

决明子对糖尿病大鼠肾脏纤维化的抑制作用

投稿时间: 2012-04-10 [点此下载全文](#)

引用本文: 朱铁锤.决明子对糖尿病大鼠肾脏纤维化的抑制作用[J].中国实验方剂学杂志,2012,18(24):315~319

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中文摘要:目的: 探讨决明子对糖尿病大鼠肾脏纤维化的保护作用及其可能机制。方法: 将70只SD大鼠随机分为模型组(60只)和正常对照组(10只)。禁食12 h后大鼠1次性左下腹腔注射 $55 \text{ mg} \cdot \text{kg}^{-1}$ 链脲佐菌素(STZ)制备糖尿病模型,对照组给予等容量生理盐水。造模成功的大鼠随机分为模型组(生理盐水, $4 \text{ mL} \cdot \text{kg}^{-1}$)、卡托普利组($10 \text{ mg} \cdot \text{kg}^{-1}$)和决明子低、中、高剂量组($1.5, 10 \text{ g} \cdot \text{kg}^{-1}$),连续灌胃给药8周。检测空腹血糖、24 h尿白蛋白量、血肌酐及肌酐清除率,采用HE染色观察肾脏组织病理学变化,采用RT-PCR检测肾脏组织中转化生长因子($\text{TGF-}\beta_1$)及结缔组织生长因子(CTGF)的mRNA表达,采用Western blot检测肾脏Smad3和Smad6的蛋白表达。结果: 与对照组相比,糖尿病模型组大鼠空腹血糖、血肌酐、24 h尿白蛋白量均显著升高 ($P < 0.05$),肌酐清除率显著下降 ($P < 0.05$),肾脏组织中 $\text{TGF-}\beta_1$ 和CTGF的mRNA表达均明显升高 ($P < 0.05$),Smad3蛋白表达亦显著升高 ($P < 0.05$),而Smad6蛋白表达则显著下降 ($P < 0.05$);与糖尿病模型组相比,决明子治疗组中的上述各指标均显著改善 ($P < 0.05$),肾脏病理学变化也明显减轻。结论: 决明子可显著减轻糖尿病大鼠肾脏纤维化程度,其机制可能与抑制肾脏组织中 $\text{TGF-}\beta_1$, CTGF和Smad3,并促进Smad6的表达有关。

中文关键词: [决明子](#) [糖尿病肾病](#) [转化生长因子](#) [结缔组织生长因子](#) [Smad](#)

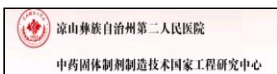
Inhibitory Effects of Cassia Seed on the Renal Fibrosis in Diabetic Rats

Abstract: Objective: To explore the anti-fibrosis effects of Cassia seed on the renal fibrosis in diabetic rats and its possible mechanisms. Method: Seventy rats were randomly divided into model group ($n=60$) and normal control group ($n=10$). Fasted for 12 h, the model group rats were left intraperitoneal injected $55 \text{ mg} \cdot \text{kg}^{-1}$ of streptozotocin to induce diabetes. Control rats were given equal volume of normal saline. The model-established rats were randomly divided into 5 groups: diabetic model group ($\text{NS}, 4 \text{ mL} \cdot \text{kg}^{-1}$), captopril group ($10 \text{ mg} \cdot \text{kg}^{-1}$), low, medium and high dose Cassia seed groups ($1, 5, 10 \text{ g} \cdot \text{kg}^{-1}$). After eight weeks of treatment, fasting blood glucose, serum creatine, 24 h urine protein (U Pro), clearance rate of creatine were detected. The morphology was observed, and the mRNA expression of transforming growth factor β_1 ($\text{TGF-}\beta_1$) and connective tissue growth factor (CTGF) were detected by RT-PCR. The protein expression of Smad3 and Smad6 were detected by western blot. Result: Compared with normal control group, fasting blood glucose, serum creatine, 24 h urine protein (U Pro) were significantly increased ($P < 0.05$), as well as the mRNA expression of $\text{TGF-}\beta_1$ and CTGF and the protein expression of Smad3 were significantly increased ($P < 0.05$), but clearance rate of creatine and the protein expression of Smad6 were significantly decreased ($P < 0.05$) in diabetic model group. Compared with diabetic model group, there were obvious improvements after the treatment of Cassia seed ($P < 0.05$), in addition, the renal pathological changes were also improved. Conclusion: Cassia seed has protective effect against the renal fibrosis induced by STZ in rats, the mechanisms may be related to its ability of down-regulating $\text{TGF-}\beta_1$, CTGF and smad3, and up-regulating smad6 in rats.

keywords: [cassia seed](#) [diabetic nephropathy](#) [TGF](#) [CTGF](#) [Smad](#)

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