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# 회화나무 열매 추출물에 의한 지방세포 분화 및 지방생성 억제

정지민[1], 성수희[2], 김보람[2], 김진호[2], 이하늘[2], 서찬[2], 김정은[1], 임수아[1], 최경민[3], 정진우[4]*
[1]국립호남권생물자원관, 연구원, [2]전임연구원, [3]실장, [4]부장

# Inhibition of Adipocyte Differentiation and Adipogenesis by the Extract from Sophora japonica Fruit

**Ji Min Jung[1], Su Hui Seong[2], Bo-Ram Kim[2], Jin-Ho Kim[2], Ha-Nul Lee[2], Chan Seo[2], Jung Eun Kim[1], Sua Im[1], Kyung-Min Choi[3] and Jin-Woo Jeong[4]***
[1]Researcher, [2]Associate Researcher, [3]Director and [4]General Manager, Honam National Institute of Biological Resources, 99 Gohadoangil, Mokpo 587262, Korea

The world-wide rate of obesity is increasing continuously, representing a serious medical threat since it is associated with a variety of diseases including type 2 diabetes, cardiovascular disease, and numerous cancers. *Sophora japonica*is used as a traditional herb for medicinal purposes in eastern Asia. However, the anti-obesity effects of *S. japonica*fruit have not been explored. The aim of this study is to investigate the inhibition of adipocyte differentiation and adipogenesis by an ethanol extract of *S. japonica*fruit (EESF) in 3T3-L1 pre-adipocytes. Our results demonstrate that EESF suppressed the terminal differentiation of 3T3-L1 pre-adipocytes in a dose-dependent manner, as confirmed by a decrease in lipid droplet number and lipid content through Oil Red O staining. EESF significantly reduced the accumulation of cellular triglyceride, which was associated with a significant inhibition of the levels of pro-adipogenic transcription factors, including PPARγ, C/EBPα and C/EBPβ. In addition, EESF potentially down regulated the expression levels of adipocyte-specific proteins, including aP2 and leptin. In particular, EESF treatment effectively enhanced the activation of the AMPK signaling pathway; however, the co-treatment with compound C, an inhibitor of AMPK, significantly restored the EESF-induced inhibition of pro-adipogenic transcription factors and adipocyte-specific genes. These results indicate that EESF may exert an anti-obesity effect by controlling the AMPK signaling pathway, suggesting that the fruit extract of S. japonica may be a potential anti-obesity agent.

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*(Corresponding author) jwjeong@hnibr.re.kr, Tel: +82-61-288-8940