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Lethal dose and horizontal transfer of bistrifluron, a benzoylphenylurea, in workers of the Formosan subterranean termite (Isoptera: Rhinotermitidae)

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Abstract:

The lethal dose and horizontal transmission of bistrifluron were examined in workers of the Formosan subterranean termite *Coptotermes formosanus* Shiraki (Isoptera: Rhinotermitidae) in laboratory no-choice feeding tests. The concentration of bistrifluron in baits was 5,000 ppm (wt/wt) in a series of tests. When termites were exposed to bistrifluron bait for 1 week, toxicity appeared slowly with an LT_{50} (50% lethal time) of 6.2 weeks. Much faster efficacy was observed after 2-week exposure. The amount of bistrifluron recovered from moribund termites indicated that approximately 400 ng/termite or more bistrifluron should accumulate in a single worker for insecticidal efficacy. The bistrifluron amount analyzed from various body parts of the termite body was not significantly different between immediately after 1-week exposure to bistrifluron bait and after the subsequent 2-week exposure to untreated bait. The rate of bistrifluron transferred from 20 donors to 20 recipients in 1 week was 6% of the amount of bistrifluron taken by the donors during the 1-week exposure to bistrifluron bait, and much smaller amounts of bistrifluron were transferred from donors to recipients for the subsequent 2 weeks. The bistrifluron that was originally ingested by *C. formosanus* workers appeared to partly remain in the termite body.

Keywords:

bistrifluron, termite control, bait toxicant, analysis, *Coptotermes formosanus*

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