

3rd World Congress on

NATURAL PRODUCTS CHEMISTRY AND RESEARCH & 12th WORLD PHARMA CONGRESS

October 16-18, 2017 Budapest, Hungary



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Cajanolic acid A from *Cajanus cajan* regulates lipid metabolism *in vitro* and *in vivo*

Prevention of obesity and related lipid metabolic disorder is an important strategy in treatment and prevention of metabolic diseases such as diabetes, hyperlipidemia and hypertension. Cajanolic Acid A (CAA) is a stilbene isolated from the leaves of *Cajanus cajan* (L.) Mills. exhibiting PTP1B inhibitory activity in our previous screening. Activity of CAA on lipogenesis and lipolysis was also investigated. In our study, CAA inhibited the differentiation of 3T3-L1 preadipocyte into mature adipocyte, at the same time it inhibited TG accumulation within mature 3T3-L1 adipocyte and reduced the release of glycerol and Free Fatty Acids (FFA) by the cell. Further study revealed that CAA inhibits adipocyte differentiation and TG synthesis via down regulation of PPAR γ and C/EBP α which are key transcriptional factors in adipocyte differentiation, and other adipogenic genes (*ACC*, *FAS*, *LPL*, etc.), and inhibits mature adipocyte to release glycerol and FFA by down-regulating genes related to lipolysis (*HSL* and *ATGL*), and up-regulating genes (*ACOX* & *CPT-1*) crucial to fatty acid oxidation. Ability of CAA to regulate lipid metabolism was confirmed in Zucker fatty rats, treatment with CAA achieved dose-dependent reduction in serum levels of TC and inhibition in increase of serum TG. In T2DM SD rats with hyperlipidemia, CAA not only inhibited the increase in blood glucose, but also significantly reduced the serum levels of TG, TC and LDL-C, and showed protective effect on organ damage brought by hyperglycemia and hyperlipidemia. In summary, CAA improved lipid metabolism both *in vitro* and *in vivo*, showing potential in treatment of hyperlipidemia.

Biography

Xiao-Ling Shen PhD is a Professor at the Laboratory of Herbal Drug Discovery, Tropical Medicine Institute, Guangzhou University of Chinese Medicine. Her research focus is Chinese herbal medicines with anti-obese, anti-diabetic or anti-tumor efficacy.

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