

**ANTIMICROBIAL SUSCEPTIBILITY OF *Escherichia coli* SPECIES
ISOLATED FROM SHRIMP (*Penaeus monodon*) FARMING SYSTEM IN
PUTTALAM, SRI LANKA**

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Antibiotics have been used extensively to manage serious health problems in commercial aquaculture systems. However, the use of a wide range of antibiotics in higher doses has resulted emergence of antibiotic-resistant bacteria in those systems. This study aimed to test the antibiotic susceptibility of *Escherichia coli* species isolated from pond water, bottom sediments and individuals cultivated shrimp (*Penaeus monodon*) farms, in Puttalam district, Sri Lanka. Total coliform count (TCC), total faecal coliform count (TFCC), and total *E. coli* count of pond water, bottom sediments, and shrimp samples of five different farms were analysed. The susceptibility to antibiotics belonging to different families, β -Lactams: Amoxicillin (AMX; 30 μ g); Tetracycline: Tetracycline (TE; 30 μ g) and Oxytetracycline (OTC; 30 μ g); Macrolides: Erythromycin (E; 15 μ g), Chloramphenicol (C; 30 μ g) were used to test the antibiogram against *E. coli*. Disk-diffusion method was performed to analyse antibiotic susceptibility. In shrimp tissues, TCC, TFCC, and *E. coli* count ranged from 0.4 to 41.9 most probable number (MPN) g^{-1} , 0.2 to 27.9 (MPN) g^{-1} , and 0 to 27.9 (MPN) g^{-1} , respectively. In pond water samples, TCC, TFCC, and *E. coli* count ranged 15 – 98.8 (MPN) 100 mL^{-1} , 5.3 – 73.7 (MPN) 100 mL^{-1} and 0 – 22 (MPN) 100 mL^{-1} , respectively and in bottom sediments ranged 0.5 – 1.6 (MPN) g^{-1} , 0.3 – 0.8 (MPN) g^{-1} , and 0-0.4 (MPN) g^{-1} , respectively. A total of 67 *E. coli* strains were isolated and 48 strains (71.64%) were resistant to at least one drug out of the total number. A high index of resistance to E (15 μ g) 70.15% was reported. In contrast, none of the *E. coli* strains was resistant to C (30 μ g). Multidrug resistance to two or more antibiotics was observed in 24 strains. Multiple antibiotic resistance index varied within the range of 0 to 0.8 for the antibiotics used. The high range of coliform count proved that unclean water of lagoons and high indices of resistance and multidrug-resistant strains may be a consequence of indiscriminate use of antibiotics.

Keywords: Antibiotics, *Escherichia coli*, *Penaeus monodon*, Shrimp farms, Susceptibility