

Tipanartt Antarasane 2007: Efficiency of Some Plant Extracts on Mortality, Levels of Esterase and Glutathione-S- transferase in the Oriental Fruit Fly (*Bactrocera dorsalis* Hendel).

Master of Science (Biology), Major Field: Biology, Department of Zoology. Thesis Advisor:

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This research was conducted to evaluate the efficiency of three plant extracts namely root of derris (*Derris elliptica* Benth.), seeds of sugar apple (*Annona squamosa* L.) and fruits of soap berry (*Sapindus rarak* DC.) against different fruit fly (*Bactrocera dorsalis* H.) instars, 2<sup>nd</sup> instar larvae and adults. The Soxhlet extraction using 95% ethanol as solvent was trialed. The completely randomized designs with 3 replicates were used for analysis procedures through out the experiment. The derris extract shows  $LC_{50}$  against the 2<sup>nd</sup> instar larvae at 24 and 48 hours ca. 0.48% and 0.45% w/v respectively while the adults revealed  $LC_{50}$  ca. 0.06% and 0.04 % w/v respectively. The sugar apple seeds extracts indicated  $LC_{50}$  at 24 and 48 hours ca. 3.09% and 2.92% w/v respectively. The adults showed  $LC_{50}$  at 24 and 48 house ca. 1.35 and 1.19% w/v respectively against sugar apple seeds. Finally, the soap berry fruits extracts showed  $LC_{50}$  at 24 and 48 hours against the larvae ca. 19.88% and 18.32% w/v respectively. Still the adults indicated of 4.02 and 3.73 % w/v respectively. The detoxification enzymes namely, esterase and glutathione-S-transferases showed different levels in response to each extracts. The drris extracts at 1% w/v and the soap berry at 30% w/v induced ca. 5 fold and 4 fold of esterase activity in the 2<sup>nd</sup> instar larvae, respectively but the glutathione-S-transferase no significant different. The sugar apple seeds extracts at 5 %w/v revealed ca. 1.6 fold reduced exsterase activity. While glutathione-S-transferases activity was elevated ca. 18 fold. In addition, the adults showed reduced esterases ca. 1.5 fold against 0.1% w/v derris extracts, and 5% w/v sugar apple seeds extracts but the glutathione-S-transferases was induced by 2 fold. Finally, the soap berry fruits extract at 7% w/v induced esterase and glutathione-S-transferase by 1.8 fold and 4 fold respectively

The non-target organisms, stingless bee (*Trigona apicalis* S.) and sward tails fish (*Xiphophorus helleri* H.) were trialed to indicate the safety application. In the bee, the derris, sugar apple seeds, and soap berry extracts showed  $LC_{50}$  at 24 hours ca.0.25, 1.24 and 7.06%w/v respectively, and at 48 hours ca. 0.22, 1.13 and 6.14%w/v respectively. While, the sward fish revealed  $LC_{50}$  at 24 hours ca. 0.02, 0.31 and 0.03 %w/v respectively, but at 48 hours ca. 0.01, 0.26 and 0.02 %w/v respectively.

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Student's signature

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