

稀土元素钬对蚕豆的细胞毒性和遗传毒性研究

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摘要 运用氧化钬与稀硝酸反应制备结晶,以去离子水溶解并且稀释成梯度溶液,对蚕豆根尖染毒6 h,分别修复培养22h和24h,观察根尖变化,统计微核率、染色体畸变率及有丝分裂指数。结果表明,4mg/L(以氧化钬质量体积浓度计)以下剂量对根尖生长具有促进作用;随着浓度的递增,微核率、染色体畸变率逐步上升,有丝分裂指数逐步下降,表现出明显的剂量-效应关系,说明稀土元素钬具有一定的细胞毒性和遗传毒性。同时,不同修复组在微核率、染色体畸变率及有丝分裂指数上也存在一定差异,表现为微核率22h修复组低于24 h 修复组,而染色体畸变率和分裂指数均高于24h修复组。微核检测应在染色体畸变检测之后进行。

关键词 [稀土元素; 氧化钬; 微核; 染色体畸变分析; 有丝分裂指数](#)

分类号

Research on the Cytotoxic and Genotoxic Effects of Rare earth Element Holmium to *Vicia faba*

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Abstract

Crystal of nitrate, made by the reaction of holmium trioxide and nitric acid, was dissolved in distilled water, thus diluted into gradient solution. Soaked in the solution for 6 hours (6h), The root tips of *Vicia faba* were then recovered and cultivated for 22h and 24h, respectively. By observing the change of root tips and calculating the frequency of micronucleus (FMN), the frequency of chromosomal aberrations (CAF) and mitosis index (MI), we find that the dosage below 4mg/L (expressed by concentration of holmium trioxide) could accelerate the growth of root tips of *Vicia faba*. CAF and FMN increased while MI decreased with the rise of concentrations. From it a dosage-effect relationship is clearly seen. And it indicated that the rare earth element holmium has certain cytotoxic and genotoxic effects. Furthermore, the different recovery groups have different FMN, CAF and MI, and the difference lies in the fact that FMN of 22h recovery group was lower than that of 24h recovery group, while CAF and MI were higher than those of 24h recovery group. The results suggest that the statistics of FMN should be made after that of CAF.

Key words [rare earth element](#) [holmium trioxide](#) [micronucleus](#) [frequence of chromosomal aberrations](#) [mitosis index](#)

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