



OCCURRENCE AND DISTRIBUTION OF ANTIBIOTIC RESISTANCE BACTERIA ISOLATED FROM SHRIMPS (*Penaeus monodon*) IN AQUACULTURE PONDS IN NEGOMBO AREA

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Abstract

Aquaculture farms are one of the major antibiotic users which facilitate the spread of antibiotic resistance. The objective of the study were isolation and characterization of antibiotic resistance bacteria from *Penaeus monodon* and determination of Multiple Antibiotic Resistance (MAR) index of isolated resistance bacteria against Tetracycline (TET), Ampicillin (AMP), Amoxicillin (AMX), Sulfamethoxzole (SMX), Erythromycin (ERM), Cloxacillin (CLOX), Azithromycin (AZY) and Ciprofloxacin (CIP). The resistance of 48 bacteria to 8 different antibiotics were investigated by agar diffusion and agar dilution method from intestines of shrimps. Antibiotic-resistant bacteria were identified to genus level using 16s rRNA sequencing and the Minimum Inhibition Concentration (MIC) was determined using agar dilution method. MAR was determined using 96 well plate method in order to calculate the MAR index. The most common resistance bacterial strains were recorded as *Aeromonas hydrophila* (43.7%), *E.coli* (23.4%) and *Bacillus* (22.6%). There was a high incidence of resistance to TET (87%), AMX (44%), ERM (38%) and a low incidence of resistance to CLOX (3%), AZY (2%) and CIP (1%). The 61% of all bacteria isolated from shrimps were resistance to 3 or more antibiotics. More than 50% of the total resistant isolates showed their MIC greater than 540 ppm for tested antibiotics except CIP (1%), CLOX (3%) and AZY (2%). The recorded MAR index ranged from 0.23 to 0.62 for the isolated bacterial species. The occurrence of antibiotic resistance bacteria in shrimp is a potential health threat bacteria as they acquire the ability to develop resistance through resistance transfer methods. An increase of antibiotic resistant strains in the natural environment will be a challenging task to future aquaculturists. Thus, the results of the present study suggest that shrimps in aquaculture systems might be a reservoir of antibiotic resistant bacteria which lead to major health risk in aquaculture field.

Keywords: Antibiotic, Resistance, Tetracycline, Multiple Resistance Index