

Nissana Phattharaphan 2011: Extraction of Bioactive Compounds from Non-Tai-Yak (*Stemona* sp.) for Diamondback Moth (*Plutella xylostella* L.) Control. Master of Science (Environmental Technology and Management), Major Field: Environmental Technology and Management, Department of Environmental Science. Thesis Advisor: Associate Professor Bongotrat Pitayont, Ph.D. 110 pages.

The injudicious use of synthetic pesticides has raised environmental and health concerns. Consequently, utilization of biopesticides as alternative bio-agents in crop production system has been increasingly adopted due to their ecofriendly nature. Non-Tai-Yak (*stemona* spp.) have been used for insect pest control agents as alternative pesticides. The objective of this research is therefore to assess the effectiveness of the stemona root extracts on reducing the major cabbage insect pest, the diamondback moth (*Plutella xylostella*). Non-Tai-Yak was collected from Phitsanulok province. The roots were cleaned, ground and sequentially extracted with hexane, dichloromethane and methanol. Bioassays of the crude extracts at different concentrations against 3<sup>rd</sup> instar *P. xylostella* larvae were investigated by leaf dipping method and mortality was assessed after 24 hrs. The highest insecticidal activity was observed from dichloromethane crude extract with the LC<sub>50</sub> of 5,927.34 ppm. Hexane and methanol crude extracts were 11,476.26 ppm and 7,053.67 ppm, respectively. Further isolation and purification of the crude dichloromethane extract by column and thin-layer chromatography yielded two purified compound (F4.5.3 and F4.5.4) showing the most effective to *P. xylostella* with  $77.78 \pm 0.6$  and  $57.78 \pm 1.2$  percentage mortality, respectively at concentration 1.5% (w/v) after 24 hrs. The molecular structure of the two active compounds were identified by spectroscopic techniques, including NMR, LC-MS and FT-IR to be didehydrostemofoline.

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Thesis Advisor's signature