F-P-20

Anti-adipogenic Effect of Chlorogenic Acid in 3T3-L1 Adipocytes

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Chlorogenic acid is a phenolic compound found in Cudrania tricuspidata fruits. In the present study, the effect of chlorogenic acid on the inhibition of adipogenesis in 3T3-L1 adipocytes was investigated. Cells were stained with Oil red O reagent to detect lipid droplets in adipocytes. The 3T3-L1 cells were lysed and measured for intracellular triglyceride and adipokine by ELISA kit. The protein expression of adipogenesis-related gene was evaluated by Western blot analysis. Chlorogenic suppressed lipid droplet and intracellular triglyceride accumulation in a concentration manner and also decreased secretion of adipokines such as leptin and adiponectin, compared with fully differentiated adipocytes. Treatment of 3T3-L1 cells with chlorogenic acid reduced the protein levels of peroxisome proliferator-activated receptor gamma (PPARγ) and, CCAAT/enhancer binding proteins alpha (C/EBPα). This indicates that chlrogenic acid was effective as an anti-obesity agent by repressing the differentiation of 3T3-L1 into adipocytes and inhibiting triglyceridef formation in adipocyte and that it exerts its role mainly through the significant down-regulation of PPARγ and C/EBPα.

Key words: Adipocyte, Adipogenesis, Adipokine

[This work was carried out with the support of "Cooperative Research Program for Agriculture Science & Technology Development (Project No. PJ012588032018)" Rural Development Administration, Republic of Korea.]