

内分泌与代谢疾病研究

金钗石斛水提物对糖尿病大鼠肾组织非酶糖基化及氧化的影响

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摘要:

目的 观察金钗石斛(*Dendrobium nobile* Lindl, DNL)水提物对糖尿病(diabetes mellitus, DM)大鼠肾组织非酶糖基化和氧化应激的影响, 探讨DNL对糖尿病大鼠肾脏的保护作用。方法 采用链脲佐菌素(streptozotocin, STZ)诱导DM大鼠模型, 分为正常对照组(N组), 糖尿病对照组(DM组), 金钗石斛低(DNLL)、中(DNLM)、高(DNLH)剂量组和氨基胍(aminoguanidine, AG)对照组(AG组), 给药12周。分别检测血糖、血尿素、肌酐、糖基化终末产物(advanced glycation end products, AGEs)、尿肌酐、24h尿白蛋白、血清及肾组织AGEs、肾组织总超氧化物歧化酶(superoxide dismutase, SOD)、丙二醛(malondialdehyde, MDA)含量。透射电镜观察肾组织超微结构变化。结果 DM组大鼠血糖、血尿素、24h尿白蛋白、血清及肾组织AGEs、肾组织MDA含量显著高于N组( $P < 0.05$ ); 肌酐清除率、肾组织总SOD活性显著低于N组( $P < 0.05$ ); DM组大鼠系膜扩张明显异常, 基底膜明显增厚。DNL明显降低DM大鼠血糖、血尿素、24h尿白蛋白、血清及肾组织AGEs、肾组织MDA含量( $P < 0.05$ ), 明显增加肌酐清除率( $P < 0.05$ )、增强肾组织总SOD活性( $P < 0.05$ )、减轻肾系膜的扩张和基底膜的增厚。结论 DNL能降低血糖、抑制AGEs的形成、抑制氧化应激的发生, 从而阻止或延缓糖尿病肾病(diabetic nephropathy, DN)的发生发展。

关键词: 金钗石斛; 糖尿病; 糖基化终末产物; 氧化应激

Effects of the aqueous extract of *Dendrobium nobile* Lindl on the nonenzymatic glycation and oxidative stress in diabetic rat kidney

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Abstract:

Objective To investigate the renoprotective effects of *Dendrobium nobile* Lindl (DNL) on nonenzymatic glycation and oxidative stress in the diabetic rat kidney. Methods The diabetes mellitus (DM) rat model was induced by streptozotocin. All rats were divided into six groups: the normal control group(N group), diabetic control group(DM group), DNL low dose group(DNLL group), DNL moderate dose group(DNLM group), DNL high dose group(DNLH group) and AG control group(AG group), and administrated for 12 weeks. The serum glucose levels, 24h urinary albumin, serum urea, creatinine, advanced glycation end products (AGEs), urine creatinine, renal total superoxide dismutase (SOD) and malondialdehyde (MDA) were measured. The ultrastructural morphology was observed by the electron microscope. Results The serum glucose levels, serum urea, 24h urinary albumin, serum and renal AGEs, and renal MDA significantly increased in the DM group compared with N group( $P < 0.05$ ). The levels of creatinine clearance rate (Ccr) and total SOD significantly reduced in the DM group compared with N group( $P < 0.05$ ). The mesangium expansion and basement membrane thickness significantly increased in the DM group. DNL significantly decreased the serum glucose levels, serum urea, 24h urinary albumin, serum and renal AGEs and renal MDA( $P < 0.05$ ), and significantly increased the levels of Ccr and total SOD( $P < 0.05$ ). The mesangium expansion and basement membrane thickness were significantly improved by DNL. Conclusion DNL can decrease serum glucose, inhibit AGEs formation, attenuate oxidative stress, and retard the occurrence and development of diabetic nephropathy.

Keywords: *Dendrobium nobile* Lindl; Diabetes mellitus; Advanced glycation end products; Oxidative stress

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