Ittipon Bannakan 2007: Effects of α-Amylase Inhibitor on The Development of *Callosobruchus maculatus* (F.) (Coleoptera: Bruchidae). Master of Science (Agriculture), Major Field: Entomology, Department of Entomology.
Thesis Advisor: Associate Professor Praparat Hormchan, Ph.D. 63 pages.

Effects of protein and non-protein α-amylase inhibitor crude extracts of the control varieties KPS1 and CN36 and mutant lines M5-16 and M5-29 seeds were evaluated on the number of eggs laid and development of the larval, pupal and adult stages of *Callosobruchus maculatus.* KPS1 seeds were used as the medium soaked with different concentrations of both extracts of all mungbean varieties/lines and distilled water (the control). Each, with three replicates, was fed to one pair of *C. maculatus* and percent mortality of each stage was recorded.

Of all different protein α-amylase inhibitor extracts, at each protein concentration, no significant differences were found in the number of eggs laid and larval mortality percentage between the extract-treated seeds and distilled water treated seeds. Only seeds treated with 0.2% w/w protein extracts from CN36 and KPS1 seeds significantly differed in percent pupal mortality and percent adult mortality from those of the control, respectively. At 0.4, 0.6 and 1% w/w protein, each extract was significantly different from the control in adult mortality percentage. The result of each extract of various protein concentrations, except for KPS1 and M5-29 extracts at 0.4 and 0.6 and 1% w/w protein, respectively, did not show significantly different larval mortality percentages from that of the control. While there were no significant differences in pupal mortality percentage, those in adult mortality percentage of every extract at each concentration from that of the control were observed.

For the non-protein α-amylase inhibitor, the treated seeds with all variety/line seed extracts at every concentration, and each extract at each concentration were not significantly different from one another and from the control in larval and pupal mortality percentages whereas KPS1 and M5-16 extracts gave significant differences in percent adult mortality from the control at 0.2% w/w non protein. An effect of α-amylase inhibitor on α-amylase activity *in vitro* was also studied. One hundred percent inhibition of protein part to α-amylase activity of *C. maculatus* was found in all variety/line mungbean seeds while no more than 10 percent inhibition was shown in non-protein part. Similar study was as well conducted against α-amylase extracted from barley. The effects were less than those of α-amylase of the weevil.

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