

Clinical effect of cidofovir and a diet supplemented with *Spirulina platensis* in white spot syndrome virus (WSSV) infected specific pathogen-free *Litopenaeus vannamei* juveniles

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Abstract

The antiviral product cidofovir and a diet supplemented with *Spirulina platensis* were tested for their efficacy to prevent or delay/reduce mortality due to white spot syndrome virus (WSSV) infection in specific pathogen free (SPF) shrimp *Litopenaeus vannamei* juveniles. Cidofovir was injected intramuscularly at 200 mg/kg shrimp mean body weight (MBW) at the moment of WSSV challenge. *Spirulina* was supplemented in the shrimp diet at 25% w/w and shrimp were fed for 4 days at 5% of the MBW per day before WSSV challenge. Shrimp were inoculated orally with WSSV at a dose of 30 SID50 (SID50 = shrimp infectious dose with 50% endpoint) and clinical signs and mortality were followed for 120 h post inoculation (hpi). WSSV infection status was determined by indirect immunofluorescence (IIF) in dead and survivor shrimp at the end of the trial. In two experiments, mortality was delayed approximately for 24 h by cidofovir treatment. The 100% mortality level was reached at 96–108 hpi in mock treated shrimp, whereas in cidofovir treated shrimp, 80–90% mortality was reached at the end of experiment (120 hpi). Significant differences ($p < 0.05$) in the median lethal time (LT₅₀) of cidofovir-treated shrimp and mock-treated shrimp were found by probit analysis. A *Spirulina*

supplemented diet delayed the onset of clinical signs for 12 h but had no effect on the cumulative mortality at the end of the experiment. This study opens perspectives for antiviral drugs to treat shrimp infected with WSSV.

Keywords

Litopenaeus vannamei; SPF; WSSV; Antiviral; Cidofovir; Spirulina platensis