

研究论文

# 磷酸胺除草剂APM诱导洋葱根尖分生组织细胞异常有丝分裂和蛋白质组分变化

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**摘要** 研究了不同浓度APM(4~6  $\mu\text{mol/L}$ )和不同处理时间(4~6 h)对洋葱根尖细胞有丝分裂的影响.结果表明,当用5.6  $\mu\text{mol/L}$  APM处理洋葱分生组织16 h后,中期细胞有丝分裂指数(Met. I)从0.8(对照)分别提高至5.0、5.2.结果也同时表明,当APM浓度超过4  $\mu\text{mol/L}$ 时,严重影响细胞有丝分裂.在根尖细胞中,多极分裂细胞(尤其是3~4级),中期染色体凝集和微核被检测到.用2D SDS-PAGE分析,5种分子量处于24~90 kD、pI在5.0~7.3的新的蛋白质被检测到,而分子量为24 kD、40 kD,pI为4.8、5.5的蛋白组分消失.从APM处理后蛋白质组分消失来分析,这些蛋白质变化可能与APM处理有关.

**关键词** [异常有丝分裂](#) [多级纺锤丝](#) [APM](#) [2D-PAGE](#) [洋葱](#)

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## Induction of Abnormal Mitosis and Changes in Protein Compositions after Treatment of Root Meristems with Phosphoric Amide Herbicide APM in *Allium*

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**Abstract** The effect of Amiprophose-methyl (APM) on mitotic cells of the root meristems of *Allium cepa* was studied at a range of concentrations (4-6  $\mu\text{mol/L}$ ), length of treatments (4-16 h). The results showed that the mitosis metaphase index (Met. I) could be obviously improved from 0.8 (in control) to 5.0 or 5.2 respectively when the root meristems were treated with APM at a range of concentrations 5-6  $\mu\text{mol/L}$  for 16 h. The result also indicated that APM treatment (more than 4  $\mu\text{mol/L}$ ) severely affected the cell division. The polypolar divided cells (especially 3-4 polar), metaphase chromosome condensed and micronuclei, were revealed in the cells of the root meristems. In 2D SDS-PAGE, 5 new protein spots with molecular weight of 24-90 kD, showing pI ranging from 5.0-7.3, were detected and 2 protein spots with molecular weight of 24 kD, 40 kD with pI of 4.8, 5.5 were lost in the root meristems treated with APM. Judging from the relationship between accumulation lost of these protein spots and treatment of APM, these proteins may be related to APM treatment.

**Key words** [Abnormal mitosis](#) [Multipolar spindle](#) [APM](#) [2D PAGE](#) [Allium cepa](#)

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