

## ABSTRACT

Crickets are major pests of horticultural crops, prompting the development of natural biopesticides as safer alternatives to synthetic chemicals. Shallot (*A. cepa* L.) peel and soursop (*A. muricata* L.) leaves contain bioactive compounds, including flavonoids, saponins, alkaloids, and squamocin, with proven insecticidal activity. This study evaluated the effects of shallot peel extract, soursop leaf extract, and their combinations on physiological and histological indicators in crickets, including feed consumption, oxygen consumption, respiration rate, midgut histology, and mortality. A completely randomized design with 11 treatments and three replications was employed: control (P0), 1% synthetic pesticide (P1), shallot peel extract at 25%, 50%, and 75% (P2–P4), soursop leaf extract at 25%, 50%, and 75% (P5–P7), and extract combinations at ratios of 25:75%, 50:50%, and 75:25% (P8–P10). Treatments were applied to crickets, and midgut tissues were analyzed microscopically. Data were statistically evaluated using the Shapiro–Wilk test, Levene’s test, ANOVA, Duncan’s multiple range test, linear regression, and Pearson correlation. Results indicated that both single and combined extracts significantly reduced physiological activity and caused midgut lumen dilation. Higher doses correlated strongly with decreased physiological function and increased tissue damage, including epithelial disorganization, villi loss, and muscle layer thinning. Based on the results, it can be concluded that treatment with extract-based biopesticides was highly effective in reducing physiological activity, inducing histological damage, and causing mortality in crickets. The combination of shallot peel extract and soursop leaf extract at a ratio of 25:75% represented the most effective formulation. This combination significantly suppressed physiological activity, damaged the histological structure of the midgut, and ultimately resulted in cricket mortality.

Kata kunci : *cricket, biopesticide, squamocin, acetogenin*