

## Characteristics and Activity of Anti Quorum Sensing Bacillus spp. Isolated from Penaeus vannamei Shrimp Ponds

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<b>Abstract</b>	<p>Certain strains of <i>V. parahaemolyticus</i> carry a gene that encodes a toxin that causes Acute hepatopancreatic necrosis disease (AHPND) in <i>P. vannamei</i>. AHPND attacks shrimp post larvae within 20-30 days after stocking causing up to 100% mortality. The expression of these virulent genes is controlled by the quorum sensing system. This system is inhibited by an anti-quorum sensing (AQS) mechanism. Several <i>Bacillus</i> strains have AQS mechanism by producing AHL-Lactonase enzyme. Therefore, this study aimed to obtain <i>Bacillus</i> spp. having AQS activity for controlling AHPND. The study was conducted from isolation and selection of <i>Bacillus</i> isolates, as well as determination of AQS activity. From 22 samples consisting of shrimp intestines, water and pond sediment samples, a total of 151 isolates of <i>Bacillus</i> spp. were isolated. The screening test for AQS activity obtained 11 isolates that showed AQS activity on <i>Cromobacterium violaceum</i>. Determination of violacein pigment in liquid cultures of <i>C. violaceum</i> showed the index value of the pigment formation was between 0.025-0.166 and 0.026-0.567 at 24-hour and between 48-hour incubations, respectively. The quantitative analysis of violacein production showed that there were six isolates of <i>Bacillus</i> could inhibit the pigment production more than 75%. The isolates were identified as <i>Bacillus cereus</i> (four isolates), <i>Bacillus thuringiensis</i> (one isolate), and <i>Bacillus velezensis</i> (one isolate), respectively. The molecular analysis had confirmed that the isolates have <i>aiiA</i> genes encoding AHL-lactonase enzyme. These <i>Bacillus</i> isolates have potential application for controlling AHPND disease.</p>
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