



Antibiotic Resistance of Bacteria in Water from Ornamental Fish Farms and Aquariums, Matara, Sri Lanka

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Abstract

Anti-Microbial Resistance (AMR) of bacteria in aquaculture has now become a major concern worldwide, since, when released into the natural environments, AMR can be spread to clinically significant strains in the wild through horizontal gene transfer. Further, the usage of antibiotics to treat bacterial disease will not be effective in the presence of AMR. Therefore, comprehensive knowledge of the AMR of bacteria in aquaculture has paramount validity. The present study was conducted to ascertain the antibiotic resistance of bacteria isolated from ten ornamental fish farms and aquariums located in the vicinity of Matara city against the most used ten antibiotics: Amikacin-AK30, Amoxicillin-AML25, Ampicillin-AMP10, Cefixime-CFM5, Chloramphenicol-C30, Ciprofloxacin-CIP10, Metronidazole-MTZ5, Penicillin-P10, Streptomycin-S10, and Tetracycline-T30. Three water samples from each site were collected. Collected water samples were inoculated on nutrient agar plates employing the spread plate technique and incubated at room temperature for 24 hours. Then a single bacterial colony was picked from each sample, inoculated in nutrient broth, and incubated at room temperature for 24 hours. Antibiotic resistance was tested following the Kirby-Bauer disk diffusion method. According to the findings, bacteria collected from all sites showed resistance against AML25, AMP10, CFM5, MTZ5, P10, S10, and, T30. Fifty percent of the bacteria were resistant to C30 while 40% of them exhibited an intermediate resistance and the remaining 10% were sensitive. The majority of bacteria (60%) showed resistance against AK30 while the other 40% showed intermediate resistance. CIP10 was the most effective antibiotic since only 20% of the bacteria showed resistance whilst 70% of all bacteria had shown intermediate resistance and 10% of them were sensitive. Bacteria isolated from ten sites showed a varying degree of AMR against tested antibiotics. So, it is better to determine the Minimum Inhibitory Concentration (MIC) of bacteria against each tested antibiotic. Conclusively, the study could be expanded by using more antibiotics and several sampling sites.

Keywords: *Antibiotic Resistance, Aquarium Water, Ornamental Fish*

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