Isolation of multidrug-resistant *Escherichia coli* O157 from goat caecal contents and carcasses in the Somali region of Ethiopia

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Background and objectives

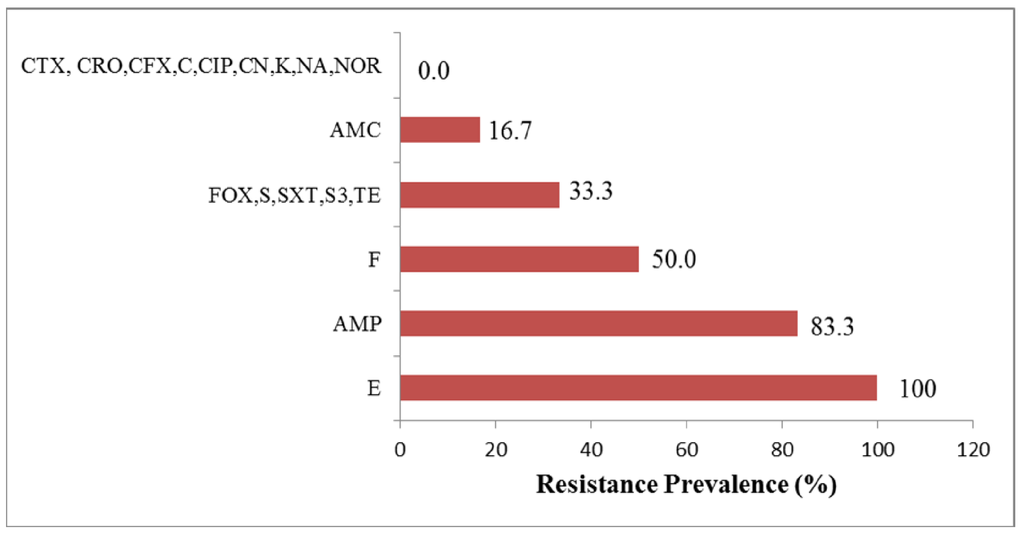
Toxigenic *E. coli* are an important cause of gastroenteritis in developing countries. In Ethiopia, gastroenteritis due to foodborne disease is a leading cause of death. The objective of this study were to:

- assess the pre-slaughter (i.e. carriage status) of *E. coli* O157 in goats originating from the Somali region of Ethiopia
- assess the hygienic practices and level of carcass contamination with *E. coli* O157 during the slaughter of goats
- determine the antimicrobial susceptibility patterns of the isolates

The vast Somali region of Ethiopia is home to 4.4 million people and 3.1 million goats

Methods

- A cross-sectional study was conducted in 2014 at a large abattoir in the Somali region of Ethiopia.
- The samples were enriched in modified tryptone broth containing novobiocin and plated onto sorbitol MacConkey agar. Isolates were confirmed using the indole test and latex agglutination.
- Antimicrobial susceptibility testing was conducted using the disc diffusion method.



AMP: ampicillin, AMC: amoxicillin-clavulanic acid, CTX: cefotaxime, CRO: ceftriaxone, FOX: cefoxitin, CFX: cefuroxime sodium, C: chloramphenicol, CIP: ciprofloxacin, E: erythromycin CN: gentamicin, K: kanamycin, NA: nalidixic acid, F: nitrofurantoin, NOR: norfloxacin, S: streptomycin, SXT: sulfamethoxazole-trimethoprim, S3: sulfonamides, TE: tetracycline

Results

- Overall, 2.5% (6/235) of samples were positive for *E. coli* O157.
- All isolates were resistant to at least two antibiotics. Two isolates (33.3%) were resistant to over five antimicrobials tested.
- Abattoir facilities and slaughter technique were conducive to carcass contamination.

Sources	Unit/sample	Number of samples tested	Serologically confirmed (%)
Caecal content	10 g	93	2 (2.1%)
Carcass swab	400 cm^2	93	3 (3.2 %)
Water	10 ml	14	1 (7.1%)
Workers' hands	2 hands	20	0
Knife	2 sides	15	0
Total		235	6 (2.5%)

Conclusions

- We isolated multidrug-resistant *E. coli* O157 from goats from a remote pastoralist system where veterinary inputs are limited. This suggests that resistance may have been transferred to livestock from humans.
- This study highlights how poor hygiene and slaughter practice can result in contaminated meat, which is especially risky in Ethiopia because of the common practice of eating raw meat.

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