Insecticidal Activity of *Cyperus rotundus* Seed-Derived Materials against *Blattella germanica* (Orthoptera: Blattellidae)

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The insecticidal activity of materials derived from the seeds of *Cyperus rotundus* against adult males and females of *Blattella germanica* was examined using direct contact and fumigation bioassays and compared with those of deltamethrin and dichlorvos, two commonly used insecticides. The biologically active constituent of *C. rotundus* seed was characterized as the menthane monoterpenoid *p*-cymene by spectroscopic analysis. In a filter paper contact bioassay, *p*-cymene was less effective than delatamethrin and dichlorvos. In structure-activity relationship, *p*-cymene was more toxic than either *m*-cymene or *o*-cymene. In fumigation tests with female *B. germanica*, *m*-, *o*-, and *p*-cymene were more effective in closed cups than in open ones, indicating that the effect of these monoterpenoids was largely due to action in the vapor phase. Dichlorvos exhibited fumigant toxicity, whereas no fumigant activity were observed with deltamethrin. *Cyperus* seed-derived materials, particularly *p*-cymene, merit further study as potential insecticides or lead compounds for the control of *B. germanica*.