

研究报告

紫外辐射诱导桃蚜DNA变异

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摘要 利用微卫星标记技术分析不同剂量紫外线诱导下桃蚜(*Myzus persicae*)的DNA变异与分子多态性. 根据3种引物的扩增图谱测出反映遗传变异程度的参数——多态位点率和基因多样性, 并进行了方差分析和聚类分析. 结果表明, 不同紫外线照射时间(2、4和6 h)和照射强度(15、30和45 W)处理后, F₁代桃蚜产生可遗传的变异. 致使F₂代的DNA发生变异, 且变异大小是由辐射时间和强度共同决定的. F₂代对照与2、4和6 h的处理平均多态位点率之间差异显著. 对于平均基因多样性, 除2 h处理外其余处理均与对照差异显著, 且2 h处理低于对照; 根据遗传距离将桃蚜分为对照、2 h(15和30 W)和其余处理3大类群, 此聚类分析与前述方差结果一致.

关键词 [紫外辐射](#) [遗传距离](#) [桃蚜](#) [变异](#) [DNA多态性](#)

分类号

UV-induced DNA mutation of peach aphid

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Abstract

By using PCR technique and microsatellite marks, this paper studied the DNA polymorphism of peach aphid (*Myzus persicae*) under UV-radiation. The fragments of three primers were amplified, and the gene diversity and the rate of loci polymorphisms of their genomic DNA, which could reflect the damage degree of DNA after UV-radiation, were measured. The results revealed that after treated with different radiation intensity (15, 30, 45 W) and duration (2, 4, 6 h), the UV-induced DNA mutations were genetic and could be delivered to F₂ generation.

The mutations depended on the interaction of radiation intensity and duration. Variance analysis on the gene diversity and the rate of loci polymorphisms showed that there existed a significant difference between UV-treated and control groups, except the rate of loci polymorphisms under 2 h radiation. The average value of the control was higher than that of 2 h radiation treatment. According to the cluster analysis of the genetic distance, the aphids were divided into three groups, *i.e.*, control group, 2 h (15, 30 W) treatment group, and the other, which was consistent with the result of variance analysis.

Key words [UV-radiation](#) [Genetic distance](#) [Myzus persicae](#) [Mutation](#) [DNA polymorphism](#)

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