

 中文标题 检索 跨刊检索

小檗碱对肥胖小鼠炎症因子分泌和炎症信号通路的作用

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中文摘要:目的:观察小檗碱对高脂饮食诱导的肥胖小鼠血清炎症因子分泌的影响及其作用的分子机制。方法:6周龄雄性昆明小鼠40只,随机分为正常组(NC)和高脂组(HF)。高脂组小鼠高脂饲料喂养13周后,随机分为3组:模型组(BM)、小檗碱低剂量组(BL)和小檗碱高剂量组(BH)并继续给予高脂饲料喂养,其中BL组和BH组分别按50,150 mg·kg⁻¹体重每天灌服小檗碱1次,NC组和BM组灌胃等量的生理盐水。治疗2周后进行口服葡萄糖耐量实验(OGTT),OGTT结束后3 d取血清,检测肿瘤坏死因子(TNF-α)、白介素6(IL-6)、脂联素的含量,并称取肝脏、附睾脂肪质量,检测肝脏、附睾脂肪中IKKβ表达以及IKK-β/ser¹⁸¹的磷酸化水平。结果:BM组小鼠血清TNF-α、IL-6含量高于NC组,经小檗碱治疗后,无论是BL组还是BH组TNF-α、IL-6含量均下降,与BM组比较有显著性差异,而各组之间脂联素未见明显差异,BH组小鼠肝脏和附睾脂肪组织中IKK-β的表达水平与NC组和BM组未见明显改变,但IKK-β/ser¹⁸¹的磷酸化水平则明显下降,此外,小檗碱能够明显改善肥胖小鼠的糖耐量,降低体重和附睾脂肪含量。结论:小檗碱能够通过减少肥胖小鼠炎症因子的分泌和抑制炎症信号通路,这可能是其改善机体胰岛素抵抗和糖代谢异常的作用机制之一。

中文关键词:小檗碱 炎症因子 IKK 胰岛素抵抗

Effects of berberine on serum levels of inflammatory factors and inflammatory signaling pathway in obese mice induced by high fat diet

Abstract: Objective: To investigate the effect of berberine on serum levels of TNF-α, IL-6 and adiponectin in obese mice induced by high fat diet and its potential molecular mechanisms. Method: Normal male Kunming mice were randomly divided into two groups taking normal chow (NC, n=10) and high fat diet (HF, n=30), respectively. After 13 weeks, HF mice were continuously given high fat diet and divided into three groups, model group (BM), low-dosage of berberine group (BL) and high-dosage of berberine group (BH). Mice in BL and BH were administered berberine by gavage at the dosage of 50 mg·kg⁻¹ and 150 mg·kg⁻¹, respectively. Two weeks later, oral glucose tolerance test was performed. At the end of the experiment, the mice were killed and blood samples were collected. The epididymal fat tissue and liver were removed promptly and weighed. The serum cytokine was measured by ELISA. The levels of IκB kinase β (IKK-β) and IKK-β/ser¹⁸¹ were detected by Western blotting. Result: Serum levels of TNF-α, IL-6 in mice of BM were significantly higher than those in NC (P<0.05). After two-week treatment of berberine, serum levels of TNF-α, IL-6 in BL and BH were lower than those in BM (P<0.05, respectively). However, there were no significant difference of adiponectin among four groups. The degrees of phosphorylation of IKK-β/ser¹⁸¹ were decreased in liver and adipose tissue in BH in comparison to that in BM, although the expression of total IKK-β did not change. Furthermore, the glucose tolerance was improved, while the body weight and epididymal fat were reduced in mice treated with berberine. Conclusion: Berberine is able to reduce inflammatory cytokines expression and inhibit activation of IKK-β/ser¹⁸¹ in obese mice, which may partly explain the therapeutic effect of berberine on insulin resistance and abnormal glucose metabolism.

keywords: berberine inflammatory cytokine IKK insulin resistance

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