IDENTIFICATION AND EFFECT OF PRO - BIOTIC BACTERIA ON WATER QUALITY OF *Lates calcarifer* (BLOCH) CULTURED IN TANKS

DINA DARIAS

FACULTY OF APPLIED SCIENCE AND TECHNOLOGY
UNIVERSITI PUTRA MALAYSIA TERENGGANU
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BY

DINA DARIAS

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ABSTRAK

Kajian telah dijalankan untuk mengenalpasti keberkesanan bakteria pro-biotik dalam membaiki kualiti air ternakan *Lates calcarifer* (Bloch) dalam tangki dan untuk mengenalpasti bakteria pro-biotik yang digunakan dalam kajian ini. Sebanyak empat eksperimen telah dijalankan. Eksperimen ini merangkumi Rawatan 1 (bakteria pro-biotik digunakan, tanpa penukaran air), Rawatan 2 (bakteria pro-biotik digunakan dengan penukaran air pada 60-80%), Rawatan 3 (hanya penukaran air pada 90-100% dilakukan) dan Kawalan (dimana tiada bakteria pro-biotik atau penukaran air). Selepas lapan minggu kajian, kepekatan tertinggi Ammonia tak terion dicerap oleh Rawatan 1 (0.0271 mg/l), diikuti oleh Rawatan 2 (0.0245 mg/l). Seterusnya Kawalan (0.0170 mg/l) dan Rawatan 3 (0.0109 mg/l). Dari segi kadar tumbesaran, tumbesaran yang lebih baik ditunjukkan oleh Rawatan 3 (5.557±0.69 g, 7.36±0.24 cm), diikuti oleh Rawatan 2 (4.443±0.63 g, 6.80±0.44 cm), Rawatan 1(3.420±0.35 g, 6.25±0.24 cm) dan Kawalan (2.335±0.64 g, 5.50±0.22 cm). Kedua-dua Rawatan 3 dan Rawatan 2 menunjukkan perbezaan berat badan yang ketara ($p<0.05$) berbanding dengan Kawalan. Manakal, Rawatan 1 menunjukkan berat badan yang ketara ($p<0.05$) berbeza daripada Rawatan 2. Kadar tumbesaran panjang piawai pula, menunjukkan ketiga-tiga rawatan ketara ($p<0.05$) berbeza berbanding Kawalan. Pengenalpastian spesis bakteria yang didapati daripada air ternakan, spesis *Vibrio* sp. dan *Pseudomonas* sp. dijumpai sangat dominan.

ABSTRACT

Studies were carried out to determine the effectiveness of pro-biotic bacteria in improving the water quality in tank culture of *Lates calcarifer* (Bloch) and to identify the pro-biotic bacteria used in this study. Four experiments were carried out. These four experiments consisted of Treatment 1 (pro-biotic bacteria added and no water changed), Treatment 2 (pro-biotic bacteria added, and water changed), Treatment 3 (only water was changed) and Control (no added pro-biotic bacteria or water change). After eight weeks of culture, the highest concentration of Ammonia unionized was observed from the Treatment 1 (0.0271 mg/l), followed by Treatment 2 (0.0245 mg/l), and Control (0.0170 mg/l) and Treatment 3 (0.0109 mg/l) respectively. In term of growth rate, the better growth showed by Treatment 3 (5.557±0.69 g, 7.36±0.48 cm), followed by Treatment 2 (4.443±0.63 g, 6.80±0.44 cm), Treatment 1 (3.420±0.35 g, 6.25±0.24 cm) and Control (2.335±0.64 g, 5.50±0.22 cm). Both Treatment 3 and Treatment 2 showed a significant ($p<0.05$) in body weight gained than the Control. Treatment 1 is significantly ($p<0.05$) different from Treatment 2 in body weight gained. The growth rates in standard length for all three treatments are significantly ($p<0.05$) different from Control. In determining the species of bacteria, the two isolated bacteria present in the water are found to be of *Vibrio* sp. and *Pseudomonas* sp.