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论著

大鼠卡那霉素耳中毒后耳蜗TMPRSS3蛋白的表达

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摘要:

目的: 建立氨基甙类抗生素(aminoglycoside antibiotics,AmAn)致聋动物模型,观察内耳跨膜丝氨酸蛋白酶3(transmembrane protease, serine 3,TMPRSS3)的表达变化,探讨其在AmAn致聋中的作用机制。方法: 选取健康SD大鼠40只,随机分为4组:对照组、硫酸卡那霉素3日组、硫酸卡那霉素7日组、硫酸卡那霉素14日组(n=10)。建立AmAn致聋动物模型,以听觉脑干反应(ABR)阈值作为评价听功能指标,采用免疫组织化学、Western印迹分析AmAn致聋后耳蜗TMPRSS3蛋白表达的变化。结果: 成功建立了AmAn致聋动物模型,随着卡那霉素注射时间延长,大鼠ABR阈值逐渐升高,耳蜗TMPRSS3蛋白表达水平逐渐降低,与对照组比较,差异有统计学意义(P<0.01)。结论: 蛋白酶TMPRSS3对于正常听觉功能维护起重要作用,它参与了AmAn致聋过程,其表达水平下调可能是AmAn耳毒性发生机制中的一个重要环节。

关键词: 跨膜丝氨酸蛋白酶3 硫酸卡那霉素 耳蜗 耳毒性

Expression of TMPRSS3 in the rat cochlea following kanamycin ototoxicity

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Abstract:

Objective To establish the kanamycin-induced deafness model in SD rats, and to investigate the expression and significance of transmembrane protease, serine 3 (TMPRSS3) in the cochlea following kanamycin ototoxicity. Methods A total of 40 male SD rats were randomly divided into 4 groups. The experimental rats received intramuscular kanamycin sulfate for 3, 7, and 14 consecutive days, and the control group were treated with normal saline for 14 days. Auditory brainstem responses (ABR) were obtained before and after the kanamycin administration. The expression of TMPRSS3 in the cochlea was identified and detected by immunohistochemistry and Western blot. Results Kanamycin-induced deafness model in the SD rats was successfully established. ABR thresholds were increased and the expression of TMPRSS3 in the cochlea was reduced after the kanamycin injection (P<0.01). Conclusion TMPRSS3 may play an important role in normal cochlea function and involve in the process of aminoglycoside antibiotics induced deafness.

Keywords: transmembrane protease, serine 3 kanamycin cochlea ototoxicity

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