SANTA CRUZ BIOTECHNOLOGY, INC.

ACO2 siRNA (m): sc-61937

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

ACO2, also referred to as aconitate hydratase, citrate hydrolyase or aconitase, is an iron-sulfur hydrolyase that catalyzes the non-limiting interconversion of citrate and isocitrate in the tricarboxylic acid cycle. It is expressed in the mitochondria and maintains a citrate:isocitrate ratio of approximately 10:1. ACO2 contains a redox-sensitive iron-sulfur cluster that exists in two states: active (Fe4S4) and inactive (Fe3S4). ACO2 activity is dependent on the state of this cluster as well as the presence of two conserved cysteine residues. In normal prostate epithelial cells ACO2 activity is prevented due to the high levels of zinc inhibiting the enzyme. In these citrate-producing epithelial cells citrate oxidation is impaired allowing citrate to accumulate and exhibit a citrate:isocitrate ratio of approximately 30:1. In malignant prostate cells zinc is unable to accumulate, therefore ACO2 activity resumes and citrate is oxidized.

REFERENCES

1. Rafferty, S.P., et al. 1996. Inhibition of hemoglobin expression by heterologous production of nitric oxide synthase in the K-562 erythroleukemic cell line. Blood 88: 1070-1078.
2. Juang, H.H. 2004. Nitroprusside stimulates mitochondrial aconitase gene expression through the cyclic adenosine 3',5'-monosphosphate signal transduction pathway in human prostate carcinoma cells. Prostate 61: 92-102.
3. Liang, L.P. and Patel, M. 2004. Iron-sulfur enzyme mediated mitochondrial superoxide toxicity in experimental Parkinson's disease. J. Neurochem. 90: 1076-1084.
4. Yu, Z., et al. 2006. Characterization of the mitochondrial aconitase promoter and the identification of transcription factor binding. Prostate 66: 1061-1069.
5. Beasley, C.L., et al. 2006. Proteomic analysis of the anterior cingulate cortex in the major psychiatric disorders: evidence for disease-associated changes. Proteomics 6: 3414-3425.
6. Singh, K.K., et al. 2006. Mitochondrial aconitase and citrate metabolism in malignant and nonmalignant human prostate tissues. Mol. Cancer 5: 14.

CHROMOSOMAL LOCATION

Genetic locus: Aco2 (mouse) mapping to 15 E1.

PRODUCT

ACO2 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 ACO2 shRNA Plasmid (m): sc-61937-SH and ACO2 shRNA (m) Lentiviral Particles: sc-61937-V as alternate gene silencing products.

For independent verification of ACO2 (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-61937A, sc-61937B and sc-61937C.

RESEARCH USE

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

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

ACO2 siRNA (m) is recommended for the inhibition of ACO2 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor ACO2 gene expression knockdown using RT-PCR Primer: ACO2 (m)-PR: sc-61937-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

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