

HACL1 (m): 293T Lysate: sc-120701

BACKGROUND

HACL1 (2-hydroxyacyl-CoA lyase 1) is also known as HPCL or 2-HPCL (2-hydroxyphytanoyl-CoA lyase) and is a 578 amino acid protein. HACL1 is abundantly expressed in liver, and is also expressed in kidney, heart and skeletal muscle, where it is localized to peroxisomes. HACL1 functions in lipid metabolism as well as fatty acid metabolism and is able to form homotetramers. Phytol, a breakdown product of chlorophyll, is converted into phytanic acid which undergoes α -oxidation. Through a series of reactions during α -oxidation, phytanic acid is converted into 2-hydroxyphytanoyl-CoA which reacts with HACL1 to yield pristanal and formyl-CoA. The α -oxidation of fatty acids by HACL1, including 3-methyl-branched fatty acids and 2-hydroxylated straight chain fatty acids, promotes carbon-carbon cleavage resulting in a reaction that forms formyl-CoA and a 2-methyl-branched fatty aldehyde. HACL1 is a member of the TPP (thiamine pyrophosphate) enzyme family and TPP is thought to be a cofactor of HACL1 during α -oxidation. Thiamine depletion, present in patients with severe malnutrition, chronic alcoholism and AIDS, can lead to Wernicke-Korsakoff syndrome and affects α -oxidation by lowering the level and activity of HACL1.

REFERENCES

1. Jansen, G.A., et al. 1999. Phytanic acid α -oxidation: identification of 2-hydroxyphytanoyl-CoA lyase in rat liver and its localisation in peroxisomes. *Biochim. Biophys. Acta* 1440: 176-182.
2. Foulon, V., et al. 1999. Purification, molecular cloning, and expression of 2-hydroxyphytanoyl-CoA lyase, a peroxisomal thiamine pyrophosphate-dependent enzyme that catalyzes the carbon-carbon bond cleavage during α -oxidation of 3-methyl-branched fatty acids. *Proc. Natl. Acad. Sci. USA* 96: 10039-10044.
3. Jansen, G.A., et al. 2001. Identification of pristanal dehydrogenase activity in peroxisomes: conclusive evidence that the complete phytanic acid α -oxidation pathway is localized in peroxisomes. *Biochem. Biophys. Res. Commun.* 283: 674-679.
4. Wierzbicki, A.S., et al. 2002. Refsum's disease: a peroxisomal disorder affecting phytanic acid α -oxidation. *J. Neurochem.* 80: 727-735.
5. Wanders, R.J., et al. 2003. Phytanic acid α -oxidation, new insights into an old problem: a review. *Biochim. Biophys. Acta* 1631: 119-135.
6. Foulon, V., et al. 2005. Breakdown of 2-hydroxylated straight chain fatty acids via peroxisomal 2-hydroxyphytanoyl-CoA lyase: a revised pathway for the α -oxidation of straight chain fatty acids. *J. Biol. Chem.* 280: 9802-9812.
7. Sniekers, M., et al. 2006. Thiamine pyrophosphate: an essential cofactor for the α -oxidation in mammals—implications for thiamine deficiencies? *Cell. Mol. Life Sci.* 63: 1553-1563.
8. Hashimoto, T., et al. 2006. Polyunsaturated fats attenuate the dietary phytol-induced increase in hepatic fatty acid oxidation in mice. *J. Nutr.* 136: 882-886.
9. Casteels, M., et al. 2007. The role of 2-hydroxyacyl-CoA lyase, a thiamine pyrophosphate-dependent enzyme, in the peroxisomal metabolism of 3-methyl-branched fatty acids and 2-hydroxy straight-chain fatty acids. *Biochem. Soc. Trans.* 35: 876-880.

CHROMOSOMAL LOCATION

Genetic locus: HACL1 (mouse) mapping to 14 B.

PRODUCT

HACL1 (m): 293T Lysate represents a lysate of mouse HACL1 transfected 293T cells and is provided as 100 μ g protein in 200 μ l SDS-PAGE buffer.

APPLICATIONS

HACL1 (m): 293T Lysate is suitable as a Western Blotting positive control for mouse reactive HACL1 antibodies. Recommended use: 10-20 μ l per lane.

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. 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.