SANTA CRUZ BIOTECHNOLOGY, INC.

CAT-2 siRNA (h): sc-77441

BACKGROUND

As a member of the APC family of transporters, CAT-2 (low affinity cationic amino acid transporter 2), also known as Solute carrier family 7 member 2, is a 658 amino acid multi-pass membrane protein that is involved in the transport of cationic amino acids, such as arginine, lysine and ornithine. Since intracellular arginine is metabolized by nitirc oxide (NO) synthase and arginase pathways, CAT-2 is specifically recognized for its role in the regulation of L-arginine. The NO synthase pathway requires extracellular arginine uptake to allow for sustained NO production by NOS2, and CAT-2 has been found to be induced in many NOS2-positive cell types. CAT-2 is also thought to play a role in the immune response by limiting arginase activity in important effector cells, such as macrophages and fibroblasts. There are two named isoforms of CAT-2, designated CAT-2A and CAT-2B, which are produced as a result of alternative splicing events.

REFERENCES

1. Hoshide, R., et al. 1996. Molecular cloning, tissue distribution, and chromosomal localization of human cationic amino acid transporter 2 (HCAT2). Genomics 38: 174-178.
2. Closs, E.I., et al. 1997. Human cationic amino acid transporters hCAT-1, hCAT-2A, and hCAT-2B: three related carriers with distinct transport properties. Biochemistry 36: 6462-6468.
3. Lauteala, T., et al. 1997. Human cationic amino acid transporter gene hCAT-2 is assigned to 8p22 but is not the causative gene in lysinuric protein intolerance. Hum. Genet. 100: 80-83.
4. Nawrath, H., et al. 2000. Voltage dependence of L-arginine transport by hCAT-2A and hCAT-2B expressed in oocytes from *Xenopus laevis*. Am. J. Physiol., Cell Physiol. 279: C1336-C1344.
5. Nicholson, B., et al. 2001. Sustained nitric oxide production in macrophages requires the arginine transporter CAT2. J. Biol. Chem. 276: 15881-15885.
6. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 601872. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/

CHROMOSOMAL LOCATION

Genetic locus: SLC7A2 (human) mapping to 8p22.

PRODUCT

CAT-2 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 CAT-2 shRNA Plasmid (h): sc-77441-SH and CAT-2 shRNA (h) Lentiviral Particles: sc-77441-V as alternate gene silencing products.

For independent verification of CAT-2 (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-77441A, sc-77441B and sc-77441C.

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

CAT-2 siRNA (h) is recommended for the inhibition of CAT-2 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 CAT-2 gene expression knockdown using RT-PCR Primer: CAT-2 (h)-PR: sc-77441-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Mandal, A., et al. 2017. l-arginine uptake by cationic amino acid transporter promotes intra-macrophage survival of *Leishmania donovani* by enhancing arginase-mediated polyamine synthesis. Front. Immunol. 8: 839.
2. Franceschelli, S., et al. 2019. Modulation of CAT-2B-mediated l-arginine uptake and nitric oxide biosynthesis in HCT116 cell line through biological activity of 4'-geranyloxyferulic acid extract from quinoa seeds. Int. J. Mol. Sci. 20: 3262.
3. Mandal, A., et al. 2019. Corrigendum: l-Arginine uptake by cationic amino acid transporter promotes intra-macrophage survival of *Leishmania donovani* by enhancing arginase-mediated polyamine synthesis. Front. Immunol. 10: 3101.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.