

**PREVALENCE AND ANTIMICROBIAL RESISTANCE OF  
*Escherichia coli* AND *Salmonella* BACTERIA ISOLATED FROM  
CULTURED SHRIMP AND POND WATER**



**By**

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## ABSTRACT

Antibiotics play a key role in controlling bacterial infections of shrimps. This study investigated the Antibiotic Sensitivity Testing (AST) of *Escherichia coli* and *Salmonella* from shrimp samples taken from seven shrimp farms in Puttalam District, Sri Lanka. Twenty-one cultured shrimp samples were analysed and thirteen *E. coli* and nine *Salmonella* cultures were isolated. Antibiotic sensitivity for isolated bacterial cultures was tested using the Kirby-Bauer disc diffusion method. The antibiotic susceptibility patterns of these bacterial species were assayed against five antibiotics including amoxicillin (30 mcg), oxytetracycline (30 mcg), chloramphenicol (10mcg), erythromycin (10 mcg), and tetracycline (10 mcg). The diameter of inhibition zones was compared with Clinical and Laboratory Standards Institute standards. Among the 21 shrimp samples, 53.84% (7/13) of *E. coli* isolates were highest resistant to erythromycin, and 38.46% exhibited resistance towards amoxicillin and tetracycline with susceptibility towards chloramphenicol. Additionally, *E. coli* cultures isolated from pond water samples showed resistance towards erythromycin and tetracycline at a rate of 33.33%. All *Salmonella* isolates in shrimp samples showed 44.44% (4/9), with the highest resistance to erythromycin and 11.11% (1/9), lower resistance to tetracycline and amoxicillin, while they showed the highest susceptibility to chloramphenicol and oxytetracycline. Moreover, *E. coli* and *Salmonella* isolates from pond water displayed resistance to erythromycin. *E. coli* isolates from shrimp samples were found to have a Multiple Antibiotic Resistance (MAR) index of as high as 0.8 with the antibiotic combination of amoxicillin, erythromycin, oxytetracycline and tetracycline. These results showed that antibiotic-resistant bacteria are present in shrimp farms.

Keywords: *Escherichia coli*, Multiple Antibiotic Resistance, Pond Water, *Salmonella*, Shrimp

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