

技术及应用

# 唐菖蒲两变异株的同功酶及SDS-聚丙烯酰胺凝胶电泳的比较分析

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收稿日期 2006-10-27 修回日期 2006-12-20 网络版发布日期: 2007-5-31

**摘要** 为探讨电子束对唐菖蒲诱变的可行性及不同剂量电子束对其花性状的影响, 用不同剂量电子束辐照唐菖蒲“江山美人”球茎, 在40 Gy和160 Gy处理组分别得到了1株花色和花序变异株(M1'和M2')。对这两变异株和对照以及其相应辐照剂量(40 Gy和160 Gy)处理组进行了研究。M1代植株叶片的过氧化物酶、过氧化氢酶、淀粉酶和酯酶4种同功酶电泳结果表明, 40 Gy和160 Gy处理组的酶带与对照组的相同, 变异株与对照组相比, 酶带有所增减。基于同功酶谱带带型, 使用SPSS11.5进行了聚类分析并得到聚类树状图。图中显示, 供试材料被分成了3个组: 对照组(包括40 Gy和160 Gy处理组与对照), M1'组和M2'组。SDS-聚丙烯酰胺凝胶电泳(SDS-PAGE)分析表明, 蛋白表达明显被电子束辐照所抑制, 但在这两个变异株中观测到3条特异表达的蛋白条带, 分子量分别为96 kDa、115.4 kDa和137.2 kDa, 这些特异表达的蛋白可能与花色与花序的调控有关。由此表明, 电子束辐照诱导花色与花形突变体是1种有效的途径。

**关键词** [电子束](#); [唐菖蒲](#); [同功酶](#); [SDS-PAGE电泳](#); [蛋白亚基](#)

分类号 [S603.6](#) [Q319](#)

## Study on Isoenzymes and SDS PAGE of the Electron Beam Induced Mutant of Gladiolus "Beauty Queen"

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**Abstract** In order to test the feasibility of electron beam induced mutation on Gladiolus and the effects of various doses of electron beam on flower traits, the corms of gladiolus "Beauty Queen" were irradiated by electron beam with different doses. Flower-colour and inflorescence mutants (M1'and M2') were obtained, respectively at the doses of 40 Gy and 160 Gy. The two mutants and the parent (CK) and those irradiated with same doses (40 Gy and 160 Gy) were studied. The isozymes of POD, CAT, AMY and EST were tested, it shows that isozymes patterns of gladiolus irradiated at the doses of 40 Gy and 160 Gy a similar to CK, but the mutants' bands were added or absent compared to CK. Based on band types of isozymes, the cluster analysis was carried out and dendrogram generated using SPSS software version 11.5, it indicates that they may be divided into three groups: CK group (CK, gladiolus irradiated at the doses of 40 Gy and 160 Gy), M1'group and M2'group. The bands of protein subunit were analyzed by SDS PAGE, it shows protein expression is obviously inhibited by electron beam irradiation. But three different protein bands were found in the two mutants, and their molecular weights were 96 kDa, 115.4 kDa, 137.2 kDa, respectively. These special proteins may have relation with regulation and control flower-color and inflorescence. The results indicate that electron beam irradiation is an effective way for inducing flower-color and flower-shape mutants.

**Key words** [electron beam](#) [gladiolus](#) [isozymes](#) [SDS-PAGE](#) [electrophoresis](#) [protein subunit](#)

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