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Effect of Hydrogenated Soybean Oil Containing Conjugated Linoleic Acid (CLA) on Adiposity of Genetically Obese Mice and the Possible Mechanism

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The purpose of this study was to investigate the effect of hydrogenated soybean oil containing conjugated linoleic acids(CLA) on the development of obesity and expression of genes involved in energy metabolism of genetically obese mice. Four week-old db/db mice(n=14) were fed AIN-93G diet containing soybean oil(control group) or diet containing hydrogenated soybean oil containing 17% CLA(CLA group) for 7 weeks. Hydrogenated soybean oil was obtained after 20 min hydrogenation in hydrogenation reactor under the condition of temperature 23℃, hydrogen pressure 0.5 kg/㎠, and stirring rate 300 rpm. Body weight of CLA group (20.9 ± 1.6 g) was significantly lower than that of control group (33.9 ± 1.7 g, $p < 0.001$). Total body fat of CLA group significantly decreased compared with control group ($p<0.001$). The mRNA levels of uncoupling protein(UCP-2) in white adipose tissue was measured using Northern blot analysis. UCP-2 mRNA level in white adipose tissue increased significantly in CLA group compared with control group. It was concluded that overexpression of UCP-2 mRNA may lead to decrease of adiposity in db/db mouse.