ABSTRACT

The rice weevil, *Sitophilus oryzae*, is a primary pest in cereals that attacks grains in storage while the red flour beetle, *Tribolium castaneum*, is a secondary pest in cereal commodities because it attacks commodities that have been damaged by primary pests. Environmentally friendly alternative control technology using essential oil of red betel leaf. The research aims to study the testing and effectiveness of betel leaf essential oil on repellent and toxicity of *Sitophilus oryzae* and *Tribolium castaneum* imago. The concentrations of red betel leaf essential oil tested were 0.25%, 0.5%, 1%, 2%, 4% (v/v) and control. The experiment was repeated three times. The method used was the residue method on filter paper for testing repellent and toxicity of betel leaf essential oil. The relationship between betel leaf essential oil concentration and the mortality of *Sitophilus oryzae* and *Tribolium castaneum* imago was determined by probit analysis. Repellent and imago mortality at concentrations of 0.25% - 4% reached >50%. The LC50 values of betel leaf essential oil against *Sitophilus oryzae* and *Tribolium castaneum* at 2-7 days after application ranged from 2.71% - 0.234% and 3.61% - 0.22%. These results indicate that betel leaf essential oil can be utilized to control *Sitophilus oryzae* and *Tribolium castaneum* imago in stored cereal products.

Key words: Botanical insecticide, Repellency, *Sitophilus oryzae*, Toxicity, *Tribolium castaneum*