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Tropaeolum majus (nasturtium) ethanolic extract inhibits adipogenesis in 3T3-L1 cells

Gichang -Kim, Ami -Yoo, Jinsook-Kim, Gyoungmi -Kim and Song yi- Choi
Rural Development Administration, South Korea

Tropaeolum majus, an edible flower with a taste similar to radishes, has been used for disinfectant, wound-healing, and antibiotics as herbal medicine. But, anti-obesity effect of *T. majus* has not been reported. As the adipogenesis plays critical role in obesity, this study was performed to investigate the anti-adipogenesis effect of *T. majus* ethanolic extract (TME) on adipogenesis in 3T3-L1 cells. 3T3-L1 cells were differentiated in the presence of different concentrations of TME (0, 20, 300, and 500 µg/ml). The level of lipid accumulation was measured by Oil-Red O staining. Changes in the expression genes and proteins related to adipocyte differentiation in 3T1-L1 cells were measured by SDS-PAGE, western blotting, and real-time PCR. As a result of Oil-Red O staining, the most inhibition of lipid accumulation was observed at the concentration of 500 µg/ml TME. Also, TME concentrations ranging from 20 to 500 µg/ml dose-dependently decreased expression of adipocyte differentiation regulator; peroxisome proliferator-activated receptor γ (PPAR γ), CCAAT element binding protein α (C/EBP α), and sterol regulatory element binding protein 1 (SREBP-1). Moreover, level of mRNA that related to expression of PPAR γ , C/EBP α , and SREBP-1 decreased by TME. According to this study, TME inhibited lipid accumulation and decreased expression of genes and protein; PPAR γ , C/EBP α , and SREBP-1 associated with adipocyte differentiation in 3T3-L1 cells. Therefore, TME is potential therapeutic agent for preventing and treating the obesity.

Biography

Gichang -Kim has completed his PhD from Korea University. He is the Researcher of Rural Development Administration(RDA) in south of Korea.

recall@korea.kr

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