SANTA CRUZ BIOTECHNOLOGY, INC.

ASCT2 siRNA (h): sc-60210

BACKGROUND

Neutral amino acid transporter proteins, also designated alanine/serine/cysteine/threonine transporters (ASCT), belong to the sodium dicarboxylate (SDF) symporter family of proteins. The members of this family of proteins are multi-pass membrane-bound proteins that act as transporters for threonine, alanine, serine and cysteine. ASCT1 and ASCT2 have been shown to exhibit sodium dependence. ASCT1 is expressed in most tissues, but highest expression has been detected in muscle, brain and pancreas. The highest levels of ASCT2 expression are found in placenta, kidney, pancreas, muscle and intestine.

REFERENCES

1. Arriza, J.L., et al. 1993. Cloning and expression of a human neutral amino acid transporter with structural similarity to the glutamate transporter gene family. J. Biol. Chem. 268: 15329-15332.
2. Hofmann, K., et al. 1994. Human neutral amino acid transporter ASCT1: structure of the gene (SLC1A4) and localization to chromosome 2p15-p13. Genomics 24: 20-26.
3. Kekuda, R., et al. 1996. Cloning of the sodium-dependent, broad-scope, neutral amino acid transporter Bo from a human placental choriocarcinoma cell line. J. Biol. Chem. 271: 18657-18661.
4. Rasko, J.E., et al. 1999. The RD114/simian type D retrovirus receptor is a neutral amino acid transporter. Proc. Natl. Acad. Sci. USA 96: 2129-2134.
5. Tailor, C.S., et al. 1999. A sodium-dependent neutral amino acid transporter mediates infections of feline and baboon endogenous retroviruses and simian type D retroviruses. J. Virol. 73: 4470-4474.
6. Tailor, C.S., et al. 2001. Truncated forms of the dual function human ASCT2 neutral amino acid transporter/retroviral receptor are translationally initiated at multiple alternative CUG and GUG codons. J. Biol. Chem. 276: 27221-27230.
7. Yamamoto, T., et al. 2004. Functional identification of ASCT1 neutral amino acid transporter as the predominant system for the uptake of L-serine in rat neurons in primary culture. Neurosci. Res. 49: 101-111.
8. Kanai, Y. and Hediger, M.A. 2004. The glutamate/neutral amino acid transporter family SLC1: molecular, physiological and pharmacological aspects. Pflugers Arch. 447: 469-479.

CHROMOSOMAL LOCATION

Genetic locus: SLC1A5 (human) mapping to 19q13.32.

PRODUCT

ASCT2 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 ASCT2 shRNA Plasmid (h): sc-60210-SH and ASCT2 shRNA (h) Lentiviral Particles: sc-60210-V as alternate gene silencing products.

For independent verification of ASCT2 (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-60210A, sc-60210B and sc-60210C.

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

ASCT2 siRNA (h) is recommended for the inhibition of ASCT2 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 ASCT2 gene expression knockdown using RT-PCR Primer: ASCT2 (h)-PR: sc-60210-PR (20 µl, 598 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Wang, R., et al. 2020. Enhanced glutamine utilization mediated by SLC1A5 and GPT2 is an essential metabolic feature of colorectal signet ring cell carcinoma with therapeutic potential. Ann. Transl. Med. 8: 302.
2. Kim, G., et al. 2022. Inhibition of glutamine uptake resensitizes paclitaxel resistance in SKOV3-TR ovarian cancer cell via mTORC1/S6K signaling pathway. Int. J. Mol. Sci. 23: 8761.
3. Wang, F., et al. 2022. Inhibition of ASCT2 induces hepatic stellate cell senescence with modified proinflammatory secretome through an IL-1α/NFκB feedback pathway to inhibit liver fibrosis. Acta Pharm. Sin. B 12: 3618-3638.
4. Wang, F., et al. 2022. O-GlcNAcylation coordinates glutaminolysis by regulating the stability and membrane trafficking of ASCT2 in hepatic stellate cells. J. Clin. Transl. Hepatol. 10: 1107-1116.

RESEARCH USE

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