SANTA CRUZ BIOTECHNOLOGY, INC.

Adenosine A3-R siRNA (h): sc-39854

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 A_1 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. Pierce, K.D., et al. 1992. Molecular cloning and expression of an Adenosine A_{2B} receptor from human brain. Biochem. Biophys. Res. Commun. 187: 86-93.
4. 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.
5. McWhinney, C.D., et al. 1996. Activaton of Adenosine A_3 receptors on macrophages inhibits tumor necrosis factor α. Eur. J. Pharmacol. 310: 209-216.
6. Guinzberg, R., et al. 1997. Ca^{2+} dependence of the response of three adenosine type receptors in rat hepatocytes. Eur. J. Pharmacol. 340: 243-247.
7. Belardinelli, L., et al. 1998. The A_{2A} Adenosine receptor mediates coronary vasodilation. J. Pharmacol. Exp. Ther. 284: 1066-1073.
8. Dubey, R.K., et al. 1998. Adenosine inhibits growth of human aortic smooth muscle cells via A_{2B} receptors. Hypertension 31: 516-521.

CHROMOSOMAL LOCATION

Genetic locus: ADORA3 (human) mapping to 1p13.2.

PRODUCT

Adenosine A3-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 A3-R shRNA Plasmid (h): sc-39854-SH and Adenosine A3-R shRNA (h) Lentiviral Particles: sc-39854-V as alternate gene silencing products.

For independent verification of Adenosine A3-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-39854A, sc-39854B and sc-39854C.

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 A3-R siRNA (h) is recommended for the inhibition of Adenosine A3-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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Adenosine A3-R gene expression knockdown using RT-PCR Primer: Adenosine A3-R (h)-PR: sc-39854-PR (20 µl, 489 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Carreira, M.C., et al. 2006. Adenosine does not bind to the growth hormone secretagogue receptor type-1a (GHS-R1a). J. Endocrinol. 191: 147-157.
2. Merighi, S., et al. 2009. A2B and A3 Adenosine receptors modulate vascular endothelial growth factor and interleukin-8 expression in human melanoma cells treated with etoposide and doxorubicin. Neoplasia 11: 1064-1073.
3. Burke, T.M., et al. 2015. Effects of caffeine on the human circadian clock *in vivo* and *in vitro*. Sci. Transl. Med. 7: 305ra146.
4. Ye, W., et al. 2020. Adenosine A3 receptor mediates ERK1/2- and JNK-dependent TNF-α production in *Toxoplasma gondii*-infected HTR8/SVneo human extravillous trophoblast cells. Korean J. Parasitol. 58: 393-402.

RESEARCH USE

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