SANTA CRUZ BIOTECHNOLOGY, INC.

RAGE siRNA (m): sc-36375

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 (mouse) mapping to 17 B1.

PRODUCT

RAGE siRNA (m) 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 (m): sc-36375-SH and RAGE shRNA (m) Lentiviral Particles: sc-36375-V as alternate gene silencing products.

For independent verification of RAGE (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-36375A, sc-36375B and sc-36375C.

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 (m) is recommended for the inhibition of RAGE 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

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 (m)-PR: sc-36375-PR (20 µl, 418 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Ma, H., et al. 2009. Advanced glycation endproduct (AGE) accumulation and AGE receptor (RAGE) up-regulation contribute to the onset of diabetic cardiomyopathy. J. Cell. Mol. Med. 13: 1751-1764.
2. Li, G., et al. 2012. Receptor for advanced glycation end products inhibits proliferation in osteoblast through suppression of Wnt, PI3K and ERK signaling. Biochem. Biophys. Res. Commun. 423: 684-689.
3. Liu, Y., et al. 2012. The alternative crosstalk between RAGE and nitrative thioredoxin inactivation during diabetic myocardial ischemia-reperfusion injury. Am. J. Physiol. Endocrinol. Metab. 303: E841-E852.
4. von Bauer, R., et al. 2013. CD166/ALCAM mediates proinflammatory effects of S100B in delayed type hypersensitivity. J. Immunol. 191: 369-377.
5. Tancharoen, S., et al. 2014. Overexpression of receptor for advanced glycation end products and high-mobility group box 1 in human dental pulp inflammation. Mediators Inflamm. 2014: 754069.
6. Lu, M., et al. 2015. HMGB1 promotes systemic lupus erythematosus by enhancing macrophage inflammatory response. J. Immunol. Res. 2015: 946748.
7. Yue, S., et al. 2015. Hyperglycemia and liver ischemia reperfusion injury: a role for the advanced glycation endproduct and its receptor pathway. Am. J. Transplant. 15: 2877-2887.
6. Chen, Q., et al. 2016. HMGB1 induces secretion of matrix vesicles by macrophages to enhance ectopic mineralization. PLoS ONE 11: e0156686.
7. Tancharoen, S., et al. 2016. HMGB1 promotes intraoral palatal wound healing through RAGE-dependent mechanisms. Int. J. Mol. Sci. 17: 1961.
8. Xue, X., et al. 2018. High-mobility group box 1 facilitates migration of neural stem cells via receptor for advanced glycation end products signaling pathway. Sci. Rep. 8: 4513.
9. Kanno, Y., et al. 2020. Alternatively activated macrophages are associated with the α2AP production that occurs with the development of dermal fibrosis : The role of alternatively activated macrophages on the development of fibrosis. Arthritis Res. Ther. 22: 76.

RESEARCH USE

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