

ASSESSMENT OF THE LEVELS OF THREE SELECTED HEAVY METALS IN BLACK TIGER SHRIMP, *Penaeus monodon* CULTURED IN THE NORTH WESTERN PROVINCE OF SRI LANKA

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Export oriented shrimp farming industry in Sri Lanka is currently restricted to the North Western Province and it has become a lucrative business in the region attracting substantial amounts of foreign exchange to the country's economy. Under fish export regulations, fish and fishery products are expected to comply with the stringent quality guidelines enforced by the statutory authorities to ensure food safety. Hence, the present study was undertaken to assess the levels of three toxic heavy metals; lead, chromium and cadmium in the edible parts of the black tiger shrimp, *Penaeus monodon*, cultured in the North Western Province of Sri Lanka and to determine whether existing levels could pose a significant risk to the shellfish consumers.

Levels of the three metals in the muscle tissue of the shrimp collected at harvest during the period of January to May 2001 from twelve selected shrimp farms that extract water from four selected water sources namely Puttalam lagoon, Dutch canal, Mundel lagoon and the Gembarandiya lagoon were determined by Atomic Absorption Spectrophotometry using standard analytical procedures.

Results indicate that the concentrations (Mean  $\pm$  SEM) of lead, chromium and cadmium in the muscle tissue of the shrimp were (in  $\mu\text{g g}^{-1}$  wet weight)  $0.096 \pm 0.024$ ,  $0.200 \pm 0.004$  and  $0.057 \pm 0.004$ , respectively. Even though, water source wise differences could be detected in relation to lead and chromium levels, the cadmium levels in the shrimp tissue cultured in water from the four water sources were not significantly different from each other. However, none of these metals in the shrimp tissue exceeded the maximum permissible levels or the guide levels enforced by the statutory authorities under fish export regulations.

The present study revealed that the levels of lead, chromium and cadmium in the edible parts of the shrimp, *Penaeus monodon* cultured in the North Western Province of Sri Lanka are within the safety permissible levels for human consumption.