SANTA CRUZ BIOTECHNOLOGY, INC.

ACAT-1 (AT15E5): sc-517387

BACKGROUND

ACAT-1 (acetyl-coenzyme A acetyltransferase 1) is a mitochondrial enzyme involved in the formation and degradation of ketone bodies and is necessary for the proper metabolic processing of isoleucine. Rare defects in the gene encoding ACAT-1 lead to β-ketothiolase deficiency, which is characterized by ketoacidotic attacks. ACAT-2 (acetyl-coenzyme A acetyltransferase 2) is considered a cytosolic protein and is crucial for cholesterol synthesis. Specifically, both Acetoacetyl-CoA specific thiolases, ACAT-1 and ACAT-2 catalyze the formation of acetoacetyl-CoA from two acetyl-CoA molecules. These enzymes are also capable of the reverse reaction, the cleavage of acetoacetyl-CoA into two acetyl-CoA molecules.

REFERENCES

1. Thompson, S.L. and Krisans, S.K. 1990. Rat liver peroxisomes catalyze the initial step in cholesterol synthesis. The condensation of acetyl-CoA units into acetoacetyl-CoA. J. Biol. Chem. 265: 5731-5735.
2. Igual, J.C., et al. 1992. Phylogenetic analysis of the thiolase family. Implications for the evolutionary origin of peroxisomes. J. Mol. Evol. 35: 147-155.
3. Masuno, M., et al. 1996. Assignment of the human cytosolic acetoacetyl-coenzyme A thiolase (ACAT-2) gene to chromosome 6q25.3-q26. Genomics 36: 217-218.
4. Antonenkov, V.D., et al. 2000. Identification, purification and characterization of an acetoacetyl-CoA thiolase from rat liver peroxisomes. Eur. J. Biochem. 267: 2981-2990.
5. Kursula, P., et al. 2005. High resolution crystal structures of human cytosolic thiolase (CT): a comparison of the active sites of human CT, bacterial thiolase, and bacterial Kas. I. J. Mol. Biol. 347: 189-201.
6. Peretó, J., et al. 2005. Phylogenetic analysis of eukaryotic thiolases suggests multiple proteobacterial origins. J. Mol. Evol. 61: 65-74.
7. Korman, S.H. 2006. Inborn errors of isoleucine degradation: a review. Mol. Genet. Metab. 89: 289-299.
8. Haapalainen, A.M., et al. 2007. Crystallographic and kinetic studies of human mitochondrial acetoacetyl-CoA thiolase: the importance of potassium and chloride ions for its structure and function. Biochemistry 46: 4305-4321.

CHROMOSOMAL LOCATION

Genetic locus: ACAT1 (human) mapping to 11q22.3.

SOURCE

ACAT-1 (AT15E5) is a mouse monoclonal antibody raised against a recombinant protein corresponding to amino acids 34-427 of ACAT-1 of human origin.

PRODUCT

Each vial contains 100 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide, 0.1% gelatin and 1% glycerol.

APPLICATIONS

ACAT-1 (AT15E5) is recommended for detection of ACAT-1 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for ACAT-1 siRNA (h): sc-96390, ACAT-1 shRNA Plasmid (h): sc-96390-SH and ACAT-1 shRNA (h) Lentiviral Particles: sc-96390-V.

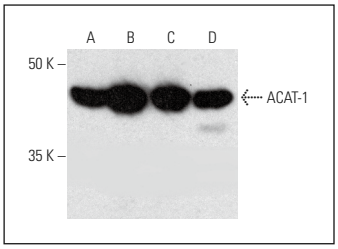
Molecular Weight of ACAT-1: 50 kDa.

Positive Controls: THP-1 cell lysate: sc-2238, SK-BR-3 cell lysate: sc-2218 or Hep G2 cell lysate: sc-2227.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



ACAT-1 (AT15E5): sc-517387. Western blot analysis of ACAT-1 expression in THP-1 (**A**), SK-BR-3 (**B**), Hep G2 (**C**) and MDA-MB-231 (**D**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Mayengbam, S.S., et al. 2023. Cholesterol reprograms glucose and lipid metabolism to promote proliferation in colon cancer cells. Cancer Metab. 11: 15.

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.