

论著

## 番茄红素及维生素E和C合用对庆大霉素大鼠肾毒性预防作用的比较

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收稿日期 2008-2-26 修回日期 网络版发布日期 2008-11-28 接受日期 2008-7-9

**摘要** 目的 比较番茄红素及维生素(Vit) E和Vit C合用对庆大霉素大鼠肾毒性的预防作用。方法 雄性SD大鼠给予庆大霉素140 mg·kg<sup>-1</sup>(ip), 连续7 d。预防组同时予以番茄红素20 mg·kg<sup>-1</sup>(ig)或Vit E 50 mg·kg<sup>-1</sup>和Vit C 200 mg·kg<sup>-1</sup>(ig)。给药7 d后, 测定大鼠血清尿素氮(BUN)、血肌酐(SCr)和尿肌酐含量, 计算肌酐清除率(CCr); 测定尿N-乙酰-β-D-氨基葡萄糖苷酶(NAG)活性, 肾组织中超氧化物歧化酶(SOD)和过氧化氢酶(CAT)活性及丙二醛(MDA)含量; HE染色观察肾脏病理改变。结果 与正常对照组比较, 庆大霉素组大鼠血清BUN和SCr含量升高, CCr降低, 尿NAG活性升高, 肾组织MDA水平增加, SOD和CAT活性降低, 肾脏病理改变明显。给予番茄红素, 或Vit E和Vit C合用明显减轻上述改变, 番茄红素的作用较Vit E和Vit C合用更为明显。结论 番茄红素及Vit E和Vit C合用均可能通过抗氧化应激作用减轻庆大霉素大鼠肾毒性, 番茄红素的作用可能优于Vit E和Vit C合用。

**关键词** 庆大霉素 番茄红素 维生素E 维生素C 肾/毒性 超氧化物歧化酶 丙二醛

**分类号** R977.2, R595.3

## Effect comparison of lycopene and combination of vitamins E and C on gentamicin-induced nephrotoxicity in rats

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### Abstract

**AIM** To investigate the possible protective effects of lycopene and combination of vitamin (Vit) E and Vit C against gentamicin-induced nephrotoxicity in rats. **METHODS** Male SD rats were given gentamicin 140 mg·kg<sup>-1</sup> (ip), gentamicin+lycopene 20 mg·kg<sup>-1</sup> (ig) and gentamicin+Vit E 50 mg·kg<sup>-1</sup>+Vit C 200 mg·kg<sup>-1</sup> (ig), respectively, once daily for 7 d. Serum creatinine (Scr), blood urea nitrogen (BUN), creatinine clearance rate (CCr) and N-acetyl-beta-D-glucosamidase (NAG) in urine were assessed, as well as the malondialdehyde (MDA) level, superoxide dismutase (SOD) and catalase (CAT) activities in renal tissue were determined. The renal morphology changes were observed by hematoxylin-eosin staining. **RESULTS** Gentamicin induced a significant increment in Scr, BUN, NAG and MDA contents and severe morphology changes, decreased the renal SOD and CAT activities. Lycopene and combination of Vit E and Vit C significantly reversed the changes mentioned above. And lycopene was superior to combination of Vit E and Vit C. **CONCLUSION** Lycopene and combination of Vit E and Vit C provide marked protective effect against gentamicin-induced nephrotoxicity in rats, which may be related to their antagonistic effects on oxidative stress. Lycopene is more powerful than combination of Vit E and Vit C.

**Key words** gentamicin lycopene vitamin E vitamin C kidney/toxicity superoxide dismutase malondialdehyde

DOI: 10.3867/j.issn.1000-3002.2008.06.007

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