

聖約翰草抑制脂肪細胞基因表現與脂質蓄積

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摘要

本研究目的在探討聖約翰草 (Saint John's Wort; *Hypericum perforatum*) 萃取物對脂肪細胞脂質蓄積的影響。以3T3-L1前脂肪細胞培養，經誘發分化為含有油滴的成熟脂肪細胞為試驗模式。分別於胰島素有無的培養條件下，添加聖約翰草萃取物培養2天，經oil-Red O染色及定量分析，結果顯示聖約翰草處理明顯降低脂肪細胞的油脂堆積。同時以相對定量聚合酶連鎖反應方法，分析脂質代謝相關基因以及脂肪細胞分泌激素基因之表現，結果顯示添加聖約翰草萃取物會降低細胞代謝相關基因，如peroxisome proliferator-activated receptor γ (PPAR γ)、adipocyte fatty acid binding protein (aP2)、perilipin、hormone-sensitive lipase (HSL)，以及脂肪細胞分泌激素leptin mRNA之表現，而此抑制作用在缺乏胰島素的培養條件下更形顯著。以上結果顯示，聖約翰草可能藉由抑制3T3-L1脂肪細胞之基因表現，進而降低脂質的蓄積，並且減少脂肪細胞分泌激素leptin的表現，而聖約翰草的此種作用會受到胰島素影響。

關鍵詞：脂肪細胞、脂質蓄積、
聖約翰草萃取物

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Saint John's Wort Extracts Inhibit Gene Expression And Fat Accumulation In 3T3-L1 Adipocytes

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Abstract

This study is aimed to investigate the effects of Saint John's Wort (SJW; *Hypericum perforatum*) extracts on fat accumulation of adipocytes using 3T3-L1 adipocyte culture as a model. The 3T3-L1 preadipocytes were induced to differentiate for 10 days. When cells reached maturation, SJW extracts were applied to the culture media with or without insulin stimulation for 2 days. Results of oil-Red O staining showed that the SJW extracts-treated adipocytes had reduced levels of fat accumulation compared with the control cells. The mRNA levels of lipid metabolism-related genes, i.e. peroxisome proliferator-activated receptor γ , adipocyte fatty acid binding protein, perilipin, and hormone-sensitive lipase, and an adipokine, leptin, were lower in the SJW extracts-treated cells than those in the control cells, as measured by RT-PCR analysis. Furthermore, these inhibitory effects of SJW extracts were enhanced in the media lacking insulin. Taken together, SJW extracts may inhibit lipid metabolism-related gene transcription, leading to the reduction of lipid accumulation, which is correlated with the decreased mRNA levels of leptin. These inhibitory effects of SJW extracts may be attenuated by the insulin.

Key words: Adipocytes, Fat accumulation, Saint John's Wort extracts

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