

Suwimon Wongphalung 2009: Efficacy of Crude Extracts from Seed Kernel and Seed Cake of Physic Nut (*Jatropha curcas* L.) against Cotton Bollworm, *Helicoverpa armigera* (Hübner) (Lepidoptera: Noctuidae) and Pea Aphid, *Aphis craccivora* Koch (Homoptera: Aphididae). Master of Science (Entomology), Major Field: Entomology, Department of Entomology. Thesis Advisor: Associate Professor Wiboon Chongrattanamateekul, Ph.D. 139 pages.

With the widespread growing of physic nut (*Jatropha curcas* L.) for biodiesel production during energy crisis, the research reported here was; therefore, aimed to study the utilization of physic nut for other purposes as well as to create value added to this crop. Crude extractions from seed kernel and seed cake of physic nut were performed by using soxhlet apparatus and soaking extraction using magnetic stirrer. Petroleum ether and ethanol were used as solvents. The 8 crude extracts were obtained in form of oils with quantitative differences. Efficacy tests against cotton bollworm and pea aphid were conducted using leaf-dipping method.

Efficacy tests against second instar cotton bollworm, *Helicoverpa armigera* (Hübner), were assessed under laboratory conditions. The results showed that the crude extracts at 10% (w/v) concentration caused moderate mortality of 14-58% to bollworm at 72 hrs after treatment. However, all crude extracts exhibited high antifeedant activity. At 5% (w/v) concentration, the antifeedant (AFI) values were between 77.77-95.57%. Moreover, feeding second instar larvae for 48 hrs with cotton leaves dipped in crude extracts and subsequently transferred to normal diet also resulted in lowered fecundity and fertility of the emerging moths.

Efficacy tests against 4 days old pea aphid, *Aphis craccivora* Koch, were also assessed under laboratory conditions. The results showed that the crude extracts caused high mortality. Six out of 8 crude extracts at 0.5% (w/v) produced high mortality between 64-94% at 72 hrs after treatment, with the LC₅₀ values ranged between 0.003-0.37%.

Crude extract from seed cake of physic nut by soaking in ethanol for 3 days, was assessed against the cotton bollworm in a net-house. The results showed that the crude extract at 1% (w/v) concentration exhibited both repellency to the oviposition and the ovicidal activities to cotton bollworm.

From this study, it was found that crude extracts from physic nut was effective against cotton bollworm and pea aphid and should be further studied to determine the appropriate dosage for field use.

Student's signature

Thesis Advisor's signature