

# Acute Hepatopancreatic Necrosis Diseases (AHPND) as Challenging Threat in Shrimp †

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**Abstract:** White feces syndrome (WFS) is an emerging problem for penaeid shrimp farming industries in South East Asia countries. Outbreaks began in cultivated shrimp *Penaeus (Penaeus) monodon*, and *Penaeus (Litopenaeus) vannamei* in China in 2009 and after that spread progressively to Vietnam (2010), Malaysia (2011), and Thailand (2012), although the cause of the disease was not known at that time. Indeed, it was not until 2011 that a case definition for AHPND was first described (as acute hepatopancreatic necrosis diseases or AHPND). The presence of white feces floating on water and clinical symptoms include pale empty gut region, reduced growth, movable shell, and black discoloration. The pacific white shrimp, *Litopenaeus vannamei*, with the major shrimp cultivable species globally, is currently in danger by a severe disease- WFS, which causes serious losses worldwide. It has been confirmed that the causative agent of WFS/AHPND is a bacterium that is a pathogen - probably *Vibrio parahaemolyticus* (2013). This bacterium currently reported has acquired plasmids that encode lethal binary toxins PirA/PirB causing rapid death of infected shrimp. Additionally, this plasmid acquired some virulence factor, which is directly related to pathogenicity. Further rapid diagnostic tests for early detection of WFS/AHPND pathogens are required, which will promote the production of hatchery and pond maintenance and also contribute to the long-term explication of the various aspects of the disease.

**Keywords:** shrimp; *Vibrio parahaemolyticus*; Plasmids; PirA/PirB; acute hepatopancreatic necrosis syndrome; AHPND.

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## Conflicts of Interest

The authors declare no conflict of interest.