

基础研究

五味子油对2型糖尿病大鼠胰岛B细胞凋亡的影响

安丽萍^{1,2}|王英平³|王春梅²|金明华¹|刘晓梅¹|詹巾卓²|孙汇²|李娜²|王拓²|杜培革²|孙志伟^{1,4}

1. 吉林大学公共卫生学院卫生毒理学教研室|吉林 长春130021; 2. 北华大学药学院微生物与生化药学教研室|吉林 吉林 132013; 3. 中国农业科学院特产研究所|吉林 吉林 132019; 4. 首都医科大学公共卫生和家庭医学 学院卫生毒理与卫生化学教研室|北京 100069

摘要:

目的: 研究五味子油对2型糖尿病大鼠胰岛B细胞的保护作用, 探讨其降血糖作用及机制。 方法: Wistar 雄性大鼠, 高脂饮食联合小剂量链脲佐菌素(STZ, 30 mg.kg⁻¹) 间隔2次注射建立2型糖尿病大鼠模型, 将模型成功大鼠随机分为糖尿病模型组(DM)和五味子油治疗组(DM+SCO), 另设正常对照组(CON)和正常五味子油组(CON+SCO)。药物干预6周后, 检测各组动物血清空腹血糖(FBG)、空腹血清胰岛素(FINS)水平; 大鼠血清丙二醛(MDA)含量、超氧化物歧化酶(SOD)和过氧化氢酶(CAT)活性; 采用RT-PCR法检测大鼠胰腺组织Bcl-2、Bax 和Caspase 3 mRNA表达水平。结果: 与模型组比较, 五味子油治疗组大鼠FBG水平明显下降(P<0.05), FINS水平明显升高(P<0.05); 五味子油治疗组大鼠血清MDA含量下降(P<0.05), SOD及CAT活性升高(P<0.05); 五味子油治疗组大鼠胰腺组织Bcl-2 mRNA表达水平升高, Caspase 3 mRNA表达水平下降(P<0.05), Bax表达无明显变化, 但Bax/bcl-2比值降低。与正常对照组比较, 正常五味子油组大鼠上述指标未出现明显改变。结论: 五味子油可通过降低脂质过氧化反应副产物, 增强抗氧化物酶活力, 调节凋亡相关基因, 促进血清胰岛素分泌, 从而降低血糖。

关键词: 五味子油; 2型糖尿病; 胰岛B细胞; 细胞凋亡; 氧化应激

Effect of schisandrae chinensis oil on apoptosis of islet B cells of type 2 diabetic rats

AN Li-ping^{1,2}|WANG Ying-ping³| WANG Chun-mei¹| JIN Ming-hua¹| LIU Xiao-mei¹| ZHAN Jin-zhuo²| SUN Hui²| LI Na²| WANG Tuo²| DU Pei-qe²| SUN Zhi-wei^{1,4}

1. Department of Toxicology, School of Public Health, Jilin University, Changchun, 130021, China; 2. Department of Microbiology, Biochemistry and Pharmacology, School of Pharmacy, Beihua University, Jilin 132013, China; 3. Institute of Special Economic Plants and Wildlives Utilization, Chinese Academy of Agricultural Sciences, Jilin 132019, China; 4. Department of Toxicology and Sanitary Chemistry, School of Public Health and Family Medicine, Capital Medical University, Beijing 100069, China

Abstract:

Objective To study of protective effect of schisandrae chinensis oil on the islet B cells of type 2 diabetic rats and explore its hypoglycemic effect and mechanism. Methods The high-fat diet combined with the twice injection of low-dose STZ at the ideal interval was used to establish the experimental rat model of type 2 diabetes. The Wistar model rats were randomly divided into diabetic model group and schisandrae chinensis oil treatment group, meanwhile control group and normal schisandrae chinensis oil group were set up. After 6 weeks abdominal injection of rats with schisandrae chinensis oil, the fasting blood glucose(FBG) and fasting plasma insulin level(FINS) in serum of the rats in various groups were examined; the malondialdehyde(MDA) content, superoxide dismutase(SOD) and catalase(CAT) activities in serum were measured; RT-PCR assay was used to examine the expressions of Bcl-2, Bax and Caspase 3 mRNA. Results Compared with diabetic model group, the level of FBG in schisandrae chinensis oil group was significantly decreased(P<0.05), the FINS level was markedly increased(P<0.05); the serum MDA content, and the SOD and CAT activities were increased(P<0.05); the expression of Bcl-2 mRNA was increased(P<0.05), the expression level of Caspase 3 mRNA was decreased(P<0.05), and the Bax mRNA expression had no change. However there were no differences in these indexes between control group and normal schisandrae chinensis oil group. Conclusion Schisandrae chinensis oil can significantly reduce blood glucose by decreasing lipid peroxidation, increasing the antioxidant capacity of the diabetic rats, regulating apoptosis-related genes, and improving insulin secretion.

Keywords: schisandrae chinensis oil; type 2 diabetes; islet B cells; apoptosis; oxidative stress

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通讯作者: 孙志伟(Tel: 0431-85619458,E-mail: zwsun@hotmail.com); 杜培革 (Tel: 0432-64608278,E-mail: dupeige2001@126.com)

作者简介: 安丽萍(1973-)|女|吉林省吉林市人|讲师|在读医学博士|主要从事生物化学与分子生物学研究。

作者Email: zwsun@hotmail.com

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