Isara Srisaard 2007: Effects of Some Plant Extracts on Toxicity and Activities of Esterase and Glutathione-S-transferase in the Green Leafhopper (*Nephotettix virescens* (Distant)). Master of Science (Biology), Major Field: Biology, Department of Zoology. Thesis Advisor: Associate Professor Suraphon Visetson, Ph.D. 80 pages.

The Green Leafhopper, *Nephotettix virescens* (Distant), is one of the major insect pests of rice (*Oryza sativa* L.) in Asia. It is a vector of viruses such as tungro, yellow dwarf, yellow-orange leaf, transitory yellowing and dwarf viruses. It also causes indirect damage to the crop because of the virus diseases that it transmits. This research was done to evaluate the effects in terms of detoxification mechanisms of some plant extracts against the Green Leafhopper. All extracts were done by Soxhlet's Extraction method using 95% ethanol as the solvent. Various concentrations of these extracts were trialed on adult Green Leafhoppers by a topical sprayer method using a completely randomized experimental design with 3 replicates to obtain their LC50 values. Mangosteen Pericarp (*Garcina mangostana* L.) extracts showed LC50 values of 8.86%w/v (Y =-11.62 + 6.95 X, r^2 = 0.95) and 5.27%w/v (Y =15.55 + 6.52 X, r^2 = 0.99) at 24 hours and 48 hours, respectively. Yam Bean Seed (*Pachyrrhizus erosus* L.) extracts showed LC50 values *ca.* 0.62%w/v (Y =19.42 + 49.13 X, r^2 = 0.98) and 0.30%w/v (Y= 37.34 + 42.13 X, r^2 = 0.95) at 24 and 48 hours, respectively. Moreover, Sugar Apple Seed (*Annona squamosa* Linneaus) extracts exhibited 0.26%w/v (Y = 42.09 + 30.44 X, r^2 = 0.98) and 0.05%w/v (Y = 48.44 + 31.57 X, r^2 = 0.98) LC50 values at 24 and 48 hours after exposure, respectively. Furthermore, the toxicity to Guppies (*Poecilia reticulata*) were determined at 24 hours after exposure. LC50 values were 3.27, 0.11 and 0.16%w/v for Mangosteen Pericarp Extracts, Yam Bean Seed extracts and Sugar Apple Seed extracts, respectively (r^2 =0.99 for all 3 extracts). *In vitro* studies of activities of the detoxification enzymes esterase and Glutathione-S-transferase (GST) in surviving Green Leafhoppers after 24 hours exposure were analyzed. Only Mangosteen Pericarp extracts was characterized as an inhibitor of esterase (*ca.* 0.5 fold inhibition). For GST, enzyme activity increased with increasing concentration for every extracts (ca. 1.25 fold induction).

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