

Is the t8,c10 Conjugated Linoleic Acid Isomer a New Anti-adipogenic Compound?

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Facing the epidemic problem of obesity worldwide, conjugated linoleic acid (CLA) dietary supplements have been widely pursued. Several studies have demonstrated important effects of CLA isomers, specially the trans(t)10,cis(c)12 isomer, on lipid metabolism modulation, by promoting the reduction of body fat mass accumulation in animal experiments. One isomer that has received little attention up till now is the t8,c10 isomer, which is present in small amounts in CLA commercial supplements. Our research group was able to successfully synthesise and purify this isomer to its further application in cell culture experiments. Therefore, the aim of the present study was to explore the anti-adipogenic properties of t8,c10 CLA isomer during 3T3-L1 preadipocytes differentiation. Two days after 3T3-L1 cells had reached confluence, growth medium was replaced by differentiation medium and, after 72 h, insulin medium was applied. In every medium change, BSA, linoleic acid, c9,t11, t10,c12 and t8,c10 CLA isomers (complexed with BSA) were added in 25, 50 and 100 μ M concentrations. The results revealed a reduction on triglycerides content by a dosage of 100 μ M of both t10,c12 and t8,c10, although in a greater magnitude in the case of t10,c12 CLA isomer. The lactate dehydrogenase (LDH) assay was also performed showing no toxicity derived from t8,c10 supplementation. In conclusion, these data indicate that the t8,c10 CLA isomer may exert anti-adipogenic effects and further genetic mechanisms studies are needed.

We thank the Fundação para a Ciência e a Tecnologia (FCT) for the fellowship SFRH/BDP/2009/63019 to SVM. PAL is a researcher from the program “Ciência 2008” from FCT.