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SUTTINEE LIMTHAMMAHISORN : FORMALDEHYDE RESIDUES  
IN GIANT TIGER PRAWN (*Penaeus monodon*) AFTER FORMALIN  
TREATMENT. THESIS ADVISOR : VITHYA SRIMANOBHAS, D.Sc.,  
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The study on formaldehyde residues in giant tiger prawn (*Penaeus monodon*) after formalin treatment was carried on at Prachuabkhirikun Coastal Aquaculture Development Center during December 1996 to May 1997. This study was designed to determine the detectable formaldehyde residues in the giant tiger prawn after formalin treatment and the biological formation by prawn muscle and the formaldehyde accumulation and degradation time in prawn muscle during rearing at two different ranges of water temperature (22-25°C and 27-30°C).

The formaldehyde concentration in prawn muscle was analyzed by using colorimetric method. The detectable formaldehyde residues were analysed from the tail muscle immediately after the prawn were scrafed. The recovery percentage of formaldehyde in prawn muscle is 56.5%. Comparison between formalin treated prawn and untreated prawn showed the detectable formaldehyde residues were not statistically different ( $P < 0.05$ ). This means that no formaldehyde residues in prawn muscle were found to result from the therapeutic use of formalin. However, prawn muscle itself was found to produce a small amount of the detectable formaldehyde during post-mortem decomposition (from 0.09 to 0.21 ppm). The results of the study of the accumulation and degradation time of formaldehyde in prawn muscle during rearing at different temperatures revealed that at a water temperature range of 22-25 °C and exposed levels 25, 50, 75 and 100 ppm 40% formalin (or 10, 20, 30 and 40 ppm formaldehyde), more formaldehyde accumulated in the tissue than at a water temperature range of 27-30°C of all concentrations. Both treatments at water temperature ranges of 22-25°C and 27-30°C for all concentrations, the maximum accumulated at the 12<sup>th</sup> hour and had decreased to nearly the biologically produced level after the 72<sup>nd</sup> hour at the highest added concentration (100 ppm exposed formalin or 40 ppm formaldehyde). All of formaldehyde levels for both temperatures were accumulated in prawn muscle and degraded in the water at the same time. This study indicated that no detectable formaldehyde is retained in the tissue of the prawn is which exposed to the chemical after formaldehyde had degraded in the water. It means that the amount of detectable formaldehyde in prawn muscle varies inversely with time and temperature. The water quality in the experiment showed that the dissolved oxygen decreased in 36 hours after formalin was added.

The relationship between the amount of detectable formaldehyde within prawn muscle and in water, the amount of added formaldehyde, degradation time and dissolved oxygen are highly correlated. It means that these variables would highly predict the detectable formaldehyde in prawn muscle.