

## **White Spot Syndrome Virus(WSSV) and Hepatopancreatic Parvovirus (HPV)Infection of *Penaeus chinensis* in Korea**

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### **Introduction**

White spot syndrome virus (WSSV) causes the most serious epizootic in cultured penaeid shrimp. The epizootic started in 1992, and spread through east and south east Asia and into other shrimp growing countries of the region. WSSV has also been reported from *Penaeus chinensis* cultured in Korean peninsula (Park et al., 1998; Kim et al., 1999). However, this paper deals with the WSSV infection in cultured and wild *P. chinensis*, purification and characterization of the pathogen, and the occurrence of other concomitant infection. The paper also deals with hepatopancreatic parvovirus(HPV) infection which is being reported for the first time from Korean peninsula.

### **Materials and Methods**

Cultured *P. chinensis* were procured from shrimp farms located in the south coast of Korea. Wild shrimp were also collected from off the west coast. Histological studies were carried out according to the routine procedure. WSSV-specific primers designed by Kimura et al. (1996) were used for PCR detection. The virus (WSSV) was purified from hemolymph of infected shrimp using ultracentrifuged at 80,000Xg. The purified virus, negatively stained, was observed under TEM. The purified virus was subjected to electrophoresis to identify the structural proteins. Concomitant infections in the cultured and wild shrimp were detected through wet mount microscopy and histological techniques.

## Results and Summary

**WSSV in Cultured Shrimp:** The clinical signs of the disease in the cultured shrimp included lethargy, anorexia and discoloration of the body, in the initial stage of infection. In the late stage, prominent, variably shaped white spots/patches were detected on the inside surface of the carapace with associated mortality. However, the mortality pattern was found to vary from low level to severe. Histological sections of organs showed marked necrosis and prominent, eosinophilic to basophilic intranuclear inclusions. Purified virus preparation revealed rod-shaped enveloped virus particles. The nucleocapsids appeared cylindrical with one end flat. SDA-PAGE of the purified virus showed three prominent and consistent polypeptide bands of approximate molecular weight of 18, 23.5 and 27 KD.

**WSSV in Captured Shrimp:** A total of 30 wild shrimp collected from off the west coast also showed WSSV infection. Although white spots/patches on the carapace were found to be less prominent at the time of collection, the animals showed the symptoms of full-blown disease after a week-long rearing in the laboratory. Histological sections of the target tissues showed degenerative changes and eosinophilic to basophilic inclusions characteristic of WSSV infection. A two-step polymerase chain reaction using WSSV-specific primers showed amplification of the viral DNA. The electrophoresis of the PCR product revealed 540 bp DNA band.

**Concomitant Infection:** Wet mount preparation of gills and exoskeleton of cultured shrimp showed moderate to heavy epicommensal, *Zoothamnium* infection. More than 30% of the shrimp, collected during the study, showed the ciliate infection. Hepatopancreas of both cultured and wild shrimp showed hepatopancreatic parvovirus (HPV) infection.

**HPV Infection:** Impression smear of hepatopancreas stained with Giemsa showed hypertrophied nuclei and inclusion-like bodies. However, histological sections stained with hematoxylin-eosin showed small eosinophilic, intranuclear inclusion bodies centrally placed in the E-cells closely associated with the nucleolus. Affected cells were mostly found in the distal portion of hepatopancreatic tubules. Hypertrophy and chromatin margination were also detected. Some of the inclusions were large and slightly basophilic.

## References

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