SANTA CRUZ BIOTECHNOLOGY, INC.

RAGE siRNA (h): sc-36374

BACKGROUND

Advanced glycosylation end products of proteins (AGEs) are nonenzymatically glycosylated proteins that are associated with a variety of conditions, including diabetes and other vascular disorders, as well as amyloidosis. These proteins regulate cellular functions via specific cell surface acceptor molecules, such as RAGE (receptor for advanced glycosylation end products). RAGE is a type 1 membrane protein that is found on the surface of endothelial cells, mononuclear phagocytes and vascular smooth muscle cells. Binding of AGEs to RAGE results in the induction of cellular oxidant stress and activation of the transcription factor NFκB. Evidence suggests that the induction of oxidant stress results in the activation of an intracellular cascade involving p21 Ras and MAP kinase, which leads to activation of transcription.

CHROMOSOMAL LOCATION

Genetic locus: AGER (human) mapping to 6p21.32.

PRODUCT

RAGE 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 RAGE shRNA Plasmid (h): sc-36374-SH and RAGE shRNA (h) Lentiviral Particles: sc-36374-V as alternate gene silencing products.

For independent verification of RAGE (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-36374A, sc-36374B and sc-36374C.

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

RAGE siRNA (h) is recommended for the inhibition of RAGE 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

RAGE (A-9): sc-365154 is recommended as a control antibody for monitoring of RAGE 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 RAGE gene expression knockdown using RT-PCR Primer: RAGE (h)-PR: sc-36374-PR (20 µl, 434 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Zhong, Y., et al. 2006. C-reactive protein upregulates receptor for advanced glycation end products expression in human endothelial cells. Hypertension 48: 504-511.
2. Ghavami, S., et al. 2008. S100A8/9 induces cell death via a novel, RAGE-independent pathway that involves selective release of Smac/DIABLO and Omi/HtrA2. Biochim. Biophys. Acta 1783: 297-311.
3. Ghavami, S., et al. 2008. S100A8/A9 at low concentration promotes tumor cell growth via RAGE ligation and MAP kinase-dependent pathway. J. Leukoc. Biol. 83: 1484-1492.
4. Xanthis, A., et al. 2009. Receptor of advanced glycation end products (RAGE) positively regulates CD36 expression and reactive oxygen species production in human monocytes in diabetes. Angiology 60: 772-779.
5. Jin, Q., et al. 2011. S100A14 stimulates cell proliferation and induces cell apoptosis at different concentrations via receptor for advanced glycation end products (RAGE). PLoS ONE 6: e19375.
6. Puddu, A., et al. 2012. Vascular endothelial growth factor-C secretion is increased by advanced glycation end-products: possible implication in ocular neovascularization. Mol. Vis. 18: 2509-2517.
7. Shimizu, F., et al. 2013. Advanced glycation end-products disrupt the blood-brain barrier by stimulating the release of transforming growth factor-β by pericytes and vascular endothelial growth factor and matrix metalloproteinase-2 by endothelial cells *in vitro*. Neurobiol. Aging 34: 1902-1912.
8. Ko, S.Y., et al. 2014. Cell migration is regulated by AGE-RAGE interaction in human oral cancer cells *in vitro*. PLoS ONE 9: e110542.
9. Han, C., et al. 2014. D-ribosylation induces cognitive impairment through RAGE-dependent astrocytic inflammation. Cell Death Dis. 5: e1117.
10. Hsieh, M.J., et al. 2015. Transcriptional regulation of Mcl-1 plays an important role of cellular protective effector of vincristine-triggered autophagy in oral cancer cells. Expert Opin. Ther. Targets 19: 455-470.
11. Medapati, M.R., et al. 2015. RAGE mediates the pro-migratory response of extracellular S100A4 in human thyroid cancer cells. Thyroid 25: 514-527.

RESEARCH USE

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