B-54: Investigations on the quality aspects of processing raw-frozen shrimp

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Shrimp is a valuable export food product for which quality control is very important. The international markets expect high quality products, which are guaranteed to be fresh and free from harmful to agents.

The objectives were to study the processing of shrimp in the factory and determine the product flow chart as background information to formulate a HACCP system; to conduct a storage study to evaluate the suitability of various parameters as indicators of quality and to investigate whether the pH indicates prime quality of shrimp by correlating pH and factory grading.

The study was conducted at a shrimp farm in Chilaw and at a shrimp processing factory at Hendala.

Existing processing conditions in the factory were observed at each stage and flow diagrams were produced. Cleaning and disinfection procedure, personnel hygienic practices were also examined.

All the possible routes of hazards and risk liabilities were determined and critical control points were identified. In addition, storage studies and an assessment of pH in relation to factory grading system were carried out.

Data was analysed using analysis of variance procedure and mean separation was done using LSD design.

Results of the storage study showed, TPC to increase sharply initially (40 h) and then slowly to reach $7.5x10^6$ (138 h). Microbiological values varied considerably from farm to farm and although they indicated the extent and potential of spoilage they could not be used as an effective quality index. TVN showed a decrease in this study. TMA and TVN levels fluctuated in the storage period probably due to the washing effect of ice and have been regarded as poor quality indices by many workers. The pH showed a sharp decrease (6.55 to 6.34) within the first 12 h and then it increased to almost 7.0 and showed a good correlation with quality.

The correlation between the pH and quality grades of processed shrimp was significant at 0.05 level. The pH values identified for quality grades 1-3 weree <6.8, 6.8-7.0 and $>$ 7.respectively. Since pH is an easy and convenient method of monitoring it can be applied by the HACCP inspection system.

Hazard Analysis Critical Control Point (HACCP) quality inspection scheme can be applied effectively in the frozen shrimp industry in Sri Lanka.

The study showed that pH has a good correlation with qualty. It can be used as an index of prime quality. Approximate grading system for *P.monodon* based on the pW are:

Grade I pH $<$ 6.80 Grade II pH 6.80 -7.0 Grade III pH $>$ 7.0

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