

**TITLE:** RETAIL LAMB MEAT IS A SOURCE OF EXTENDED-SPECTRUM BETA-LACTAMASE-PRODUCING *Escherichia coli*

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**ABSTRACT:**

Antimicrobial resistant (AR) bacteria selected in food-producing animals due to the indiscriminate use of antimicrobials can be transmitted to humans through food chain. Extended-spectrum beta-lactamase (ESBL)-producing strains are a public health concern since they promote failure in treatment of infections because of resistance to beta-lactams. In Brazil, the market of lamb meat is on the rise, but little is known about antimicrobial resistance in this field. This study aimed to characterize the ESBL-producing *E. coli* colonizing 25 retail lamb meat sold in São José do Rio Preto – SP. The *E. coli* were selected on MacConkey agar supplemented with 4 mg/L of ceftiofur, identified by commercial biochemical essays and tested for antimicrobials susceptibility. PCR was performed in order to detect genes codifying AR or virulence, and phylogenetic group. Clonality was accessed by *Xba*I-PFGE. Twenty-six ESBL-producing *E. coli* were recovered from 17 (68.0%) service inspected meat samples, which indicates that despite of inspection for hygiene indicator microorganisms, AR genes can be successfully conveyed by this kind of food. Isolates presented further resistance to aminoglycosides, florfenicol, quinolones, tetracycline, or trimethoprim/sulfamethoxazole, all approved for use in sheep. The *bla*<sub>CTX-M-8</sub> gene was detected in 13 (50.0%) isolates, *bla*<sub>CTX-M-2</sub> in 10 (38.4%), *bla*<sub>CTX-M-15</sub> in 2 (7.7%), and *bla*<sub>CTX-M-14</sub> in 1 (3.9%). The first two are well known disseminated *bla* genes in food-producing animals in Brazil, but detection of *bla*<sub>CTX-M-14</sub> and *bla*<sub>CTX-M-15</sub> in *E. coli* from retail meat is of concern since they are often associated with human infections. Most of the isolates (76.9%) belonged to the phylogenetic groups related to commensal strains, B1 (15/26) and A (5/26), and the remaining (6/26) belonged to phylogroup D, also linked to extraintestinal infections. Virulence genes for fimbriae, polysaccharide capsule, toxin, or siderophores production, commonly associated to extraintestinal infections, were detected. This scenario illustrates potential AR pathogenic *E. coli* in retail meat, which could reach human and cause severe or hard-to-treat infections. Most of the isolates were genetically distinct by *Xba*I-PFGE, which reveals the spread of diverse strains carrying AR genes in those samples. This is the first study presenting ESBL-producing *E. coli* recovered from retail lamb meat in Brazil, and further studies are required to better characterize the AR in this field.

**Keywords:** lamb meat, *E. coli*, ESBL, *bla*<sub>CTX-M</sub>.

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