

研究简报

稀土元素钬对蚕豆根尖细胞姊妹染色单体互换的影响

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摘要 背景与目的: 研究稀土元素钬对蚕豆根尖细胞姊妹染色单体互换的影响。材料与方法: 将蚕豆初生根浸入10—4 mol/L 5-BrdU溶液中, 23℃避光培养18 h, 然后把实验组蚕豆转移到硝酸钬溶液中, 23℃避光培养4 h, 对照组蚕豆转移到去离子水中23℃避光培养4 h。再把实验组、对照组蚕豆分别转移到10—4 mol/L 5-BrdU溶液中继续在23℃避光条件下培养17 h。切取根尖,在23℃避光条件下用0.05%秋水仙素处理3.5 h, 固定液固定3.5 h, 盐酸水解, Schiff试剂染色, 制片, 镜检, 统计SCE频率/细胞。结果: 各剂量组的硝酸钬溶液均能诱导蚕豆根尖细胞SCE频率显著上升, 并且细胞核异常现象明显。结论: 钬元素对蚕豆根尖具有一定的细胞毒性和遗传毒性。

关键词 [钬; 姊妹染色单体互换; 细胞毒性和遗传毒性](#)

Effect of Rare-Earth Element Holmium on the Sister Chromatid Exchange(SCE) of Root TIP Cells of Vicia Faba

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Abstract **BACKGROUND & ATM:**To evaluate the effect of rare-earth Holmium on the sister chromatid exchange(SCE) of root tip cells of Vicia faba. **MATERIAL AND METHODS:** The primary roots of Vicia faba were cultured for 18 hours in 10—4 mol/L 5-BrdU solution at 23℃ in the dark. In the disposal groups, roots were moved to nitrate of holmium solution and incubated for 4 hours at 23℃ in the dark; in the control group, roots were moved to distilled water and treated for 4 hours at 23℃ in the dark. The roots in the disposal groups and control group were transferred to 10—4 mol/L 5-BrdU solution respectively and cultured for 17 hours at 23℃ in the dark. The root tips of vicia faba were dissected and soaked in 0.05% colchicines solution for 3.5 hours in the same condition as above, and treated in fix solution for 3.5 hours, hydrolyzed in HCl solution, stained in Schiff agent. Finally, the slides were prepared and examined under microscope, the frequency of SCE were analyzed by t-test. **RESULTS:** The results showed that, in all of the disposal groups, Holmium element significantly increased the frequency of SCE compared with the control group. Furthermore, Holmium element also induced anomalous nuclei. **CONCLUSION:** It suggests that Holmium element may have certain cytotoxicity and genotoxicity to root—tip cells of vicia faba.

Keywords [holmium; sister chromatid exchange; cytotoxicity and genotoxicity](#)

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