

**Speaker:**

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Date: Monday, Jan. 03, 2022**Time:** 4:00 pm - 4:50 pm**Zoom:** 948 0131 1028**Passcode:** 347039**Title:**

“Sodium selenate, a potential inorganic bait toxicant against the German cockroach, *Blattella germanica* (Blattodea: Ectobiidae)”

Abstract:

Pest Control Technology magazine reported that cockroach control (23%) was the most important service revenue generator for the US pest management industry after pest ant control (24%) in 2019. Among the four major cockroach species managed by pest management professionals, German cockroach control accounted for 77% of the cockroach control businesses. The German cockroach, *Blattella germanica* (L.), is a cosmopolitan indoor public health pest. There are two significant health risks associated with a German cockroach infestation: transmission of pathogenic microbes (also as vectors of antibiotic resistance genes) and producers of metabolites that could trigger allergies and asthma. Control of German cockroaches relies heavily on insecticide use, leading to the development of insecticide resistance. There is a serious need for a practical German cockroach control approach to managing insecticide-resistant populations while minimizing the risk associated with a neurotoxic insecticide treatment. Selenium is a trace element that is found across different ecosystems. It is essential for growth at a narrow range, but beyond that range, Se becomes toxic. Earlier studies on several insect species have found that selenium compounds exhibit insecticidal effects. It can repel, disrupt development, and kill insect pests. This study evaluated various organic and inorganic compounds as bait toxicants against *B. germanica*. After the screening process, sodium selenate was chosen as a suitable candidate for further evaluation. In non-choice bioassays, adult males were provided with sodium selenate in a 3% sucrose solution. Mortality was assessed at selected time intervals until complete mortality was achieved. The UCR laboratory susceptible strain fed with a 1% (w/v) sodium selenate had an LT50 of 9.9 hours and reached 100% mortality at 72 hours post-treatment. Three multiple-resistant field strains (RG386, WM, and Ryan) fed with the same concentration registered an LT50 of 12.2 hours, 19.9 hours, and 41.8 hours, respectively. Adult males orally fed with 1 μ l of sodium selenate solution revealed an LD50 of 8.3 μ g/insect at 4 days post-treatment. This study demonstrates that sodium selenate is a potential inorganic bait toxicant against German cockroaches.