

# 马拉硫磷对中华稻蝗种群遗传结构的作用 Impacts of Malathion on Population Genetic Structure of *Oxya chinensis*

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## 摘要

将中华稻蝗(*Oxya chinensis*)注射1.5g/L的马拉硫磷, 24h后死亡率为56%。用等位酶电泳确定死亡与存活个体在多态性基因座Pgm和Me上的基因型, 并比较各基因型的死亡率差异。结果表明: 在Pgm基因座上, 马拉硫磷对具有不同基因型的中华稻蝗个体存在选择性致死作用, 但是在Me基因座上未观察到类似选择性致死作用。在基因座Pgm上, Pgm-ab 基因型个体死亡率最高(80%), Pgm-bb和Pgm-bc基因型个体死亡率最低(49%), 低于平均死亡率。卡方检验表明, 基因型Pgm-bb和Pgm-cc的死亡率之间存在显著差异。在存活个体中, 等位基因Pgm-b的频率显著增加。基于Roger's遗传距离的聚类分析表明, 马拉硫磷的急性致死作用会导致中华稻蝗种群遗传组成的变化。马拉硫磷是蝗虫防治中常用的杀虫剂, 研究显示, 不同基因型在死亡率上的差异也可能存在于田间。

Abstract: Allozyme electrophoresis was employed to compare the difference in mortality among the genotypes at two polymorphic loci of Pgm and Me of grasshopper *Oxya chinensis* individuals acutely exposed to 1.5g/L malathion which resulted in 56% mortality in 24 hours. The selective lethal effects were observed among the genotypes at Pgm locus but not at Me locus. It is noted that the genotype Pgm-ab experienced the highest mortality (80%), whereas Pgm-bb and Pgm-bc were 49%, lower than the

average. The  $\chi^2$  tests showed significant difference in mortality between Pgm-bb and Pgm-cc. After exposure the allele frequency of Pgm-b showed a notable increase among surviving individuals. The cluster analysis based on Roger's genetic distance indicated that the acute exposure to malathion can cause differentiation in genetic composition at population level in *Oxya chinensis*. Because malathion is commonly used as the insecticide for grasshopper control, the data obtained in this study suggest that the similar genotype-mortality effects may occur in crop fields.

关键词 [马拉硫磷](#) [中华稻蝗](#) [种群遗传结构](#) [死亡率差异](#) [等位酶](#) Key words [malathion](#) [Oxya chinensis](#) [population genetic structure](#) [mortality difference](#) [allozyme](#)

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## Abstract

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