

INTERACTIONS BETWEEN ENTOMOPATHOGENIC FUNGI
(DEUTEROMYCOTINA: HYPHOMYCETES) AND THE BIOLOGY OF
GERMAN COCKROACHES (*BLATTELLA GERMANICA* (L.))
(DICTYOPTERA: BLATTELLIDAE)

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German cockroaches occur in habitats that are generally warm and moist, and such abiotic conditions are also favorable for infection with entomopathogenic fungi. There is an increasing interest for the use of entomopathogens, particularly entomopathogenic fungi, for suppression of insect pests. We have previously found field-collected German cockroaches to be infected with pathogenic fungi, bacteria and nematodes. Screening of a range of entomopathogenic fungi showed that nymphs of German cockroaches were susceptible to all fungal isolates (representing six species of entomopathogenic hyphomycetes) when subjected to high doses of dry conidia.

In this study gravid females carrying fully developed oothecae were treated with dry conidia of four fungal species. They were similarly very susceptible to infection and by day 21 post-exposure the mortality was 100%. During the experiment very few had dropped their oothecae and no offspring emerged from these oothecae, in contrast to those of the control (mean no. nymphs per female: 35.8). In the few cases where nymphs were produced, all newly hatched nymphs were subsequently infected by the conidia produced from the infected females. Fully developed oothecae were not colonised by any of the fungi.

Ecdysis potentially may influence the susceptibility of cockroach nymphs to a pathogen invading through the cuticle as do fungi. When late-instar nymphs were immersed in spore suspensions of *Metarhizium anisopliae* and incubated separately for 21 days, we found no differences in the mortalities reached by the groups that molted and those which did not molt. The mortality was dose-dependent with a LC_{50} of 1.8×10^7 conidia per ml.