

# Product Information



## MCAD Polyclonal Antibody

Item No. 101730 • Lot No. XXXXX

<b>Synonym:</b>	Medium-chain Fatty Acyl-CoA Dehydrogenase
<b>Contents:</b>	This vial contains (100-500 µg of protein A-purified IgG, <i>lot specific</i> ) in 500 µl TBS, pH <i>lot specific</i> , containing <i>lot specific</i> % glycerol, <i>lot specific</i> mg/ml BSA, and <i>lot specific</i> % sodium azide.
<b>Host:</b>	Rabbit
<b>Antigen:</b>	The MCAD polyclonal antibody was raised against purified human recombinant MCAD. <sup>1</sup>
<b>Cross-reactivity:</b>	(+) Human, porcine, ovine, and mouse MCAD; other species not tested.
<b>Stability:</b>	≥2 years at -20°C
<b>Application:</b>	For western blot analysis a starting dilution of <i>lot specific:lot specific</i> is recommended. A band at approximately 43 kDa should be detected. Other applications not tested.
<b>Concentration:</b>	Varies by lot, from 0.2-1.0 mg/ml (100-500 µg/vial). Always 100 µl final working volume for western blotting.

Medium-chain fatty acyl-CoA dehydrogenase (MCAD) is a mitochondrial enzyme that catalyzes the first step in the  $\beta$ -oxidation of fatty acids. MCAD expression is induced during periods of fasting, when reliance on fatty acids for energy is increased.<sup>2,3</sup> The promoter for MCAD contains a peroxisome proliferator response element (PPRE) and is regulated transcriptionally by peroxisome proliferator-activated receptor alpha (PPAR $\alpha$ ), a ligand-activated transcription factor involved in the regulation of lipid homeostasis.<sup>2,4,5</sup> Because of this, MCAD expression can be used as a marker to evaluate the *in vivo* activity of PPAR $\alpha$ .<sup>2,3</sup> Human MCAD is approximately 87% homologous to porcine and rat MCAD, respectively.<sup>1,6</sup> MCAD is expressed in liver, heart, kidney, and skeletal muscle.

### References

1. Kelly, D.P., Kim, J.-J., Billadello, J.J., *et al.* 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 (1987).
2. Gulick, T., Cresci, S., Caira, T., *et al.* The peroxisome proliferator-activated receptor regulates mitochondrial fatty acid oxidative enzyme gene expression. *Proc. Natl. Acad. Sci. USA* **91**, 11012-11016 (1994).
3. Leone, T.C., Weinheimer, C.J., and Kelly, D.P. A critical role for the peroxisome proliferator-activated receptor  $\alpha$  (PPAR $\alpha$ ) in the cellular fasting response: The PPAR $\alpha$ -null mouse as a model of fatty acid oxidation disorders. *Proc. Natl. Acad. Sci. USA* **96**, 7473-7478 (1999).
4. Carter, M.E., Gulick, T., Moore, D.D., *et al.* A pleiotropic element in the medium-chain acyl coenzyme A dehydrogenase gene promoter mediates transcriptional regulation by multiple nuclear receptor transcription factors and defines novel receptor-DNA binding motifs. *Mol. Cell Biol.* **14**, 4360-4372 (1994).
5. Lemberger, T., Desvergne, B., and Wahli, W. Peroxisome proliferator-activated receptors: A nuclear receptor signaling pathway in lipid physiology. *Annu. Rev. Cell Dev. Biol.* **12**, 335-363 (1996).
6. Matsubara, Y., Kraus, J.P., Ozasa, H., *et al.* Molecular cloning and nucleotide sequence of cDNA encoding the entire precursor of rat liver medium chain acyl coenzyme A dehydrogenase. *J. Biol. Chem.* **262**, 10104-10108 (1987).

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