

Virulence of white spot syndrome virus (WSSV) isolates may be correlated with the degree of replication in gills of *Penaeus vannamei* juveniles

ABSTRACT: A standardized inoculation model was used in 2 separate experiments to gauge the virulence of 3 white spot syndrome virus (WSSV) isolates from Thailand and Vietnam (WSSV Thai-1, WSSV Thai-2, and WSSV Viet) in *Penaeus vannamei* juveniles. Mortality patterns (Expt 1) were compared and WSSV-positive cells quantified (Expt 2) in tissues following intramuscular inoculation of shrimp with the most (WSSV Thai-1) and least (WSSV Viet) virulent isolates as determined by Expt 1.

The results of Expt 1 demonstrated that mortalities began at 36 h post inoculation (hpi) for both Thai isolate groups and at 36 to 60 hpi for the Viet isolate group. Cumulative mortality reached 100% 96 to 240 h later in shrimp challenged with the WSSV Viet isolate compared to shrimp challenged with the Thai isolates. WSSV infection was verified in all groups by indirect immunofluorescence. In Expt 2, WSSV-infected cells were quantified by immunohistochemical analysis of both dead and timecourse sampled shrimp. WSSV-positive cells were detected in tissues of Thai-1 inoculated dead and euthanized shrimp from 24 hpi onwards and from 36 hpi onwards in shrimp injected with the Viet isolate.

Significantly more infected cells were found in tissues of dead shrimp inoculated with the Thai 1 than in Viet isolate-inoculated shrimp. In these experiments, substantial differences in virulence were demonstrated between the WSSV isolates. The Vietnamese isolate induced a more chronic disease and mortality pattern than was found for the Thai isolates, possibly because it infected fewer cells. This difference was most pronounced in gills.