

MCAD (A-4): sc-365030

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 pig 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. Blois, B., et al. 2005. Newborns with C8-acylcarnitine level over the 90th centile have an increased frequency of the common MCAD 985A>G mutation. *J. Inher. Metab. Dis.* 28: 551-556.

CHROMOSOMAL LOCATION

Genetic locus: ACADM (human) mapping to 1p31.1; Acadm (mouse) mapping to 3 H3.

SOURCE

MCAD (A-4) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 141-163 within an internal region of MCAD of human origin.

PRODUCT

Each vial contains 200 μ g IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-365030 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

APPLICATIONS

MCAD (A-4) is recommended for detection of MCAD of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g 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).

MCAD (A-4) is also recommended for detection of MCAD in additional species, including bovine and porcine.

Suitable for use as control antibody for MCAD siRNA (h): sc-60996, MCAD siRNA (m): sc-60997, MCAD shRNA Plasmid (h): sc-60996-SH, MCAD shRNA Plasmid (m): sc-60997-SH, MCAD shRNA (h) Lentiviral Particles: sc-60996-V and MCAD shRNA (m) Lentiviral Particles: sc-60997-V.

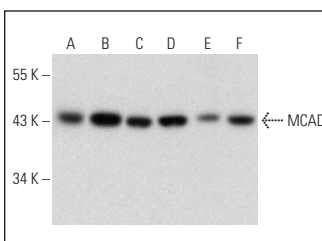
Molecular Weight of MCAD: 45 kDa.

Positive Controls: 3T3-L1 cell lysate: sc-2243, NIH/3T3 whole cell lysate: sc-2210 or NRK whole cell lysate: sc-364197.

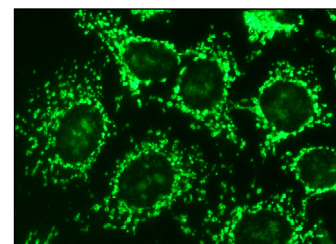
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ 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-IgG κ BP-FITC: sc-516140 or m-IgG κ 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 (A-4): sc-365030. Western blot analysis of MCAD expression in MCF7 (A), Hs 732.Sk/Mu (B), 3T3-L1 (C), NIH/3T3 (D), PC-12 (E) and NRK (F) whole cell lysates.



MCAD (A-4): sc-365030. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

SELECT PRODUCT CITATIONS

1. Cho, Y.K., et al. 2022. Adipocyte lysoplasmalogenase TMEM86A regulates plasmalogen homeostasis and protein kinase A-dependent energy metabolism. *Nat. Commun.* 13: 4084.

RESEARCH USE

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