

## **Characterization and experimental infection of *Vibrio harveyi* isolated from diseased Asian seabass (*Lates calcarifer*)**

### **Abstract**

Aims: *Vibrio harveyi* causes vibriosis to Asian seabass (*Lates calcarifer*). The disease spreads rapidly among fish stocked in the same cage. It causes high mortality especially in weak and small sized fish stocked at high density in poorly managed net cage. Study to determine the virulence levels of the bacterial pathogen in various aquaculture animals is a key to prevent vibriosis in marine aquaculture. Methodology and Result: Isolation of bacteria from diseased Asian seabass was done using tryptic soy agar (TSA) and thiosulphate citrate bile sucrose agar (TCBS) plates. Virulence of two strains of *Vibrio harveyi* (VHJR4 and VHJR7) was tested against clinically healthy aquaculture animals. The analysis revealed that the two bacterial strains differ in pathogenicity. The *V. harveyi* strain VHJR7 was virulent to Asian seabass at  $1.40 \times 10^4$  c.f.u. g<sup>-1</sup>, humpback grouper (*Cromileptis altivelis*) at LD 50  $8.33 \times 10^3$  c.f.u. g<sup>-1</sup> and black tiger shrimp (*Penaeus monodon*) at LD50  $3.26 \times 10^4$  c.f.u. g<sup>-1</sup>, respectively. The *V. harveyi* strain VHJR4 was not virulent to Asian seabass and humpback grouper but it caused mortality to black tiger shrimp at LD50  $1.32 \times 10^6$  c.f.u. g<sup>-1</sup>. Phenotypically, the two strains shared most of the biochemical features except that the *V. harveyi* strain VHJR7 was a urease positive and grew at 8.5 % NaCl, and at 10 oC. The percentage similarity of nucleotide sequences of 16S rDNA in *V. harveyi* VHJR4 and *V. harveyi* VHJR7 was higher (99 %) but reduced at 95 % in hemolysin gene. Conclusion, significance and impact of study: Pathogenic strain of *V. harveyi* causes mortality and affects aquaculture production of Asian seabass. Hence, vaccine development against the bacterial pathogen is urgently needed for sustainability of Asian seabass aquaculture in Malaysia.