Prevalence of ESBL-Producing Escherichia coli isolates from goat and sheep in stallholder farms in Northeastern Côte d'Ivoire

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INTRODUCTION

- One of the globally spreading antimicrobial resistance problems affecting both animals and humans is the extended-spectrum beta lactamase (ESBL)-producing E. coli bacteria.
- In low- and middle-income countries such as Côte d'Ivoire, the often empirical, inappropriate use of antibiotics in livestock farming encourages the selection and dissemination of resistant strains.

OBJECTIVES

- To identify the prevalence of E. coli ESLB culture positive in the feces of sheep and goat collected farms in Satama-Sokoro, Côte d'Ivoire.
- To determine the antibiotic susceptibility and MDR patterns in the sheep and goat farms in Satama-Sokoro, Côte d'Ivoire.

METHODOLOGY

Study Design: Cross-sectional study

Study population and area: Satama sokoro, in northeastern Côte d'Ivoire

Period of study: from October, to November, 2022

Survey on antibiotic use

A structured questionnaire was administered to farmers to collect information on: (i) Recent antibiotic use (previous two weeks); (ii) Types of antibiotics administered; (iv) Target animals and treatment practices.

Sample collection and antimicrobial analysis

- Fecal samples were collected from sheep and goats farms.
- Isolation of ESBL-producing E. coli was performed on RAPID'E.coli agar supplemented with 4 mg/L ceftazidime.
- Presumptive ESBL isolates were confirmed using the double-disk synergy test

Antimicrobial susceptibility testing

Antibiotic susceptibility was assessed for major antimicrobial families, including:. β-lactams; Quinolones; Aminoglycosides; Carbapenems (imipenem)

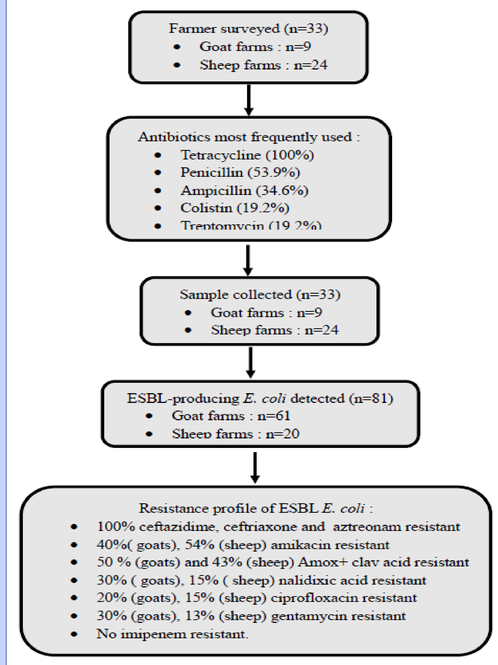
Key Measures: Prevalence of ESBL *E. coli*, susceptibility patterns and MDR

Data analyst: Descriptive Analysis using Microsoft Excel.

RESULTS

- Out of the 33 farmers surveyed, 19 (57.6%) reported having used antibiotics to treat their animals.
- Antibiotics most frequently used were tetracycline, penicillin, and ampicillin and colistin.

- 57.9% of farmers obtained antibiotics from informal markets, 26.3% from veterinary pharmacies and 15.8% through acquaintances
- 89.5% used antibiotics for curative purposes, 10.5% used them preventively.



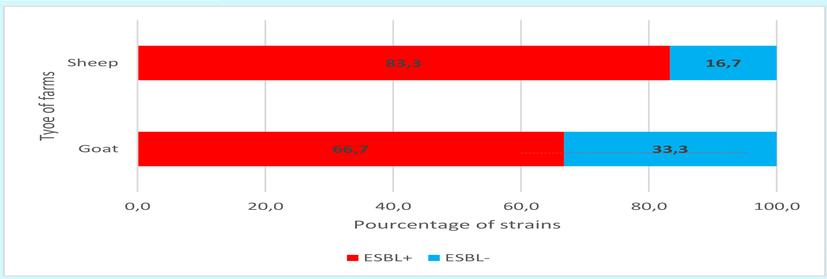


Figure 1 shows the results reveal a collective prevalence of 75.1% (81) for ESBL E. coli in goat and sheep feces sampled from the farms, Specifically, 66.7 % (6/9) of goats and 83.3% (20/24) of sheep tested positive for, ESBL E. coli

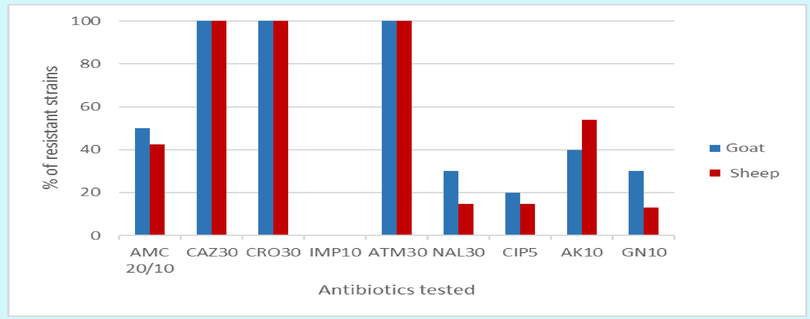


Figure 2. The resistance profiles of C3GR E. coli to certain families of antibiotics (Beta-lactam, quinolone and aminoglycoside) are shown in figure Antibiotic resistance profile of E. coli ESBL strains (Goat and Sheep)

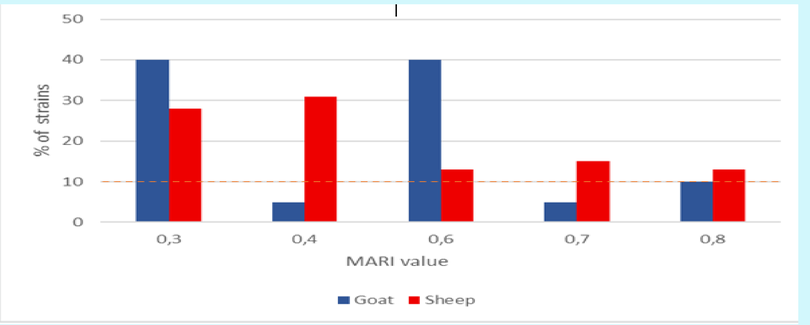


Figure 3 Presents Multiple Antibiotic Resistance Index of ESBL-producing E. coli isolates (Goat and Sheep)

DISCUSSION

The high carriage rate of ESBL-EC is likely linked to the intense use of broad-spectrum antibiotics, particularly tetracyclines and beta-lactams. Small-scale farms may act as silent reservoirs of resistant bacteria, facilitating transmission to humans through close contact, food handling, and environmental contamination. These results reinforce concerns about AMR emergence in under-surveilled livestock systems in West Africa.

CONCLUSIONS

- High prevalence of ESBL-producing E. coli in small-scale sheep and goat farms in northern Côte d'Ivoire, associated with widespread antibiotic use.
- Strategies such as antimicrobial stewardship and awareness campaigns for livestock farmers are essential to curb the spread of resistant bacteria.
- Further researcher molecular investigations are required to characterize ESBL resistance genes and assess potential transmission pathways between animal and human communities within a One Health approach

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