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Introduction

- ❖ Pond water sources are useful for diversified purpose including aquaculture and other related uses at the domestic level.
- ❖ There are several microorganisms found in ponds including bacteria, fungi, algae, protozoa etc.
- ❖ The resistance of Enterobacteriaceae to antibiotics is a serious issue of concern due to the life-threatening infections caused by them.
- ❖ The prevalence of antibiotic resistance bacteria in pond water is majorly because of indiscriminate use of antibiotics in aquaculture.



Plate 1: Aquaculture pond.

Methods

- ❖ Isolation and purification of carbapenem resistant bacteria
- ❖ Ten different antibiotics were used in this present study.

Results

A total of forty four (44) bacteria isolates were obtained from the fifteen (15) aquaculture ponds water samples. In all 41% (18) were identified as *Yersinia* sp. 36% (16) as *Edwardsiella* sp. 14% (6) as *Shigella* sp., 5% (2) as *Ewingella* sp., 2% (1) as *Citrobacter* sp. and one *Salmonella* sp. (2%) as shown in Figure 1.

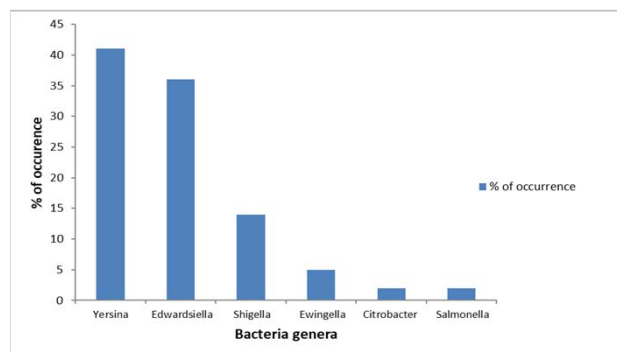
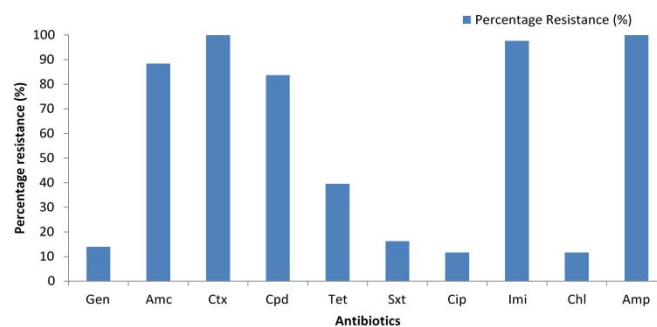


Fig 1: Percentage of bacterial genera obtained from the aquaculture ponds



KEY:

Gen: Gentamicin; **Amc:** Amoxicillin-clavulanate; **Ctx:** Cefotaxime; **Cpd:** Cefpodoxime; **Tet:** Tetracycline; **Sxt:** Sulfamethaxazole; **Cip:** Ciprofloxacin; **Imi:** Imipenem; **Chl:** Chloramphenicol; **Amp:** Ampicillin

Fig 2: Percentage resistance of the carbapenem resistance bacteria to selected antibiotics

Conclusion

The aquaculture ponds harboured carbapenem-resistant Gram negative bacteria belonging to the genera *Shigella*, *Yersinia*, *Edwardsiella*, *Salmonella*, *Citrobacter* and *Ewingella*; showing varying percentage degree of resistance to the ten antibiotics tested in this study. The resistance of the isolated carbapenem resistant bacteria to imipenem may primarily be attributed to the production of carbapenemase, which is one of the main mechanisms for the resistance of carbapenem resistant enterobacteriaceae (CRE) strains. The use of antibiotics in aquaculture farming should be regulated in order to minimize the emergence and spread of bacteria resistance towards antibiotics.

References

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