Antibacterial resistant *Escherichia coli* isolated from slaughter sites in Yenagoa metropolis Bayelsa state

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Introduction

Antimicrobial/antibiotic resistance is currently a global concern.
In the course of livestock production for meat, milk and eggs for human consumption; significant use of antimicrobials can occur further making it of global concern to both human and animal health.

Spread of antimicrobial resistance generated at farm level

Human exposure to antimicrobial resistant pathogens occurs by:

I. Direct contact.
II. Contamination of livestock products.
III. Wide spread release into the environment.

Drivers:

- Inappropriate and extensive use of antimicrobials without regulation.
- Large number of ruminant animals slaughtered daily at slaughter sites for human consumption come from different sources/
- Limited record of health status or any treatment received prior to slaughtering.

Research question:

- Determination of antibiotic resistant bacteria – ***Escherichia coli***
- Sampling of 2 major slaughter sites in Yenagoa metropolis of Bayelsa state
- Site 1 labelled as **SW**
- Site 2 labelled as **TA**.

How drivers may contribute to antimicrobial resistance spread:

- Absence of or inappropriate slaughter waste disposal facility at slaughter site.
- Slaughter sites located close to water ways or waste channeled to water ways**.**

Methodology

Samples: 4 solid mass samples were collected from each site then stored in pre-labelled sterile sample bottles; taken to the laboratory for bacteria isolation.

Enrichment

1gm sample +15ml pre-sterilized peptone broth.

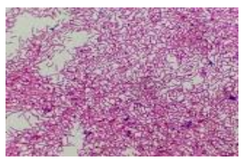
Incubate mixture at 37°C for 24 hours

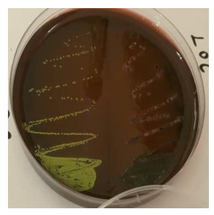
Isolation of *E. coli*

Liquid culture sub-cultured onto Eosin Methylene Blue Agar.

Green metallic sheen isolates identified

Gram staining to confirm *E. coli*





Antibiogram on *E. coli*

Penicillin - 10µg
Streptomycin - 10µg
Tetracycline - 30µm
Ampicillin - 10µg
Chloramphenicol - 30µg
Cloxacillin - 5µg
Erythromycin - 15µg
Gentamycin - 10µg
Augmentin - 30µg
Ofloxacin - 5µg

Results

From the 4 samples collected from **site SW**, *E. coli* was isolated from 2 samples.
Site TA: 1 sample showed the presence of *E. coli*. (**Table 1**)
Antibiogram results for *E. coli* were interesting

E. coli isolated from both sites was resistant to most antibiotics tested.
Antibiogram results are presented in **Table 2a** and **Table 2b**
Antibiogram results obtained with **ofloxacin** (**fig. 1**) was 28mm, 31mm (SW) and 32mm (TA); respectively.

Table 2a: Antibiogram (mm) of different antibiotics against *E. coli*

Antibiotic	SW 1	SW2	TA 1
PEN	0.00	0.00	0.00
STR	0.00	20.00	0.00
TET	0.00	0.00	0.00
AMP	0.00	0.00	0.00
CHL	0.00	0.00	0.00

Table 2b: Antibiogram (mm) of different antibiotics against *E. coli*

Sample	CXC	ERY	GEN	AUG
SW 1	0.00	0.00	0.00	0.00
SW2	0.00	0.00	0.00	0.00
TA1	0.00	0.00	0.00	0.00

PEN – Penicillin
STR – Streptomycin
TET – Tetracycline
AMP – Ampicillin
CHL – Chloramphenicol
CXC – Cloxacillin
ERY – Erythromycin
GEN – Gentamycin
AUG – Augmentin

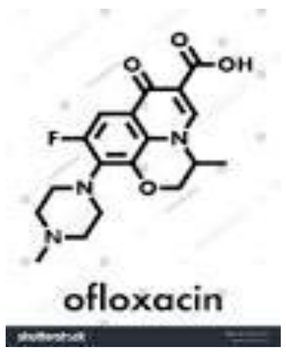


Table 1: Isolation and identification *E. coli* from slaughter sites sampled

Sample	Growth yield	Green metallic sheen	Swarming growth on EMBA	Morphologic identification
SW1	+	+	-	*Escherichia coli*
SW2	+	+	-	*Escherichia coli*
TA1	+	+	-	*Escherichia coli*

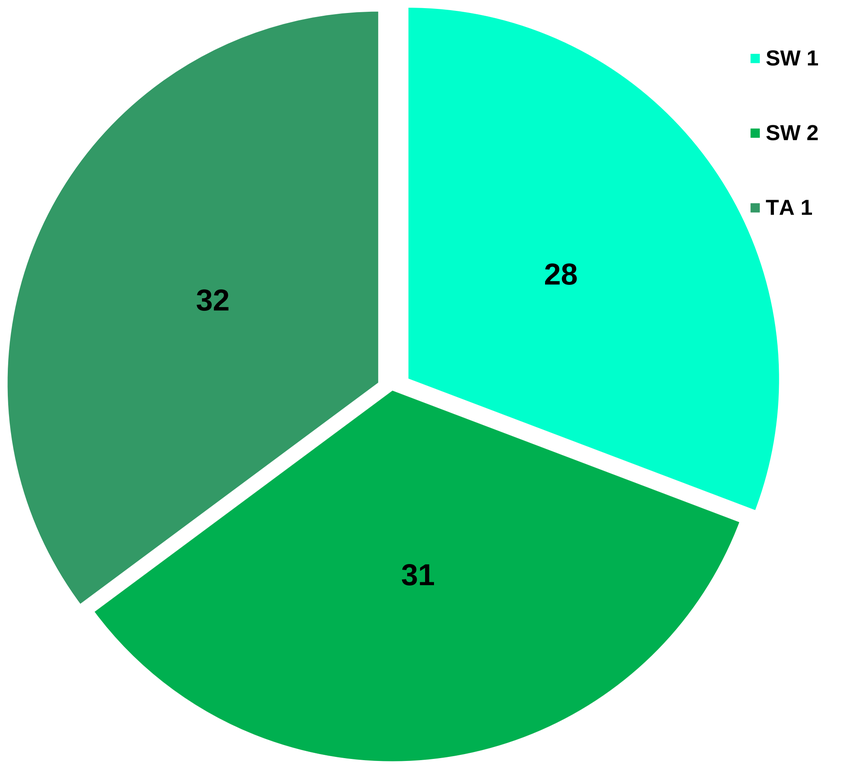


Fig. 1: Antibiogram (mm) of Ofloxacin against *Escherichia coli*

Conclusion

Escherichia coli isolated from both slaughter sites exhibited antibiotic resistance against 8 of the antibiotics tested except 1 (**ofloxacin**).
However *E. coli* from SW2 was also susceptible to Streptomycin

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