SANTA CRUZ BIOTECHNOLOGY, INC.

ACO2 (775F2I): sc-517651

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., Domachowske, J.B. and Malech, H.L. 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., Costello, L.C., Feng, P. and Franklin, R.B. 2006. Characterization of the mitochondrial aconitase promoter and the identification of transcription factor binding. Prostate 66: 1061-1069.
5. Beasley, C.L., Pennington, K., Behan, A., Wait, R., Dunn, M.J. and Cotter, D. 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., Desouki, M.M., Franklin, R.B. and Costello, L.C. 2006. Mitochondrial aconitase and citrate metabolism in malignant and nonmalignant human prostate tissues. Mol. Cancer 5: 14.
7. Hunzinger, C., Wozny, W., Schwall, G.P., Poznanovic, S., Stegmann, W., Zengerling, H., Schoepf, R., Groebe, K., Cahill, M.A., Osiewacz, H.D., Jägemann, N., Bloch, M., Dencher, N.A., Krause, F. and Schrattenholz, A. 2006. Comparative profiling of the mammalian mitochondrial proteome: multiple aconitase-2 isoforms including N-formylkynurenine modifications as part of a protein biomarker signature for reactive oxidative species. J. Proteome Res. 5: 625-633.
8. Bulteau, A.L., Dancis, A., Gareil, M., Montagne, J.J., Camadro, J.M. and Lesuisse, E. 2007. Oxidative stress and protease dysfunction in the yeast model of Friedreich ataxia. Free Radic. Biol. Med. 42: 1561-1570.
9. Martelli, A., Salin, B., Dycke, C., Louwagie, M., Andrieu, J.P., Richaud, P. and Moulis, J.M. 2007. Folding and turnover of human iron regulatory protein 1 depend on its subcellular localization. FEBS J. 274: 1083-1092.

CHROMOSOMAL LOCATION

Genetic locus: ACO2 (human) mapping to 22q13.2.

SOURCE

ACO2 (775F2I) is a mouse monoclonal antibody raised against a KLH-coupled peptide corresponding to amino acids 433-467 of ACO2 of human origin.

PRODUCT

Each vial contains 50 µg IgG_1 in 0.5 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

ACO2 (775F2I) is recommended for detection of ACO2 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000).

Suitable for use as control antibody for ACO2 siRNA (h): sc-61936, ACO2 shRNA Plasmid (h): sc-61936-SH and ACO2 shRNA (h) Lentiviral Particles: sc-61936-V.

Molecular Weight of ACO2: 82 kDa.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

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.