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论文

芒果苷对糖尿病大鼠心肌损伤保护作用

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摘要：

目的 探究芒果苷对糖尿病大鼠心肌损伤的保护作用及其机制。方法 以链脲佐菌素尾静脉注射建立SD大鼠糖尿病模型。芒果苷（15、30、60 mg/kg）灌胃12周后，检测血糖，心脏指数及左心室指数、心功能状态；苏木素-伊红染色观察心肌形态学变化；免疫组织化学法测定心肌组织活化蛋白-1（AP-1）、转化生长因子-β1（TGF-β1）和纤维连接蛋白（FN）表达。结果 与对照组比较，模型组大鼠血糖[（26.14±3.25）mmol/L]明显升高，心脏及左心室指数升高，左心室内压最大上升和下降速率（±dp/dt_{max}）[（3852.49±86.26）、（2336.67±55.37）mmHg]均明显降低（$P<0.05$），心肌细胞体积明显增大，AP-1、TGF-β_1和FN蛋白的表达显著增加（$P<0.05$）；与糖尿病模型组比较，60 mg/kg芒果苷组大鼠血糖[（12.83±4.31）mmol/L]下降，心脏及左心室指数下降，+dp/dt_{max}、-dp/dt_{max}[分别为（5236.75±71.12）、（3660.25±96.53）mmHg/s]升高，心肌细胞肥大减轻，AP-1、TGF-β_1和FN蛋白的表达明显降低（$P<0.01$）。结论 芒果苷对大鼠糖尿病心肌组织具有保护作用，其机制可能与抑制AP-1表达，进而下调TGF-β_1、FN有关。

关键词： 芒果苷 糖尿病心肌病 活化蛋白-1(AP-1) 转化生长因子-β_1(TGF-β_1) 纤维连接蛋白(FN)

Protective effect of mangiferin on myocardial injury in diabetic rats

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Abstract:

Objective To investigate protective effect and mechanism of mangiferin on myocardial injury in diabetic rats.Methods Fifty Sprague-Dawley(SD)rats were randomly divided into five groups:a normal control group,a diabetic model group,and groups of low,moderate,and high does mangiferin.The diabetic model was established with tail vein injection of streptozocin(45 mg/kg).Mangiferin at the does of 15,30,60 mg/kg·d were given to the rats for 12 weeks.Blood glucose,cardiac mass index,left ventricular mass index and heart function of the rats were measured;cardiac pathological changes were observed with hematoxylin-eosin staining;immunohistochemical method was used to detect expressions of activator protein-1(Ap-1),transforming growth factor-β_1(TGF-β_1),and fibronectin(FN)in myocardial tissue of the rats.Results Compared with the control group,blood sugar(26.14±3.25 mmol/L),cardiac mass index(4.03±0.39 mg/g)and left ventricular mass index(2.71±0.21 mg/g)increased significantly in the rats of diabetic model group($P<0.05$ for all)maximum rate of rise of left ventricular pressure(+dp/dt_{max})and maximum rate of decrease of left ventricular pressure(-dp/dt_{max})(3 852.49±86.26 and 2 336.67±55.37 mmHg)were decreased significantly($P<0.05$ for all).In addition to destroyed myocardial structure,the volume of myocardial cells were increased obviously;the levels of Ap-1,TGF-β_1 and FN were significantly up-regulated for the diabetic model group.($P<0.05$ for all).Compared with the diabetic group,blood sugar(12.83±4.31 mmol/L),cardiac mass index,and left ventricular mass index decreased for the rats in 60 mg/kg·d mangiferin group($P<0.05$ for all);the +dp/dt_{max}(5 236.75±71.12 mmHg/s)and -dp/dt_{max}(3 660.25±96.53 mmHg/s)were up-regulated($P<0.05$ for all);the volume of myocardial cells were decreased and the levels of Ap-1,TGF-β_1,and FN were also declined($P<0.01$ for all).Conclusion Mangiferin has a protective effect on heart of diabetic rat and the mechanism may be associated with the suppression of AP-1,and the reduce of the TGF-β_1 and FN expression.

Keywords: mangiferin diabetic cardiomyopathy activator protein-1 transforming growth factor-β_1 fibronectin

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参考文献：

[1] 邱水晶, 刘义, 杜红禹.芒果苷对糖尿病大鼠肾脏的保护作用及机制[J].中国动脉硬化杂志, 2010, 18(12):956-960.
[2] Sharma V, McNeill JH.Diabetic cardiomyopathy:where are we 40 years later[J].Can J Cardiol, 2006, 22(4):305-308.
[3] Shima Y, Tajiri T, Taguchi T, et al.Increased expression of c-fos and c-jun in the rat small intestinal epithelium after ischem injury:a possible correlation with the proliferation or apoptosis of intestinal epithelial cells[J].J Pediatr Surg, 2006, 41(4):830-836.
[4] 郝存勖, 苏彦君, 王青菊, 等.姜黄素对糖尿病大鼠肾组织c-fos及c-jun基因表达上调的抑制作用[J].医学动物防制, 2010, 12:1089-1091.
[5] Ruiz-Torres MP, Perez-Rivero G, Diez-Marques ML, et al.Role of activator protein-1 on the effect of arginine-glycine-aspartic acid containing peptides on transforming growth factor-beta 1 promoter activity [J].Int J Biochem Cell Biol, 2007, 39(1):133-145.
[6] Chuang LY, Guh JY, Lin SF, et al.Regulation of type Ⅱ transforming growth-factor-beta receptors by protein kinase C iota[J].Biochem J, 2003, 375(Pt 2):385-393.
[7] 王豫萍, 肖林生, 周艳, 等.类风湿性关节炎与转化生长因子基因多态性[J].中国公共卫生, 2007, 23(11):1405-1406.
[8] Kohda Y, Shirakawa H, Yamane K, et al.Prevention of incipient diabetic cardiomyopathy by high-does thiamine[J].J Toxicol Sci, 2008, 33(4):459-472.
[9] Saed GM, Diamond MP.Effect of glucose on the expression of type 1 collagen and transforming growth factor-beta 1 in cultured human peritoneal fibroblasts[J].Fertil Steril, 2003, 79(1):158-163.
[10] 曹萍, 刘铭球, 熊世熙, 等.福辛普利对实验性糖尿病大鼠心肌细胞外基质的影响[J].第四军医大学学报, 2002, 23(7):619-622.
[11] Jeon YJ, Han SH, Lee YW, et al.Dexamethasone inhibits IL-1 gene expression in JPS-stimulated RAW 264.7 cells by blocking NF-KB/Rel and AP-1 activation[J].Immunopharmacology, 2000, 48(2):173-183.

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