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论著

氨基胍和维生素C对糖尿病大鼠血脂水平和主动脉硫酸乙酰肝素蛋白多糖表达的影响

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摘要 目的 观察氨基胍(Ami)与维生素C (Vit C)合用是否可通过抑制糖基化和氧化应激对糖尿病大鼠主动脉起到保护作用。方法 腹腔注射链脲佐菌素诱导建立1型糖尿病大鼠模型，Ami, Vit C和Vit C+Ami治疗组分别 ig Ami 100 mg·kg^{-1}, Vit C 100 mg·kg^{-1}或Vit C 100 mg·kg^{-1}+ Ami 100 mg·kg^{-1}，每日1次，给药16周。观察大鼠的一般状况；血糖、血清甘油三酯(TG)、胆固醇(TC)、低密度脂蛋白(LDL)、高密度脂蛋白 (HDL)、糖化血红蛋白（HbA1c）和糖化低密度脂蛋白（G-LDL）水平；HE染色及免疫组织化学检测主动脉内膜硫酸乙酰肝素蛋白多糖（HSPG）表达。结果 与模型组相比，Ami和Vit C可增加糖尿病大鼠的体重，但对血糖水平无影响；Vit C降低TG 、TC和LDL水平，显著提高HDL水平，Ami 及Vit C明显降低HbA1c和G-LDL水平，并增强主动脉HSPG表达。Ami+Vit C的治疗作用较Ami及Vit C更为明显，但所有的观察指标未恢复至正常组水平。结论 Ami和Vit C无降血糖作用，但可通过抑制糖基化和氧化应激对糖尿病大鼠主动脉起到保护作用。

关键词 氨基胍 维生素C 糖尿病,实验性 脂蛋白类 主动脉 硫酸乙酰肝素蛋白多糖

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Effects of aminoguanidine and vitamin C on blood lipid level and expression of heparan sulfate proteoglycan of aorta in streptozotocin induced diabetic rats

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Abstract

AIM To observe whether the protection of aminoguanidine (Ami) combined with vitamin C (Vit C) on aorta is achieved by inhibiting oxidative stress and glycosylation in streptozotocin- induced diabetic rats. **METHODS** Type 1 diabetic rats, induced by ip injection of streptozotocin, were treated with ig Ami 100 mg·kg^{-1}, Vit C 100 mg·kg^{-1} and Vit C 100 mg·kg^{-1}+ Ami 100 mg·kg^{-1}, respectively, once daily for 16 weeks. During and after the treatment, the levels of blood sugar, triglyceride, total cholesterol, low density lipoprotein(LDL), high density lipoprotein(HDL), glycosylated hemoglobin (HbA1c) and glycosylated low density lipoprotein (G-LDL) were measured. Aorta tissue morphology via HE staining was observed. Heparan sulfate proteoglycan (HSPG) expression in intima of aorta was determined by immunohistochemical method. **RUSULTS** Compared with the model group, Ami and Vit C had no effect on the blood sugar level, while they improved body weight. Vit C decreased serum triglyceride, cholesterol, and LDL, and increased HDL significantly. Ami and Vit C decreased levels of HbA1c and G-LDL. The expression of HSPG in aorta was significantly augmented at the same time. Therapeutic effect of Ami+Vit C was better than Ami or Vit C alone obviously, but all the observed parameters did not recover to the level of control group. **CONCLUSION** Ami and Vit C have no effect in decreasing blood sugar level but have certain protection on aorta by inhibiting oxidative stress and glycosylation.

Key words aminoguanidine vitamin C diabetes mellitus experimental lipoproteins aorta heparan sulfate proteoglycan

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