

## Documents

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**Characterization of bacterial communities in prebiotics and probiotics treated shrimp farms from Kuantan**  
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#### Abstract

**Aims:** Prebiotics and probiotics profoundly enhance water quality and shrimp development to tackle infectious disease in shrimp farming. This study evaluated the impact of prebiotics and probiotics treatments in water by assessing the physicochemical properties and bacterial communities in local shrimp ponds. **Methodology and results:** Water was collected from shrimp pond 1 (SP1), treated with prebiotics and probiotics, and shrimp pond 2 (SP2), treated with only prebiotics. The physicochemical parameters of water from two shrimp ponds were measured, including pH, dissolved oxygen (DO), ammonia concentration and temperature. The total environmental DNA (eDNA) was extracted from the water samples and sequenced using amplicon sequencing targeting the full length of the 16S rRNA gene region via the Oxford Nanopore Technology Flongle. The water quality analysis indicated that SP1 had better water quality than SP2 for shrimp aquaculture. The dominant phyla in both shrimp ponds were Proteobacteria and Bacteroidota. SP1 samples had unique microbiota at the phylum level, including Bdellovibrionota, Firmicutes A, Patescibacteria and unclassified Rhizobiales, Saprospiraceae, Vulcanococcus and HIMB114 at the genus level. The alpha- and beta-diversity showed insignificant differences in microbiota composition between SP1 and SP2 (p-value>0.05). **Conclusion, significance and impact of study:** Research findings demonstrated that the probiotic-treated shrimp pond (SP1) had better water quality and more diverse microbial communities than the shrimp pond that was not treated with probiotics (SP2). © (2023), (Universiti Sains Malaysia). All Rights Reserved.

#### Author Keywords

Microbial community; nanopore; prebiotics; probiotics; shrimp

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