

P011 Regulation of cardiac mAGPAT3 mRNA expression by PPAR α
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1-Acyl-*sn*-glycerol-3-phosphate acyltransferase (AGPAT) exists as at least five iso-forms, termed AGPAT1, 2, 3, 4, 5. We report the molecular cloning, tissue distribution, and enzyme characterization of murine AGPATs (mAGPAT) and regulation of cardiac mAGPATs mRNA expression by PPAR α . mAGPAT1 and 3 were ubiquitously expressed in most tissues, whereas mAGPAT2, 4, and 5 were expressed in a tissue-specific manner. MAGPAT2 expressed in *in vitro* transcription and translation reactions and in transfected COS-1 cells exhibited specificity for 1-acyl-*sn*-glycerol-3-phosphate. When amino acid sequences of five mAGPATs were compared, three highly conserved motifs were identified, including one novel motif/pattern K(X2)L(X5)G(X11)R. Cardiac mAGPAT activities were 25% lower ($p < 0.05$) in PPAR α null mice compared to wild-type. In addition, cardiac mAGPAT activities were 50% lower ($p < 0.05$) in PPAR α null mice fed clofibrate compared to clofibrate fed wild type animals. This modulation of AGPAT activity was accompanied by significant enhancement/reduction of the mRNA levels of mAGPAT3/mAGPAT2, respectively. Finally, mRNA expression of cardiac mAGPAT3 was regulated by PPAR α activation. We conclude that cardiac mAGPAT activity may be regulated by both the composition of mAGPAT isoforms and the levels of each isoform.

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