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Antibiotic Resistance in Bacteria Isolated from Goat Meat in Nashville, Tennessee

Foods of animal origin are an important vehicle for spreading antibiotic resistant bacteria. This study investigated the prevalence of antibiotic resistant *Escherichia coli*, *Salmonella spp.,* and *Staphylococcus aureus,* as well as coliform contamination levels in retail goat meat in Nashville, Tennessee. Anti-microbial susceptibility test was done using the Kirby-Bauer disk diffusion method and the results interpreted by CLSI guidelines. Total coliform count was performed according to the USA-FDA Bacteriological Analytical Manual. Retail goat meat samples (n=100) were purchased from ethnic retail stores (n=10). The prevalence of *Staphylococcus aureus* was highest (44%), followed by *Escherichia coli* (29%), and *Salmonella* spp. (20%). *E. coli* isolates (n=29) were highly resistant to tetracycline (100%), cephalothin (72%), and 48.3-51.7% were resistant to doxycycline, tetracycline, and oxytetracycline. *Salmonella* spp. resistance of 65%, 55% and 35% to oxytetracycline, penicillin and tetracycline, respectively, were observed. *Staphylococcus aureus* showed resistance to penicillin (75%), oxytetracycline (72.7%), ampicillin (61.4%), cefpodoxime (54.5%), and cephalothin (40.9%). Multidrug resistance was observed in *E. coli* (41.38%), *Salmonella spp*. (40%), and *Staphylococcus aureus* (47.72%). Multiple antibiotic resistance (MAR) index ranged between 0.25 and 0.75 among multidrug resistant isolates. Total coliform count in meat samples ranged from 0.48-7.21 log10 CFU/g. Mean coliform count among the stores ranged from 0.88-5.04 log10 CFU/g. As per International Commission on Microbiological Specification for food (ICMSF) specifications, 52% of all goat meat samples examined were unacceptable (>2000 CFU/g or >3.30$\log_{10}$ CFU/g), 21% was marginally acceptable (100-2000 CFU/g or 2-3.30$\log_{10}$), and 27% was acceptable ($\leq$100 or $\leq$2 $\log_{10}$). This study revealed the presence of multidrug resistant bacteria and high coliform contamination levels in retail goat meat, which is a menace to public health. This menace can be prevented by practicing better farm animal management, good personal hygiene and providing adequate knowledge on food safety to all meat handlers in the production chain.