SECONDARY TRANSMISSION OF TOXICANT IN *BLATTELLA GERMANICA* (L.) COCKROACHES (DICTYOPTERA: BLATTELLIDAE)

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Control of cockroach populations in urban environments is now very often performed with insecticides presented in food bait formulations. To be efficient, food baits must attract pests so that contact is made with the active substance and/or that it is ingested. Food baits may be less efficient for cockroaches as the feeding rhythms of these long living insects with overlapping generations, varies with developmental and reproductive cycles. Cockroaches need to eat at least once during each larval instar and females require plenty of food for oogenesis. However, there are three days (day before, during and after a molt) when larval activity is very low or nil and ootheca bearing females do not eat. An approach to palliate these behavioral traits is to employ foraging individuals to deliver insecticide to non-foraging members of a population.

The aim of this study was to test possibilities of secondary transmission of Goliath in German cockroaches in laboratory experiments. Fipronil, a phenylpyrazole insecticide, is a neurotoxic. It is reported to be a highly efficient insecticide, utilizing a low-dose technology. The possibility that cockroaches that have access to Goliath® (0.05% fipronil; Rhône-Poulenc Rhodic, Lyon, France) contaminate other individuals in their aggregate was hypothesized. Animals that have ingested Goliath may have traces of fipronil on their bodies, and thus transport it and disperse it in their environment.

The active substance can act through two different physiological mechanisms: ingestion or cuticular absorption (the molecule penetrates directly into the haemolymph through the cuticule). We hypothesized that there were four ways the active ingredient could be dispersed and cause secondary transmission. Dispersion could occur through: (1) traces of bait deposited in the environment by animals that have ingested it; (2) interactions with contaminated animals (bite, contact, grooming); (3) faeces of animals that have ingested bait or (4) animals that have died after eating bait. Whatever the way the active ingredient was dispersed, cuticular absorption and/or ingestion can be involved.

The experiments presented here did not aim at separating these two physiological mechanisms, they aimed at determining the impact of each dispersion ways (social interactions, necrophagy, coprophagy or traces of bait deposited in the environment) on secondary kill.

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Wm H. Robinson, F. Rettich and G.W. Rambo (editors). 1999.