

Presence of multiple viruses in non-diseased, cultivated shrimp at harvest

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Abstract:

Histological examinations were carried out with 400 cultivated black tiger shrimp (*Penaeus monodon*) from 12 commercial rearing ponds from three different areas in Thailand over a period of 3 years. The shrimp were collected at or near harvest time as two arbitrary size groups of 10–20 each from each pond. Aside from size difference, they showed no gross signs of disease and were normally active. Pathognomonic histopathological lesions were found only for hepatopancreatic parvovirus (HPV) or monodon baculovirus (MBV). Although these were relatively frequent, no unusual shrimp mortality had occurred in any of the ponds examined. Severity of these infections was negatively correlated with shrimp size. When grouped together, HPV-infected shrimp gave mean lengths of approximately 6.5 cm that were significantly different from uninfected shrimp at 9 cm length, early in the cultivation cycle while MBV-infected groups of approximately 9 cm length were not readily distinguishable until uninfected shrimp were 10 cm or more, later in cultivation. Thus, HPV infection was correlated with more severe stunting than MBV. In addition to histopathological examination, polymerase chain reaction (PCR) assays for HPV, white spot syndrome virus (WSSV) and infectious hypodermal and hematopoietic necrosis virus (IHHNV) were carried out on one large sample of 240 shrimp from 6 ponds where visible lesions were apparent for MBV only. Surprisingly, 94% of the specimens gave a positive test for at least one of the four viruses. HPV and IHHNV alone or in combination were detected at high prevalence (approximately 60%) despite the absence of visible histological lesions and were confirmed by southern blot hybridization. Although the prevalence of the four viral pathogens was very high, it would normally have gone unnoticed, since normal shrimp are rarely examined for viruses.