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GPAT1 Antibody

Catalog # ASC10696

Product Information

Application	WB, IF, E, IHC-P
Primary Accession	Q9HCL2
Other Accession	NP_065969, 190358539
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	93795
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	GPAT1 antibody can be used for detection of GPAT1 by Western blot at 1 - 2 g/mL. Antibody can also be used for immunohistochemistry starting at 2.5 g/mL. For immunofluorescence start at 20 g/mL.

Additional Information

Gene ID	57678
Other Names	Glycerol-3-phosphate acyltransferase 1, mitochondrial, GPAT-1, 2.3.1.15, GPAM, GPAT1, KIAA1560
Target/Specificity	GPAM; At least four isoforms of GPAT1 are known to exist; this antibody will detect only the two largest isoforms.
Reconstitution & Storage	GPAT1 antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	GPAT1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	GPAM (HGNC:24865)
Function	Mitochondrial membrane protein that catalyzes the essential first step of biosynthesis of glycerolipids such as triglycerides, phosphatidic acids and lysophosphatidic acids (PubMed:18238778, PubMed:19075029, PubMed:36522428). Esterifies acyl-group from acyl- coenzyme A (acyl-CoA) to the sn-1 position of glycerol-3-phosphate, to produce lysophosphatidic acid (PubMed:18238778). Has a narrow hydrophobic binding cleft that selects for a linear acyl chain (PubMed:36522428). Catalytic activity is higher for substrates with a 16-carbon acyl chain (PubMed:36522428).

Cellular Location	Mitochondrion outer membrane; Peripheral membrane protein. Note=Associated with the mitochondrion outer membrane of hepatic cells via a patch of basic residues

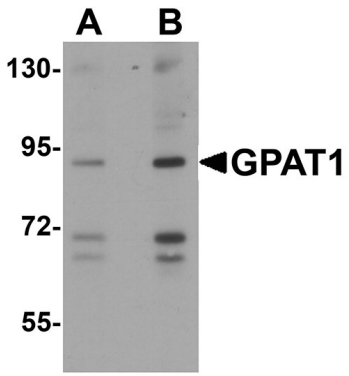
Background

GPAT1 Antibody: Glycerol-3-phosphate acyltransferase 1 (GPAT1), one of four known GPAT isoforms, is located on the mitochondrial outer membrane, allowing reciprocal regulation with carnitine palmitoyltransferase-1. It is thought to be critical for the development of hepatic steatosis; steatosis triggered by GPAT1 overexpression leads to hepatic and possibly peripheral insulin resistance. GPAT1 is transcriptionally upregulated by insulin and sterol regulatory element binding protein (SREBP-1) and downregulated by AMP-activated protein kinase. Mice deficient in GPAT1 exhibit decreased triacylglycerol (TAG) in cardiomyocytes even in high-fat diets, suggesting that GPAT1 contributes significantly to TAG accumulation in heart tissue during lipogenic or high fat diets.

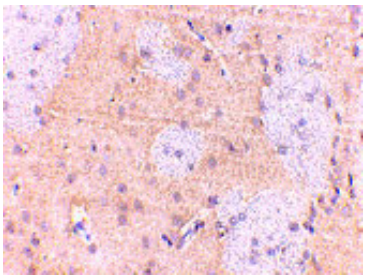
References

Coleman RA and Lee DP. Enzymes of triacylglycerol synthesis and their regulation. Prog. Lipid Res. 2004; 43:134-76.
Linden D, William-Olsson L, Ahnmark A, et al. Liver-directed overexpression of mitochondrial glycerol-3-phosphate acyltransferase results in hepatic steatosis, increased triacylglycerol secretion and reduced fatty acid oxidation. FASEB J. 2006; 20:434-43.
Eberle D, Hegarty B, Bossard P, et al. SREBP transcription factors: master regulators of lipid homeostasis. Biochimie 2004; 86:839-48.
Lewin TM, de Jong H, Schwerbrock NJ, et al. Mice deficient in glycerol-3-phosphate acyltransferase-1 have diminished myocardial triacylglycerol accumulation during lipogenic diet and altered phospholipid fatty acid composition. Biochim. Biophys. Acta 2008; 1781:352-8.

Images

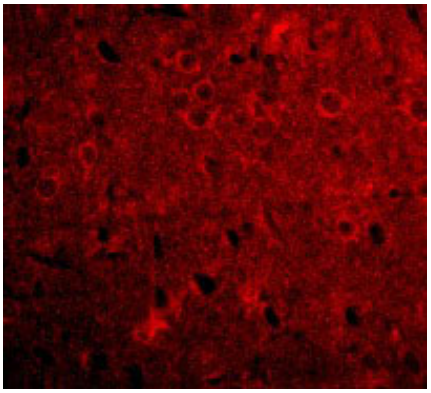


Western blot analysis of GPAT1 in rat brain tissue lysate with GPAT1 antibody at (A) 1 and (B) 2 µg/mL.



Immunohistochemistry of GPAT1 in rat brain with GPAT1 antibody at 2.5 µg/mL.

Immunofluorescence of GPAT1 in Rat Brain tissue with GPAT1 antibody at 20 µg/mL.



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