

观察链脲菌素 (STZ) 诱导的糖尿病大鼠肾小球中4-羟基壬烯醛 (4-HNE) 的表达, 并探讨普罗布考的肾脏保护作用机制。方法 60 mg/kg STZ一次性腹腔注射构建糖尿病大鼠模型, 造模成功的大鼠按数字表法分为糖尿病组 (D组, n=24) 和普罗布考干预组 (P组, n=24), 同时选取健康大鼠作为正常对照组 (C组, n=24)。P组大鼠给予普罗布考110 mg·kg⁻¹·d⁻¹灌胃, D组及C组给予生理盐水灌胃。分别于4周、8周及12周检测24 h尿蛋白量、血清胆固醇、三酰甘油、尿素氮及血肌酐。HE染色及PAS染色后光镜下观察肾脏病理变化, 免疫组化观察肾组织4-HNE的表达, Western blotting检测肾组织4-HNE的表达水平。结果 D组24 h尿蛋白量、三酰甘油、胆固醇、尿素氮及肌酐在4周、8周及12周逐渐升高, 且均高于同时期的C组, 差异有统计学意义 (均P<0.05), P组以上指标均低于同时期的D组, 差异有统计学意义 (均P<0.05)。P组及D组4周、8周及12周的肾脏病理改变逐渐加重, 同时期的P组肾脏病理改变较D组轻, 但仍重于C组。D组4周、8周及12周肾脏中的4-HNE的表达均显著高于C组, 免疫组化染色积分差异有统计学意义 (P<0.05), P组4-HNE的表达量低于同时期的D组, 差异亦有统计学意义 (P<0.05); Western印迹结果与免疫组化结果相符。结论 STZ诱导的糖尿病大鼠肾小球中脂质过氧化标志物4-HEN明显升高, 而普罗布考可能通过减少4-HNE的生成减轻脂质过氧化损伤, 从而起到肾脏保护作用。

Objective To investigate the expression of 4-hydroxynonenal (4-HNE) in the kidney of diabetic rats and the effect of probucol. Methods The rats were being divided into diabetic group (group D, n=24), probucol treated group (group P, n=24). Normal rats were taken as control group (group C, n=24). Rats in group P were treated by probucol (110 mg·kg⁻¹·d⁻¹); rats in group D and group C were given equal volume water instead. Scr, BUN, triglyceride (TG), total cholesterol (TC) and 24-hour urinary protein were measured at the 4th, 8th and 12th week. Pathological changes and HE staining were used to evaluate the pathological changes of the kidney. The immunohistochemistry and Western blotting were used to detect the expression of 4-HNE in renal tissue. Results Levels of Scr, BUN, TG, TC and 24-hour urinary protein in group D were higher than those in group C at the 4th, 8th and 12th week (all P<0.05); Levels of Scr, BUN, TG, TC and 24-hour urinary protein in group P were lower than those in group D at 4th, 8th and 12th week (all P<0.05). The pathological changes of the kidney in group D were more serious than that in group P. The expression of 4-HNE in group D were higher than group C at the 4th, 8th and 12th week (all P<0.05). The expression of 4-HNE in the kidneys of group P decreased significantly compared to that of group D at the same time (P<0.05). Conclusions As an indicator of lipid peroxidation, the expression of 4-HNE significantly increases in the kidney of diabetic rat. Probucol may protect the diabetic kidney through decreasing the expression of 4-HNE and the level of lipid peroxidation.



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糖尿病大鼠肾脏4-羟基壬烯醛的表达及普罗布考的干预研究

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Expression of 4-hydroxynonenal in the kidney of diabetic rats and the effect of probucol

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摘要

图/表

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