

论著

## 大黄提取物对成年大鼠睾丸的毒性作用

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**摘要** 目的 探讨长期应用大黄及其总蒽醌对雄性大鼠生殖功能的影响。方法 8周龄SD大鼠50只, 分别ig给予大黄水提取物(RWE)0.3, 0.6, 1.2 g·kg<sup>-1</sup>及大黄总蒽醌0.1 g·kg<sup>-1</sup>, 每天1次, 连续30 d。取睾丸、附睾称质量, 检测精子数量、活动率及畸变率。ELISA法检测血清中睾酮(T)、黄体生成素(LH)和卵泡刺激素(FSH); 免疫组化SP法检测睾丸Bcl-2, Bax蛋白的表达水平。结果 与正常对照组比较, RWE 0.3, 0.6和1.2 g·kg<sup>-1</sup>组大鼠精子数量和活动率均明显降低( $P<0.05$ ), 精子畸变率无统计学变化; 与正常对照组比较, RWE 0.6和1.2 g·kg<sup>-1</sup>以及大黄总蒽醌0.1 g·kg<sup>-1</sup>组血清中T由 $5.0\pm 0.7$ 降低到 $2.6\pm 0.4$ ,  $1.5\pm 0.5$ 和 $(1.2\pm 0.3)\mu\text{g}\cdot\text{L}^{-1}$  ( $P<0.05$ ), LH由 $4.3\pm 0.4$ 升高到 $6.9\pm 0.5$ ,  $10.1\pm 1.0$ 和 $(10.5\pm 0.8)\mu\text{mol}\cdot\text{min}^{-1}\cdot\text{L}^{-1}$ 及FSH由 $2.7\pm 0.5$ 升高到 $6.3\pm 1.2$ ,  $11.3\pm 0.8$ 和 $(12.0\pm 1.2)\mu\text{mol}\cdot\text{min}^{-1}\cdot\text{L}^{-1}$  ( $P<0.05$ ); 与正常对照组比较, RWE 0.6和1.2 g·kg<sup>-1</sup>以及大黄总蒽醌0.1 g·kg<sup>-1</sup>组睾丸生精上皮和睾丸间质细胞内Bax蛋白表达率由 $12\pm 3$ 升高到 $35\pm 4$ ,  $55\pm 6$ 和 $(57\pm 5)\%$  ( $P<0.01$ ), 而Bcl-2蛋白表达率由 $60\pm 4$ 降低到 $31\pm 4$ ,  $8\pm 4$ 和 $(8\pm 4)\%$  ( $P<0.05$ )。结论 长期应用大黄对成年大鼠睾丸功能有较强的毒性。

**关键词** [大黄属](#) [睾丸](#) [生殖](#)

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## Toxicity of *Rheum* extracts on testes of adult rats

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### Abstract

**OBJECTIVE** To investigate the effect of *Rheum* water extracts (RWE) and total anthraquinone(RTA) on the reproductive function of adult male rats. **METHODS** Fifty SD rats were ig given RWE 0.3, 0.6 and 1.2 g·kg<sup>-1</sup> and RTA 0.1 g·kg<sup>-1</sup>, once daily, for 30 d. Then, testes and epididymis were taken out, sperm count was detected, and the rate of sperm mobility and aberration was determined. The level of testosterone(T), luteinizing hormone (LH), and follicle-stimulating hormone (FSH) in serum and the expression of Bcl-2 and Bax in testes were measured by ELISA and immunohistochemistry S-P method, respectively. **RESULTS** Compared with normal control group, the sperm count, sperm mobility rate in RWE 0.3, 0.6, 1.2 g·kg<sup>-1</sup> and RTA 0.1 g·kg<sup>-1</sup> groups significantly decreased ( $P<0.05$ ) while the malformation rate showed no significant change. Compared with control group, T level in RWE 0.6 and 1.2 g·kg<sup>-1</sup> and RTA 0.1 g·kg<sup>-1</sup> groups significantly decreased from  $5.0\pm 0.7$  to  $2.6\pm 0.4$ ,  $1.5\pm 0.5$  and  $(1.2\pm 0.3)\mu\text{g}\cdot\text{L}^{-1}$ , respectively ( $P<0.05$ ) while LH significantly increased from  $4.3\pm 0.4$  to  $6.9\pm 0.5$ ,  $10.1\pm 1.0$  and  $(10.5\pm 0.8)\mu\text{mol}\cdot\text{min}^{-1}\cdot\text{L}^{-1}$ , respectively ( $P<0.05$ ), and FSH from  $2.7\pm 0.5$  to  $6.3\pm 1.2$ ,  $11.3\pm 0.8$  and  $(12.0\pm 1.2)\mu\text{mol}\cdot\text{min}^{-1}\cdot\text{L}^{-1}$ , respectively ( $P<0.05$ ). Compared with normal control group, the positive expression rate of Bax significantly increased from  $12\pm 3$  to  $35\pm 4$ ,  $55\pm 6$  and  $(57\pm 5)\%$  ( $P<0.01$ ), but the positive expression rate of Bcl-2 significantly decreased from  $60\pm 4$  to  $31\pm 4$ ,  $8\pm 4$  and  $(8\pm 4)\%$  ( $P<0.05$ ) in RWE 0.6 and 1.2 g·kg<sup>-1</sup> and RTA 0.1 g·kg<sup>-1</sup> groups. **CONCLUSION** *Rheum* has toxic action on reproduction function.

**Key words** [Rheum](#) [testes](#) [reproduction](#)

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