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论著

运用彗星试验检测醋酸铅对小鼠离体、在体生殖细胞的DNA损伤作用

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摘要 背景与目的： 探讨一定剂量的醋酸铅对离体、在体小鼠雄性生殖细胞的DNA损伤作用。 材料与方法： 以50、100、500、 1 000 μmol/L醋酸铅处理离体小鼠睾丸生殖细胞，阴性对照加PBS；用12.5、25、50 mg/kg浓度醋酸铅腹腔连续注射5 d，第6 d处死取小鼠睾丸生殖细胞，应用彗星试验检测醋酸铅对细胞DNA的损伤率和细胞DNA迁移距离的影响。 结果： 4种浓度醋酸铅均可致小鼠离体睾丸细胞DNA损伤，与阴性对照组比较差异有统计学意义(P<0.01)，且与剂量相关(分级计数： r=0.5114，尾距r=0.407)。3种浓度醋酸铅组可致小鼠体内睾丸细胞产生DNA损伤，与阴性对照组比较差异有统计学意义且呈剂量相关(分级计数： r=0.4801，尾距r=0.5314)。 结论： 醋酸铅可致小鼠睾丸生殖细胞的DNA损伤，对小鼠生殖细胞可能有遗传毒性。

关键词 彗星试验； 醋酸铅； DNA损伤； 睾丸

Study of DNA Damage of Lead Acetate on Germ Cells of Mice in Vivo and in Vitro

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Abstract BACKGROUND & AIM: To explore the DNA damaging effect of lead acetate on germ cell of mice in vivo and in vitro. MATERIAL AND METHODS: Mouse testicular germ cells were exposed to 50, 100, 500 and 1 000 μmol/L lead acetate in vitro, and then exposed to 12.5, 25, and 50 mg/kg of lead acetate for five days by intraperitoneal injection. Mouse testicular germ cells were collected on the 6th day. Comet assay was used to detect the effects of the damage and electrophoretic mobility distance of DNA. RESULTS: In vitro DNA lesion were detected in all 4 lead acetate treated groups(compared with negative control P<0.01), and was dose_related (visual scoring r=0.5114, P<0.01, tail moment r=0.407, P<0.01). In vivo DNA damage was detected in 3 lead acetate treated groups (compared with negative control P<0.01), and was also dose_related (visual scoring r=0.4848,P<0.01, tail moment r=0.5314, P<0.01).CONCLUSION: Lead acetate is genotoxic to mouse testicular germ cells, by inducing mouse testicular germ cell DNA damage.

Keywords comet assay lead acetate DNA damage testicular

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