



Tropentag, September 18-20, 2019, Kassel

“Filling gaps and removing traps  
for sustainable resource management”

## Occurrence and Antibiotic Susceptibility Profile of Carbapenem-Resistant Enterobacteriaceae in Selected Aquaculture Ponds in Southwestern Nigeria

ELIZABETH OMOKOSHI JOEL<sup>1</sup>, ABIMBOLA ADEKANMBI<sup>2</sup>

<sup>1</sup>University of Ibadan, Dept. of Animal Science, Nigeria

<sup>2</sup>University of Ibadan, Dept. of Microbiology, Nigeria

### Abstract

The indiscriminate use of antibiotics in aquaculture has contributed to the prevalence of antibiotic resistant bacteria in aquaculture ponds and this represents a major challenge to public health. The aim of this study was to determine the antibiotic susceptibility profile of carbapenem-resistant Enterobacteriaceae from selected aquaculture ponds in Awotan area of Ibadan, Oyo State. Water samples from fifteen (15) concrete and earthen aquaculture ponds were collected weekly for a period of two months. Isolation of bacteria was carried out using the standard pour plate technique on MacConkey agar supplemented with imipenem. Pink colonies presumptive of members of the Enterobacteriaceae were purified and characterised using conventional methods. The isolates were subjected to ten classes of antibiotics using the Kirby Bauer disc diffusion technique.

A total of forty four (44) carbapenem-resistant bacteria belonging to six genera namely: *Edwardsiella* (36.4% n=16), *Salmonella* (2.3% n=1), *Yersinia* (40.9 n=18), *Ewingella* (4.6% n=2), *Shigella* (13.6% n=6), and *Citrobacter* (2.3% n=1) were obtained. 97.6% of the isolates were resistant to imipenem, 88% to amoxicillin-clavulanate while 83.7% were resistant to cefpodoxime. All the isolates were resistant to ampicillin and cefotaxime with 11.6% of them showing resistance to chloramphenicol and ciprofloxacin respectively. None of the carbapenem resistant bacteria in this study was positive for ESBL production.

The presence of carbapenem-resistant bacteria in aquaculture ponds in this study, suggests need for proper investigation, monitoring and management of aquaculture ponds from time to time to evaluate the emergence of bacterial resistance towards antibiotic. Also, the usage of antibiotic in aquaculture ponds should be well regulated.

**Keywords:** Antibiotic susceptibility profile, aquaculture ponds, carbapenem-resistance, Enterobacteriaceae