Pornsarun Leagamnuy 2010: The Effect of Whole Bean Flour and Protein-Enriched Bean Flour as Deterrent and Protectant Against Penetration into Packaging by *Sitophilus zeamais* (Motschulsky) (Coleoptera: Curculionidae). Master of Science (Zoology), Major Field: Zoology, Department of Zoology. Thesis Advisor: Associate Professor Boongeua Vajarasathiara, Ph.D. 85 pages.

Sitophilus zeamais caused deterioration of whole stock of maize and cereals in storage. A laboratory experiment was conducted to investigate the deterrent effect of whole flour and protein flour of red kidney bean, mung bean and navy bean against *S. zeamais*. The deterrent effect of whole bean flour was detected at 48 and 72-hour. The average number of *S. zeamais* moving out of rice grains treated with whole flour of navy bean, after 48-hour, was significantly different among concentrations. Similar result was observed for all kind of beans after 72-hour. The deterrent effect of rice grains treated with 1, 10 and 20% whole flour of navy bean against *S. zeamais*, after 48 hours, was significantly higher than that of the untreated control. The deterrent effect of rice treated with 20% whole bean flour was significantly different among bean types. Polyethylene sheets coated with protein flour solution for all kind of beans cannot prevent insect penetration.

Inhibitory effect of crude bean protein on activity of *S. zeamais* α-amylase, *C. maculatus* α-amylase, human salivary α-amylase and barley malt α-amylase was tested. Inhibitory effect of three beans was more effective against *S. zeamais* α-amylase, *C. maculatus* α-amylase and barley malt α-amylase but less effective against human salivary α-amylase. α-Amylase inhibitors from all three beans were classified as αAI-2 type because they inhibited α-amylase of *S. zeamais*, *C. maculatus* and barley malt but not human salivary. α-Amylase inhibitors from three beans may play an important role as antifeedant against *S. zeamais*.

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