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Attenuation of interstitial inflammation and fibrosis by SHEN-KANG injuection in tacrolimus induced kidney injury

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Objectives : Shen-Kang (SK), a traditional Chinese herbal medicine, has been used clinically in the treatment of renal diseases for decades. Recent studies have demonstrated that SK injection protects against renal injury induced by 5/6 nephrectomy. This study was carried out to validate the renoprotective effects of Shen-Kang (SK) injection on kidney injury induced by tacrolimus (TAC).

Methods : Rats were treated daily with TAC (1.5 mg/kg, subcutaneously) and the SK (450mg/kg/d, iv) for 4 weeks. The protective effects of SK on TAC-induced renal injury were evaluated with tubulointerstitial fibrosis, macrophage infiltration, expression of proinflammatory and profibrotic cytokines, apoptotic cell death (Bcl-2, Bax, and caspase-3), and markers of oxidative stress (8-hydroxy-2'-deoxyguanosine and MnSOD).

Results : Administration of SK injection decreased tubulointerstitial fibrosis and the number of macrophages, which increased significantly in TAC-treated rat kidneys. At the molecular level, SK treatment decreased proinflammatory mediators (osteopontin and toll-like receptor-2) and profibrotic cytokines (transforming growth factor-β1 and TGF-β-inducible gene-h3). Increased apoptotic cell death in TAC-treated rat kidneys was significantly decreased with SK co-treatment, and apoptosis-related genes were regulated in favor of cell survival (increased Bcl-2 and suppressed Bax and caspase-3). These changes were accompanied by decreased urinary 8-OHdG level and increased MnSOD expression.

Conclusions : SK injection has a renoprotective effect against chronic TAC-induced kidney injury.

Keywords : SHEN-kANG injection, TAC