

Comparative study on length-weight relationship and *Vibrio* composition between normal and stunted growth in pond-cultured whiteleg shrimp, *Litopenaeus vannamei*

ABSTRACT

The occurrence of stunted growth in *L. vannamei* culture causing large size variation of shrimps may lead to huge profit loss. Despite causing concerns to farmers, detailed information on the stunted growth in *L. vannamei* related to *Vibrio* loads and its composition is limited. Normal and stunted growth in shrimp was collected from shrimp ponds in Tuaran, Malaysia. Investigation of the length-weight relationship and *Vibrio* composition between normal and stunted grown shrimps were conducted. Statistical analysis showed that size variations were present in all age groups between normal shrimps and stunted shrimps. The regression coefficient (b value) for normal shrimp was 2.92, which is not significantly less than 3.00 indicating an isometric growth pattern. Meanwhile, a positive allometric growth pattern was observed in stunted grown shrimp with b value of 3.41. The coefficient correlation (r value) of normal shrimp and stunted shrimp was 0.95 and 0.94, respectively. No significant difference was found regarding the total bacteria count and the total *Vibrio* count between normal and stunted grown shrimps. However, the tests' results revealed that *Vibrio* isolates obtained from stunted shrimp showed a higher variation of phenotypic characteristics, compared to isolates from normal shrimp. The study revealed that normal shrimp had negative allometric growth, while stunted shrimp recorded positive allometric growth. The finding in this study indicates that stunted growth shrimp might have a more diverse and complex bacterial composition than normal shrimp. The present study managed to provide information on the size difference and length-weight relationship of normal and stunted grown *L. vannamei*, opening up the opportunity to conduct more research to find out the possible cause of stunted shrimp problems.