

ID: 405

## Antibiotic Resistance in *Salmonella enterica* Isolated from Water Sources in Kaduna State, Nigeria: Susceptibility Patterns and Resistance Genes Detection

Alalade, O. M.<sup>1\*</sup>, Ameh, J. B.<sup>2</sup>, Abdullahi, I. O.<sup>2</sup> and Whong, C. M. Z.<sup>2</sup>

<sup>1</sup>Department of Food Science and Technology, Aliko Dangote University of Science and Technology, PMB 3244, Wudil, Kano state, Nigeria

<sup>2</sup>Department of Microbiology, Ahmadu Bello University, Zaria, Nigeria

### Abstract

The presence of antibiotic resistant bacteria and the genes responsible for resistance in water sources has gained attention of researchers over the years. This because of the risk of transfer of such genes to pathogens in humans, worsening the problem of antibiotic resistance. This study aimed at subjecting *Salmonella enterica* isolated from water of Kaduna state, Nigeria, to susceptibility tests using ten commonly used antibiotics namely: Ampicillin (10µg), Gentamicin (10µg), Amoxycillin (10µg), Tetracycline (30µg), Ciprofloxacin (5µg), Augmentin (30µg), Cefotaxime (30µg), Nalidixic acid (30µg), Chloramphenicol (30µg) and Sulphamethoxazole-trimethoprim (25µg), using standard methods. The isolates were further screened for antibiotic resistance genes (*tetA*, *tetB*, *sulI* and *blaTEM*) using Polymerase Chain Reaction (PCR) method. Of the six (6) isolates used in this study, 2 (33.3 %) were susceptible to all antibiotics tested. Three isolates were resistant to Tetracycline alone, and one was resistant to tetracycline, nalidixic acid and sulphamethoxazole-trimethoprim. Interestingly, this isolate was obtained from treated pipe borne water. The genes detected included the *tetA* and *sulI* genes, while the *tetB* and *blaTEM* were not amplified in any of the isolates. The presence of these organisms harboring these genes is of public health importance because water has been shown to serve as a reservoir of antibiotic resistance. Furthermore, this highlights the problem of antibiotic misuse in the study area. These findings indicate that focus should be placed on ensuring the safety of these water sources by the government and policy makers of Nigeria.

**Keywords:** Drinking water, Antibiotic resistance, genes, *Salmonella enterica*, Nigeria

