Isolation of Entomopathogenic Fungi from Mosquito Larvae and Evaluation of Potential for Mosquito Control

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There are growing concerns about the health and environmental effects of chemical pesticides used to control mosquito populations and the increasing resistance of mosquitoes to pesticides. Entomopathogenic fungi (fungi that infect and kill insects) are being investigated as a biological alternative to chemical pesticides. The purpose of this study was to isolate entomopathogenic fungi from stagnant water sources and assess their effectiveness as a mosquito larvicide. Culex quinquefasciatus mosquito larvae were placed in tubes containing collected water samples. When larvae died they were placed on water agar. Fungi that emerged from the larvae were replated on potato dextrose agar. One fungal isolate produced sufficient spore counts for subsequent larval testing and was identified through DNA analysis as Trichoderma harzianum. Mosquito larvae were exposed to three concentrations of T. harzianum spore suspension (2.18E7 spores/ml, 4.36E7 spores/ml, and 6.54E7 spores/ml) and a control (0 spores/ml). Live and dead mosquito larvae were counted each day. This test was repeated three times with mosquito larvae at three different developmental stages. T. harzianum spore suspension increased the mortality of all larval instars. In an effort to further investigate the fungal product(s) responsible for larval mortality, the spore suspension was centrifuged and spore-free supernatant was separated from fungal spores. In subsequent toxicity testing, the T. harzianum spore-free supernatant significantly increased larval mortality in comparison with the washed spores and the control. Further investigation is necessary to identify toxic components in the spore-free supernatant.

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