

Fumigant activity of (E)-anethole identified in *Illicium verum* fruit against *Blattella germanica*.

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The insecticidal activities of materials derived from the fruit of star anise, *Illicium verum*, against adults of *Blattella germanica* were examined by direct contact application and fumigation methods, and compared with those of DDVP, deltamethrin and hydramethylnon. The biologically active constituent of the *Illicium* fruit was characterized as the phenylpropene, (E)-anethole, by spectroscopic analysis. In a filter paper diffusion test with females, (E)-anethole caused 80.3% mortality at 0.159 mg cm⁻² at 1 and 3 days after treatment (DAT), whereas 16.7% mortality at 3 DAT was achieved at 0.079 mg cm⁻². DDVP and deltamethrin gave > 90% mortality at 0.019 mg cm⁻² at 1 DAT. At 0.009 mg cm⁻², DDVP and deltamethrin showed 73.3 and 60% mortality at 1 DAT, respectively, but 93.3 and 76.7% mortality at 3 DAT. Hydramethylnon exhibited 0 and 93.3% mortality at 0.159 mg cm⁻² at 1 and 3 DAT, respectively, whereas 6.7% mortality at 3 DAT was observed at 0.079 mg cm⁻². In a fumigation test with females, (E)-anethole was much more effective in closed cups than in open ones, indicating that the insecticidal activity of the compound was largely attributable to fumigant action. (E)-Anethole and DDVP caused 100% mortality at 0.398 and 0.051 mg cm⁻² 4 and 1 h after treatment, respectively. (E)-Anethole showed 46.7% mortality at 0.199 mg cm⁻² at 3 DAT, whereas deltamethrin and hydramethylnon at 0.796 mg cm⁻² was ineffective for 3-day period. As naturally occurring insect-control agents, the *I verum* fruit-derived materials described could be useful for managing populations of *B germanica*.