Jittra Boonyoung 2011: Contamination and Transmission of Viruses in Pacific White Shrimp (*Litopenaeus vannamei*) Headless Shell-less Frozen Product. Master of Science (Fisheries Science), Major Field: Fisheries Science, Department of Fishery Biology. Thesis Advisor: Assistant Professor Niti Chuchird, Ph.D. 69 pages.

Series of studies were carried out to determine the transmission of five major viruses including ; Taura syndrome virus(TSV), white spot syndrome virus(WSSV), yellow head virus(YHV), infectious hypodermal and hematopoietic necrosis virus(IHHNV) and *Macrobrachium rosenbergii* nodavirus(MrNV) from headless and shell-less frozen shrimp product to normal shrimp in laboratory conditions. One hundred randomly sampled products were obtained from Thai Frozen Foods Association between June to October 2009 and tested for viral infection using nested polymerase chain reaction (nested PCR) for WSSV and IHHNV and reverse transcriptase polymerase chain reaction(RT-PCR) assays for TSV, YHV and *Mr*NV. Results showed that 9 samples gave TSV-positive followed by WSSV with 8 samples, IHHNV with 7 samples for YHV and *Mr*NV with 4 samples each. All positive samples were then fed to the viruses-free shrimp of 10-12 g. in aquaria. They were monitored for mortality and checked for viral infection by nested-PCR and RT-PCR assays. At the end of 14-day experiment, no mortality was found. In addition, nested-PCR and RT-PCR tests gave negative results for all of the experimental shrimp. To study the efficiency of the frozen shrimp process (headless and shell-less) that can control the transmission of viruses infection to normal shrimp in laboratory. Ten viruses-free shrimp(10-12 g.) were infected with the virulent stock of each virus including TSV, YHV, WSSV, IHHNV and *Mr*NV and then placed in aquaria to observe clinical signs of disease. Moribund shrimp were then fed to 10 normal shrimp of 10-12 g. twice daily in each aquaria with three aquaria for each virus. On the third day post-challenge, shrimp were collected and placed on ice and transported to processing plant(2hours) before being processed according to standard procedures. 20 shrimp were sampled (10 during processing, another 10 at the end of the process) and fed directly to normal shrimp twice daily for three days. The challenged shrimp were observed for mortality for 7 days before being collected and tested for the presence of viruses using nested PCR and RT-PCR assays. The results showed that challenged shrimp with IHHNV, TSV ,YHV and *Mr*NV were all negative by nested PCR and RT-PCR methods. There was no mortality over 7 days regardless of whether shrimp fed with unfinished product or after processed product. In contrast, all tested shrimp fed with WSSV –product showed typical gross signs of the disease and were positive for nested PCR assay. WSSV-trail was carried out again using similar procedure practices for most farms for harvesting and transporting to the processing plants. The entire process usually consume 18-24 hours. WSSV infected shrimp were fed to 30 viruses-free shrimp until shrimp developed diseased signs. Experimental shrimp were collected and placing into ice water of 0-4 ^{o}C for 30 minutes. Then shrimp were washed in 50ppm chorine water before placing on ice in the container. Eighteen hours later shrimp were transported to the processing plant for processed as previously described. These samples were then fed to normal shrimp in aquaria and observed for 7 days. Results showed that shrimp fed with unfinished-product or finished product did not show mortality and negative for nested PCR. This results indicated that if shrimp were harvested and followed normal practices before processed with the industry standard at the processing plant. WSSV is unlikely to cause the disease.

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