

Isomer Specific Effects of Conjugated Linoleic Acid on Macrophage *abcg1* Transcription by a *srebp-1c* Dependent Mechanism

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Conjugated linoleic acids (CLAs) are minor components of the diet with many reported biological activities. Our aim was to examine the function of the single trans-9,trans-11 (t9,t11), cis-9,trans-11 (c9,t11) and trans-10,cis-12 (t10,c12) isomers on gene expression in human macrophages. Therefore we incubated in vitro MCSF differentiated monocyte derived macrophages from three healthy donors and THP-1 cells with these CLA-isomers and analyzed whole genome transcripts with Affymetrix U133 Plus 2.0 DNA-microarrays and realtime RT-PCR. We found that t9,t11-CLA, but not c9,t11- and t10,c12-CLA activates target genes of SREBP, SREBP-1 and ABCG1. Gene reporter assays with deletion constructs of the ABCG1 regulatory region and cotransfections with SREBP-1a and SREBP-1c expression plasmids in RAW 264.7 macrophages showed that t9,t11-CLA activates ABCG1 via SREBP-1c. These results indicate that positional and geometrical isomers of CLAs have specific effects on gene expression of human macrophages and that t9,t11-CLA activates ABCG1 by a SREBP-1c-dependent mechanism. This work was supported by a grant from Deutsche Forschungsgemeinschaft (SCHM 654/9-1, SCHM 654/9-2).