Narutai Wanchooplao 2010: The Utilization of Protein Hydrolysates from Eri Silkworm (*Philosamia ricini*) substitute of fish meal protein in Giant Freshwater Prawn (*Macrobrachium rosenbergii*) diet. Master of Science (Aquacuture), Major Field: Aquacuture, Department of Aquacuture. Thesis Advisor: Associate Professor Orapint Jintasataporn, Ph.D. 90 pages.

The investigation was conducted to determine the utilization of protein hydrolysate obtained from Eri silkworm (*Philosamia ricini*) pupae in giant freshwater prawn (*Macrobrachium rosenbergii*). The objective was to study the optimum level that fishmeal can be replaced with the hydrolysate and it effects on growth performance of prawn, blood protein, body protein, glycogen in hepatopencreas, total RNA per protein in hepatopencreas and amount of gut bacteria. The hydrolysate by digested Eri silkworm pupae with papaya papain enzyme (eri silkworm pupae : 10% acetic acid: papain enzyme = 3 :6.9:0.1) replaced the fishmeal from the diet of prawn at graded levels 0, 50 and 100%. The male giant freshwater prawn with initial weight of 19.5±1.43 grams were fed with three levels of hydrolysate (0, 50 and 100%), feed contained Eri silkworm pupae substituted for protein from fishmeal 50% and control of commercial diet. The result showed that the prepared hydrolysate was highest digestion 59.3% in the 6^{th} day. At the end of this experiment, 50% hydrolysate replacement monitored the highest growth performance when compared with commercial feed. Blood protein and glycogen in hepatopancreas were not significantly difference ($p>0.05$). There were 47.81±6.61 – 54.57±2.25 mg protein/dl and 0.51±0.06 – 0.57±0.01 mg glucose/g hepatopencreas, respectively. Body protein was significantly different ($p<0.05$) from commercial feed. The 50% replacement was 41.13±1.17%. On the other hand, the total RNA from 100% replacement showed the best result. The amount of RNA, protein and RNA per protein were 1.7793±4.8 $x10^{2}$ µg RNA /mg tissue , 0.0032±6.9 $x10^{5}$ mg Protein /mg tissue and 0.5403±1.7 $x10^{2}$, respectively and have no effect with amount of gut bacteria. The persent study indicated that 50% protein hydrolysate replacement could be suitable to use as protein source in diets.

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