



DETECTION OF TETRACYCLINE RESISTANCE GENES IN ISOLATED BACTERIA FROM AQUACULTURE SITES IN SRI LANKA

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Tetracycline is a family of antibiotics that inhibit protein synthesis by preventing the attachment of aminoacyl-tRNA to the ribosomal acceptor (A) site. The extensive use of tetracycline as prophylactic and therapeutic agent in aquaculture can result in the occurrence of antibiotic resistant bacteria and Antibiotic Resistant Genes (ARGs) in the aquaculture environment. The aim of the study was to determine the genetic determinants which are responsible for tetracycline (TET) and Oxytetracycline (OTC) resistance in bacteria isolated from aquaculture farms in Sri Lanka. In this study, 42 TET bacteria strains (MIC \geq 60 μ g/ml) were isolated from 16 aquaculture sites. They were examined for the presence of the selected tet genes (*tet A*, *tet B*, *tet M*, *tet S*) using Polymerase Chain Reaction (PCR) method. *Bacillus* and *Staphylococcus* were the most dominant bacterial genera recorded for both OTC and TET resistance while bacteria species *Acinetobacter* sp., *Achromabacter* sp., *Staphylococcus* sp., and *Micrococcus* sp. were identified as main TET and OTC resistant bacteria species. Out of 42 bacteria isolated, one or more tet genes were detected in 30 strains (71%). It was found that, out of 30 tet gene positive bacteria, 21 bacterial strains were positive for *tet M*, 14 were positive for *tet A* gene, 11 for *tet S* and 8 for *tet B* gene respectively. However 12 bacteria strains were not positive (29%) for selected tet genes. The results of the study revealed that, *tet M* (70%) was the most abundant gene among tet gene, followed by *tet A* (47%), *tet S* (37%) and *tet B* (27%). The results of the present study showed that bacteria isolated from aquaculture sites in Sri Lanka harbor a variety of tetracycline resistance genes which implies the need of an urgent monitoring system in aquaculture as this may lead to problems in the efficiency of antibiotic use in treating fish diseases and subsequent aquaculture production losses.

Keywords: *Tetracycline (TET); Oxytetracycline (OTC); Antibiotic resistance; Antibiotic Resistance Genes (ARGs)*