

Nisakorn Sukhirun 2010: Effects of *Alpinia galanga* (Linn.) Sw. Rhizome Extract on Mortality and Detoxification Enzyme Activity of Oriental Fruit Fly (*Bactrocera dorsalis* (Hendel)). Master of Science (Zoology), Major Field: Zoology, Department of Zoology. Thesis Advisor: Ms. Vasakorn Bullungpoti, Ph.D. 87 pages.

The oriental fruit fly, *Bactrocera dorsalis* (Hendel) is one of most economically damaging pests, and generally is controlled by insecticides. This research was done to evaluate the effect of rhizomes of *Alpinia galanga* extract on the oriental fruit fly and detoxification enzyme activity. The rhizome of galanga was extracted by Soxhlet's apparatus using hexane, dichloromethane, ethylacetate and 95% ethanol as separate solvent system. Various concentrations of all crude extracts were tested with adult *B. dorsalis* using topical spray application. The results showed that the hexane extract displayed the highest efficacy against adult *Bactrocera dorsalis*. LC_{50} values at 24 hours were $4,866.06 \pm 184.52$, $24,156.66 \pm 880.33$, $14,778.32 \pm 641.27$ and $6,337.54 \pm 145.42$ ppm for hexane, dichloromethane, ethylacetate and 95% ethanol extract, respectively. The hexane crude extract was purified by quick column chromatography, column chromatography and preparative thin layer chromatography to give two active pure compounds. Structural elucidation of the isolated compounds on the basis of spectral analyses, including $^1\text{H-NMR}$ and $^{13}\text{C-NMR}$ showed 2 compounds as *E-p*-coumaryl alcohol ethyl ether and *E-p*-acetoxycinnamyl alcohol. The active ingredient compound, *E-p*-acetoxycinnamyl alcohol exhibited the highest efficacy as shown by its LC_{50} values at 24 hours as $3,654.52 \pm 168.11$ ppm. The *in vitro* detoxification enzyme activities of carboxylesterase and glutathione S-transferase from hexane extract treated adult *Bactrocera dorsalis* after treated with hexane extract for 24 hours exposure showed that carboxylesterase Activity was inhibited 1.14 fold activity showed no difference with control although it was at 95% significant.

Student's signature

Thesis Advisor's signature