

## Quantification of the Relative Virulence of White Spot Syndrome Virus (WSSV) in the Penaeid Shrimps *Litopenaeus vannamei* (Boone, 1931) and *Farfantepenaeus duorarum* (Burkenroad, 1939) by Quantitative Real Time PCR

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### ABSTRACT

The relative virulence of the China isolate of white spot syndrome virus (WSSV-CN) in the penaeid shrimps *Litopenaeus vannamei* and *Farfantepenaeus duorarum*, was assessed by a comparison of 7-d median lethal dose (LD<sub>50</sub>), survival curve, and mean lethal load after exposure by injection. Shrimps were injected intramuscularly with known WSSV dose. Median lethal dose of *L. vannamei* was lower than that of *F. duorarum*. Log LD<sub>50</sub> in *L. vannamei* was 4.20 WSSV genome copies μg<sup>-1</sup> total DNA. Log LD<sub>50</sub> in *F. duorarum* was 5.32 WSSV genome copies μg<sup>-1</sup> total DNA. Median survival times of *L. vannamei* and *F. duorarum* injected with 10<sup>4</sup> and 10<sup>5</sup> WSSV genome copies were 54.17 h and 38.91 h, respectively for *L. vannamei* whereas they were 119.58 h and 82.67 h, respectively for *F. duorarum*. Mean log of the WSSV lethal load for *L. vannamei* was 9.34 (SE ± 9.09) copies μg<sup>-1</sup> of total DNA and for *F. duorarum* was 11.80 (SE ± 11.55). No significant difference was noted in lethal load for the shrimp species using Student's t-test. Overall mean WSSV lethal load was 2.86 x 10<sup>11</sup> (SE ± 1.63 x 10<sup>11</sup>) genome copies μg<sup>-1</sup> of total DNA. In conclusion, WSSV was found to be less virulent in *F. duorarum* than in *L. vannamei* by LD<sub>50</sub> and mean survival time but not in mean lethal load. This suggests that shrimp resistance is imparted by controlling WSSV loads rather than by tolerating higher loads.

**Key Words:** WSSV-China isolate, median lethal dose (LD<sub>50</sub>), median survival times, lethal loads

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