

ABSTRAC

Rice is the primary staple food for the Indonesian population, making post-harvest storage a crucial stage. One of the common challenges during rice storage in warehouses is pest infestation by *Sitophilus oryzae*, *Tribolium castaneum*, and *Oryzaephilus surinamensis*, which can damage and reduce the quality of rice. Lime peel has potential as a botanical insecticide due to its active compounds such as flavonoids, essential oils, tannins, saponins, phenols, and alkaloids. This study was conducted experimentally in a laboratory using a Completely Randomized Design (CRD) with six concentrations of lime peel extract (0%, 0.5%, 1%, 2%, 4%, and 8%), each replicated three times, resulting in 18 experimental units. Data were analyzed using analysis of variance (ANOVA), followed by Duncan's Multiple Range Test (DMRT) at a 5% significance level. The results showed that repellent activity appeared one hour after application, with the 0.5% concentration already showing an effect on *S. oryzae* and *T. castaneum*, although not yet on *O. surinamensis*. At the highest concentration (8%), repellency increased to 35–39%. Mortality began to appear on the first day, peaking on day 7, with the highest mortality observed in *T. castaneum* (90%), followed by *S. oryzae* and *O. surinamensis* at 83.8%. The 8% concentration was the most effective, showing repellency and mortality rates exceeding 50%, indicating that lime peel extract holds significant potential as a botanical insecticide for natural pest control in storage environments.

Keywords: *Citrus aurantifolia*, *Oryzaephilus surinamensis*, Repellent activity, *Sitophilus oryzae*, Toxicity, *Tribolium castaneum*.