

Microbial Analysis of Street Vended Ready-to-Eat Meat around Thohoyandou Area, Vhembe District, Limpopo Province, RSA

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Abstract : Background: Street-vended meats, including chicken, pork, and beef, are popular in urban areas worldwide due to their convenience and affordability. However, these meats often pose a significant risk of foodborne diseases. The high water activity, protein content, and nearly neutral pH of meat create conditions conducive to the growth of pathogenic bacteria. Street foods, particularly meats, are frequently linked to outbreaks of foodborne illnesses due to potential contamination from improper handling and preparation. This study aimed to assess the microbial quality and safety of street-vended ready-to-eat meat sold in the Thohoyandou area. Method: The study involved collecting 168 samples of street-vended meat, split evenly between chicken (n=84) and beef (n=84), from various vendors around Thohoyandou. The samples were randomly selected and transported in sterile conditions to the Department of Food Microbiology at the University of Venda for analysis. Each 10-gram sample was cultured in selective media: MSA for *Staphylococcus aureus*, EMB for *E. coli* O157, XLD agar for *Salmonella*, and Sorbitol McConkey for *Shigella*. After initial culturing, the presumptive colonies were sub-cultured for purification and identified through Gram staining and biochemical tests, including Catalase, API 20E, Klingler Iron Agar Test, and Vitek 2 system. Antibiotic susceptibility was tested using agents such as Ampicillin, Chloramphenicol, Penicillin, Neomycin, Tetracycline, Streptomycin, and Amoxicillin. Molecular characterization was performed to identify *E. coli* pathotypes using multiplex PCR. Results: Out of 168 samples tested, 32 (19%) were positive for *Staphylococcus* spp., with the highest prevalence found in cooked chicken meat. The most common *staphylococcus* species identified were *S. xylosus* (13.2%) and *S. saprophyticus* (10.5%). *E. coli* was present in 29 (19.3%) of the samples, with the highest prevalence in fried chicken. Antibiotic susceptibility testing showed that 100% of *E. coli* isolates were resistant to Ampicillin, Tetracycline, and Penicillin, but 100% were susceptible to Neomycin. *Staphylococcus* spp. isolates were also 100% resistant to Ampicillin and 100% susceptible to Neomycin. The study detected a range of virulence genes in *E. coli*, with prevalence rates from 13.33% to 86.67%. The identified pathotypes included EPEC, EHEC, ETEC, EAEC, and EIEC, with many isolates showing mixed pathotypes. Conclusion: The study highlighted that the microbial quality and safety of street-vended meats in Thohoyandou are inadequate, rendering them unsafe for consumption. The presence of pathogenic microorganisms in both beef and chicken samples indicates significant risks associated with poor personal hygiene and food preparation practices. This underscores the need for improved monitoring and stricter food safety measures to prevent foodborne diseases and ensure consumer safety.

Keywords : meat, microbial analysis, street vendors, *E. coli*

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