

## ABSTRAK

### UJI COBA PROBIOTIK KOMERSIAL PADA BUDI DAYA UDANG VANAME (*Litopenaeus vannamei*) UNTUK PERBAIKAN KUALITAS AIR DAN MENGURANGI KEPADATAN *Vibrio* spp.

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Budi daya udang vaname (*Litopenaeus vannamei*) pada sistem intensif berpotensi menurunkan kualitas air akibat akumulasi bahan organik serta meningkatnya kepadatan bakteri patogen, khususnya *Vibrio* spp. Penurunan kualitas air dan tingginya kepadatan *Vibrio* spp. dapat menyebabkan stres dan kematian pada udang sehingga diperlukan upaya preventif, salah satunya melalui aplikasi probiotik. Penelitian ini bertujuan untuk mengevaluasi efektivitas probiotik komersial yang mengandung *Bacillus polymyxa*, *Lactobacillus plantarum*, *Lactobacillus fermentum*, dan *Pediococcus acidilactici* dalam memperbaiki kualitas air dan mengurangi kepadatan *Vibrio* spp. pada media budi daya udang vaname. Penelitian menggunakan dua perlakuan, yaitu pemberian probiotik pada dosis 0 ppm (A) dan 0,5 ppm (B) dengan tiga ulangan selama 60 hari pemeliharaan. Parameter kualitas air yang diamati meliputi suhu, salinitas, pH, oksigen terlarut, bahan organik total (BOT), amonia (NH<sub>3</sub>), nitrit (NO<sub>2</sub>), dan asam sulfida (H<sub>2</sub>S). Populasi *Vibrio* spp. dianalisis menggunakan metode *spread plate* pada media TCBS dan diuji secara statistik menggunakan uji t test. Hasil penelitian menunjukkan bahwa pemberian probiotik 0,5 ppm mampu menjaga stabilitas parameter kualitas air tetap berada dalam kisaran optimal dibandingkan tanpa probiotik meskipun secara signifikan belum mampu menekan kepadatan *Vibrio* spp. dan perlu penelitian lanjutan terkait peningkatan dosis pada probiotik komersial untuk mengetahui dosis terbaik.

Kata kunci: *Bacillus polymyxa*, *Lactobacillus fermentum*, *Lactobacillus plantarum*, *Pediococcus acidilactici*, *Vibrio* spp.

## ABSTARCT

### COMMERCIAL PROBIOTIC TRIALS ON PACIFIC WHITE SHRIMP (*Litopenaeus vannamei*) CULTIVATION FOR QUALITY IMPROVEMENT WATER AND REDUCING *DENSITY Vibrio* spp.

By

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Pacific white shrimp (*Litopenaeus vannamei*) farming in intensive systems has the potential to reduce water quality due to the accumulation of organic matter and an increase in pathogenic bacteria, particularly *Vibrio*. Declining water quality and high *Vibrio* density related to stress and death in shrimp, requiring preventive measures, one of which is the application of probiotics. This study aimed to evaluate the effectiveness of commercial probiotics containing *Bacillus polymyxa*, *Lactobacillus plantarum*, *Lactobacillus fermentum*, and *Pediococcus acidilactici* in improving water quality and reducing the density of *Vibrio* in Pacific white shrimp farming media. The study used two treatments, namely the administration of probiotics at a dose of 0 ppm (A) and 0.5 ppm (B) with three replicates within 60 days cultured. Water quality parameters included temperature, salinity, pH, dissolved oxygen, total organic matter (TOM), ammonia (NH<sub>3</sub>), nitrite (NO<sub>2</sub>), and hydrogen sulfide (H<sub>2</sub>S). The *Vibrio* density was analyzed using the spread plate method on TCBS media and tested statistically using Student t-test. The results showed that administration of 0.5 ppm probiotics was able to maintain the stability of water quality parameters within the optimal range compared to without probiotics, although it was not able to significantly suppress the number of *Vibrio*. Further research is needed regarding increase in dosage of commercial probiotics to determine optimal dosage.

Keywords: *Bacillus polymyxa*, *Lactobacillus fermentum*, *Lactobacillus plantarum*, *Pediococcus acidilactici*, *Vibrio* spp.