

Quantitative analysis of an experimental white spot syndrome virus (WSSV) infection in *Penaeus monodon* Fabricius using competitive polymerase chain reaction

ABSTRACT

White spot syndrome virus (WSSV) has been a major pathogen of cultured *Penaeus monodon* Fabricius in Malaysia since 1994. As quantitative study on the replication of WSSV is in its infancy, competitive polymerase chain reaction (PCR) was used for quantitative study of an experimental WSSV infection per os in growout *P. monodon*. Gills, abdominal integument and abdominal muscle were selected for viral quantification. Infection was detectable as early as 14 h postinfection (h p.i.) in both gills and integument, but the infection in muscle was only detected at 24 h p.i. Gill tissue had the highest viral load, followed by integument and muscle. Typical viral growth curves were obtained for all organs with distinct phases of eclipse (0-24 h p.i.), logarithmic (24-48 h p.i.) and the plateau (48-120 h p.i.). Cumulative mortality rapidly increased from 48 h p.i. and reached 100% at the end of the plateau phase at 120 h p.i. Gross signs of white spots and reddish discoloration were also obvious in moribund individuals from the plateau phase. Based on the three phases of viral growth, WSSV infection was classified into light, moderate and heavy infection stages.

Keyword: *Penaeus monodon*; Polymerase chain reaction; Viral growth; White spot syndrome virus