SANTA CRUZ BIOTECHNOLOGY, INC.

MCAD (E-5): sc-365448

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Acyl-CoA dehydrogenase is a family of enzymes that localize to the mitochondrion and target acyl chain lengths of 4 to 16 by use of the mitochondrial fatty acid β-oxidation pathway. In mammalian tissue, many straight-chain acyl-CoA dehydrogenases possess different substrate specificities. In rare cases, irregularities in medium-chain acyl-CoA dehydrogenase can cause fasting hypoglycemia, hepatic dysfunction and encephalopathy, often resulting in death in infancy. MCAD, also designated acyl-CoA dehydrogenase, medium-chain (ACADM) and MCADH, is a homotetramer. The MCAD gene encodes a 421 amino acid protein with characteristics of mitochondrial protein transit peptides. The protein shows 88% sequence identity with MCAD of porcine origin. Medium-chain acyl-CoA dehydrogenase catalyzes the initial reaction in the β-oxidation of C4 to C12 straight-chain acyl-CoAs.

REFERENCES

1. Matsubara, Y., et al. 1986. Molecular cloning of cDNAs encoding rat and human medium-chain acyl and assignment of the gene to human chromosome 1. Proc. Natl. Acad. Sci. USA 83: 6543-6547.
2. Kelly, D.P., et al. 1987. Nucleotide sequence of medium-chain acyl-CoA dehydrogenase mRNA and its expression in enzyme-deficient human tissue. Proc. Natl. Acad. Sci. USA 84: 4068-4072.
3. O'Reilly, L., et al. 2004. The Y42H mutation in medium-chain acyl-CoA dehydrogenase, which is prevalent in babies identified by MS/MS-based newborn screening, is temperature sensitive. Eur. J. Biochem. 271: 4053-4063.
4. Lee, P.J., et al. 2005. L-carnitine and exercise tolerance in medium-chain acyl-coenzyme A dehydrogenase (MCAD) deficiency: a pilot study. J. Inherit. Metab. Dis. 28: 141-152.
5. Blois, B., et al. 2005. Newborns with C8-acylcar frequency of the common MCAD 985A→G mutation. J. Inherit. Metab. Dis. 28: 551-556.
6. Corydon, T.J., et al. 2005. Down-regulation of HSP 60 expression by RNAi impairs folding of medium-chain acyl-CoA dehydrogenase wild-type and disease-associated proteins. Mol. Genet. Metab. 85: 260-270.
7. Derks, T.G., et al. 2005. The difference between observed and expected prevalence of MCAD deficiency in the Netherlands: a genetic epidemiological study. Eur. J. Hum. Genet. 13: 947-952.
8. Ensenauer, R., et al. 2005. Genotypic differences of MCAD deficiency in the Asian population: novel genotype and clinical symptoms preceding newborn screening notification. Genet. Med. 7: 339-343.

CHROMOSOMAL LOCATION

Genetic locus: ACADM (human) mapping to 1p31.1.

SOURCE

MCAD (E-5) is a mouse monoclonal antibody raised against amino acids 196-375 mapping within an internal region of MCAD of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

MCAD (E-5) is recommended for detection of MCAD of human origin by Western Blotting (starting dilution 1:100, 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 MCAD siRNA (h): sc-60996, MCAD shRNA Plasmid (h): sc-60996-SH and MCAD shRNA (h) Lentiviral Particles: sc-60996-V.

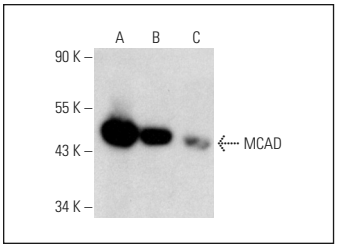
Molecular Weight of MCAD: 45 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, MCF7 whole cell lysate: sc-2206 or ES-2 cell lysate: sc-24674.

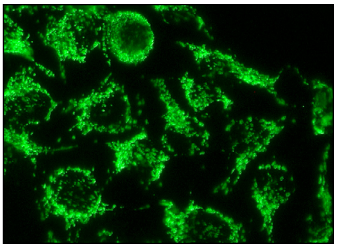
RECOMMENDED SUPPORT REAGENTS

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



MCAD (E-5): sc-365448. Western blot analysis of MCAD expression in Hep G2 (**A**), ES-2 (**B**) and MCF7 (**C**) whole cell lysates.



MCAD (E-5): sc-365448. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

SELECT PRODUCT CITATIONS

1. Kappler, L., et al. 2019. Linking bioenergetic function of mitochondria to tissue-specific molecular fingerprints. Am. J. Physiol. Endocrinol. Metab. 317: E374-E387.

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.