

论文 木豆叶芪类提取物对高脂模型小鼠血脂和肝脏胆固醇的降低作用

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摘要:

观察木豆叶芪类提取物对高脂饲料诱导的高脂模型小鼠肝脏胆固醇代谢的影响。将昆明种小鼠分为对照组、高脂模型组、木豆叶芪类提取物高剂量组(200 mg·kg⁻¹)、木豆叶芪类提取物低剂量组(100 mg·kg⁻¹)和辛伐他汀组(12 mg·kg⁻¹), 分别采用基础饲料和高脂饲料喂养。4周后检测小鼠血清和肝脏脂质的含量, 并采用反转录聚合酶链式反应(reverse transcription polymerase chain reaction, RT-PCR)方法检测小鼠肝脏中胆固醇7 α -羟化酶(cholesterol 7 α -hydroxylase, CYP7A1)和低密度脂蛋白受体(low density lipoprotein receptor, LDL-R)的mRNA表达。结果发现, 高脂模型组的血清脂质和肝脏脂质含量均明显升高。木豆叶芪类提取物200 mg·kg⁻¹可以使血清和肝脏中总胆固醇水平分别下降31.5%和22.7%($P<0.05$), 使血清和肝脏中甘油三酯含量分别减少23.0%和14.4%, 使血清低密度脂蛋白水平下降53.0%($P<0.01$)。同时, 木豆叶芪类提取物还可以上调肝脏组织CYP7A1和LDL-R的mRNA表达水平。结果表明, 木豆叶芪类提取物能够显著降低高脂小鼠的血清和肝脏脂质水平, 其降低胆固醇的作用可能与促进肝脏LDL-R表达和增加肝脏胆固醇向胆汁酸转化有关。

关键词: 木豆叶芪类提取物 胆固醇 肝脏CYP7A1 肝脏LDL-R

Hypocholesterolemic effect of stilbene extract from *Cajanus cajan* L. on serum and hepatic lipid in diet-induced hyperlipidemic mice

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Abstract:

Cajanus cajan L. is a natural plant, which contains a lot of potential active components. In the present study, we identified the effects of the stilbene extract from *Cajanus cajan* L. (sECC) on hepatic cholesterol metabolism in diet-induced (for 4 weeks) hyperlipidemic Kunming mice. All experimental mice were divided into 5 groups: control group, high lipid model group, sECC-treated with 200 or 100 mg·kg⁻¹, and simvastatin (Sim, 12 mg·kg⁻¹) treated group. The mice were fed with fat and cholesterol-enriched chow except control mice that were fed with standard diet. The effects of sECC were investigated by monitoring serum and liver lipid profile (*i.e.* cholesterol homeostasis) in mice. To further explore the mechanism of sECC, hepatic cholesterol 7 α -hydroxylase (CYP7A1) and low density lipoprotein (LDL) receptor expressions in cholesterol homeostasis were analyzed by reverse transcription PCR. After 4 weeks pretreatment, the mice in the high lipid model group showed markedly higher serum and hepatic lipid contents than control group ($P<0.01$). Compared with high lipid model group, the increased serum and hepatic lipid contents were markedly attenuated by sECC (200 mg·kg⁻¹), the serum and hepatic total cholesterol were reduced by 31.5% and 22.7% ($P<0.05$), respectively. The triglyceride contents of serum and liver were also lowered by 23.0% and 14.4%, respectively. At the same times, serum LDL cholesterol decreased by 53.0% ($P<0.01$). The mRNA expressions of hepatic CYP7A1 and LDL-receptor were significantly enhanced in the mice administered with sECC (200 mg·kg⁻¹), whereas those expressions were suppressed by the fat and cholesterol-enriched diet. These data indicate that sECC reduces the atherogenic properties of dietary cholesterol in mice. It is indicated that expression enhancement of hepatic LDL-receptor and cholesterol 7 α -hydroxylase may be responsible for the hypercholesterolemic effect.

Keywords: cholesterol hepatic CYP7A1 hepatic LDL-receptor stilbene extract from *Cajanus cajan* L.

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