACK1 may be associated with impaired PKC activation in the aging brain. The RACK1 gene is conserved in chimpanzee, canine, bovine, mouse, rat, chicken, zebrafish, fruit fly, mosquito, *C. elegans, S. pombe, S. cerevisiae, K. lactis, E. gossypii, M. grisea, N. crassa, A. thaliana,* rice and *P. falciparum,* and maps to human chromosome 5q35.3.

REFERENCES

1. Takai, Y., et al. 1979. Calcium-dependent activation of a multifunctional protein kinase by membrane phospholipids. J. Biol. Chem. 254: 3692-3695.
2. Castagna, M., et al. 1982. Direct activation of calcium-activated, phospholipid-dependent protein kinase by tumor-promoting phorbol esters. J. Biol. Chem. 257: 7847-7851.

CHROMOSOMAL LOCATION

Genetic locus: GNB2L1 (human) mapping to 5q35.3.

PRODUCT

RACK1 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 RACK1 shRNA Plasmid (h): sc-36354-SH and RACK1 shRNA (h) Lentiviral Particles: sc-36354-V as alternate gene silencing products.

For independent verification of RACK1 (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-36354A, sc-36354B and sc-36354C.

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

RACK1 siRNA (h) is recommended for the inhibition of RACK1 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.

GENE EXPRESSION MONITORING

RACK1 (B-3): sc-17754 is recommended as a control antibody for monitoring of RACK1 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 RACK1 gene expression knockdown using RT-PCR Primer: RACK1 (h)-PR: sc-36354-PR (20 µl, 367 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Bourd-Boittin, K., et al. 2008. RACK1, a new ADAM12 interacting protein. Contribution to liver fibrogenesis. J. Biol. Chem. 283: 26000-26009.
2. Liu, D., et al. 2016. IRE1-RACK1 axis orchestrates ER stress preconditioning-elicited cytoprotection from ischemia/reperfusion injury in liver. J. Mol. Cell Biol. 8: 144-156.
3. Kim, H.D., et al. 2017. RACK1 depletion in the ribosome induces selective translation for non-canonical autophagy. Cell Death Dis. 8: e2800.
4. Subramani, C., et al. 2018. Host-virus protein interaction network reveals the involvement of multiple host processes in the life cycle of hepatitis E virus. mSystems 3: e00135-17.
5. Liu, L.T., et al. 2019. Morphine-induced RACK1-dependent autophagy in immortalized neuronal cell lines. Br. J. Pharmacol. 177: 1609-1621.
6. Pu, Y., et al. 2020. Dual role of RACK1 in airway epithelial mesenchymal transition and apoptosis. J. Cell. Mol. Med. 24: 3656-3668.
7. Bae, J.A., et al. 2021. A new KSRP-binding compound suppresses distant metastasis of colorectal cancer by targeting the oncogenic KITENIN complex. Mol. Cancer 20: 78.
8. Pu, Y., et al. 2023. Azithromycin suppresses TGF-β1-related epithelial-mesenchymal transition in airway epithelial cells via targeting RACK1. Chem. Biol. Interact. 370: 110332.

RESEARCH USE

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