SANTA CRUZ BIOTECHNOLOGY, INC.

Adenosine A2A-R siRNA (h): sc-39850

BACKGROUND

Adenosine is involved in a variety of processes, including the synthesis of urea, the anti-inflammatory response, and the inhibition of protein synthesis. The Adenosine receptors, including Adenosine A1-R, Adenosine A2A-R, Adenosine A2B-R and Adenosine A3-R, are integral membrane proteins that are members of the G protein-coupled receptor family. Adenosine A1-R mediates ureagenesis in a partially calcium-dependent manner. Adenosine is known to mediate coronary vasodilation via Adenosine A2A-R. Collagen synthesis and total protein synthesis are inhibited in certain cells by Adenosine, acting via the A2B receptors. Activation of Adenosine A3-R inhibits the induction of TNFα and blocks the endotoxin CD14 receptor signal transduction pathway.

REFERENCES

1. Mahan, L.C., et al. 1991. Cloning and expression of an A1 adenosine receptor from rat brain. Mol. Pharmacol. 40: 1-7.
2. Furlong, T.J., et al. 1992. Molecular characterization of a human brain adenosine A_2 receptor. Brain Res. Mol. Brain Res. 15: 62-66.
3. Salvatore, C.A., et al. 1993. Molecular cloning and characterization of the human A_3 adenosine receptor. Proc. Natl. Acad. Sci. USA 90: 10365-10369.

CHROMOSOMAL LOCATION

Genetic locus: ADORA2A (human) mapping to 22q11.23.

PRODUCT

Adenosine A2A-R 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 Adenosine A2A-R shRNA Plasmid (h): sc-39850-SH and Adenosine A2A-R shRNA (h) Lentiviral Particles: sc-39850-V as alternate gene silencing products.

For independent verification of Adenosine A2A-R (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-39850A, sc-39850B and sc-39850C.

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

Adenosine A2A-R siRNA (h) is recommended for the inhibition of Adenosine A2A-R 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

Adenosine A2A-R (7F6-G5-A2): sc-32261 is recommended as a control antibody for monitoring of Adenosine A2A-R 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Adenosine A2A-R gene expression knockdown using RT-PCR Primer: Adenosine A2A-R (h)-PR: sc-39850-PR (20 µl, 545 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Zhang, L., et al. 2010. Selective regulation of nuclear orphan receptors 4A by adenosine receptor subtypes in human mast cells. J. Cell Commun. Signal. 4: 173-183.
2. Burke, T.M., et al. 2015. Effects of caffeine on the human circadian clock *in vivo* and *in vitro*. Sci. Transl. Med. 7: 305ra146.
3. Guzmán-Gutiérrez, E., et al. 2016. Insulin requires A_1 adenosine receptors expression to reverse gestational diabetes-increased L-arginine transport in human umbilical vein endothelium. Purinergic Signal. 12: 175-190.
4. Liu, Z., et al. 2017. Endothelial adenosine A_{2A} receptor-mediated glycolysis is essential for pathological retinal angiogenesis. Nat. Commun. 8: 584.
5. Xu, Y., et al. 2017. Regulation of endothelial intracellular adenosine via adenosine kinase epigenetically modulates vascular inflammation. Nat. Commun. 8: 943.

RESEARCH USE

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