



The presence of *Escherichia coli* in fresh meat samples in Tirana's market

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Introduction

Food borne diseases caused mainly by *E. coli*, *Salmonella* species and *S. aureus* are the major causes of mortality and infections especially in the developing countries. These pathogens are transmitted mainly through consumption of contaminated food and the presence of these organisms in meat and raw meat products has relevant public health implications (Zafar et al., 2016). *E. coli* is considered as a good indicator of possible fecal contamination (Synge, 2000). It is commonly non-virulent but some strains have adopted pathogenic or toxigenic virulence factors that make them pathogenic to human and animals. . Some strains of *E. coli* can cause adverse effects to the gastrointestinal system, and are classified according to their virulence properties: enteropathogenic *E. coli* (EPEC), enterotoxinogenic *E. coli* (ETEC), enteroinvasive *E. coli* (EIEC), enteroaggregative *E. coli* (EAEC), verotoxinogenic *E. coli* (VTEC), diffusely adherent *E. coli* (DAEC), and necrotoxinog *E.coli* (NTEC)

Material and method

From the period of June to October 2021, a study was performed with 90 fresh meat samples equally taken from three meat brand shops considered among the biggest in Tirana, Albania's capital city. All three stores applied Good Hygiene Practices (GHP). Meat samples (equally separated) were taken from poultry beef and pork meat. Sampling was based on the ISO/TS 17728:2015 method. Within one hour, the samples were transported to the laboratory of Food Microbiology at the Food Safety and Veterinary Institute in Tirana. BS ISO 16649-2:20013 method was applied during the experimental procedure, which describes the enumeration of β -Glucuronidase positive *E.coli* by pour plate. Results were calculated based on the formula: Count per g = Count/Volume tested x dilution.

Discussion

This study shows a higher *E. coli* load in chicken and beef meat. We found that the stores from which the samples were taken, even though they declared the implementation of GHP, neglected some hygienic aspects such as the lack of medical certificates of some of the employees, non-respect of the meat expiration date. These findings do not exclude the possibility of contamination of the meat between the links of the chain before its marketing.



Fig 2 Petri dishes with isolated colonies from beef meat

AIM

The purpose of this study was the investigation of *E.coli* presence in fresh meat sample in retail level of meat shop



Figure 1. Meat sold in retail level

Results

The results obtained in the chicken meat samples indicated that three samples (10 %) had unsatisfactory results, specifically with a load of 750, 1300 and 1700 cfu/gr *E. coli*. One sample had an acceptable result of 420 cfu/gr *E. coli*, and the rest were satisfactory. In the beef meat samples, three samples (10 %) that had an unsatisfactory result were observed, specifically with a load of 700, 780 and 810 cfu/gr *E. coli*. Three samples had acceptable results of 140, 370 and 480 cfu/gr (10 %) *E. coli* and the rest were satisfactory. In the pork meat samples, it was observed that three samples were within an acceptable limit of 120, 140 and 200 cfu/gr (10 %) *E. coli*, and the rest were satisfactory. This study shows a higher *E. coli* load in chicken and beef meat.

Conclusion

This study shows a higher *E. coli* load in chicken and beef meat. This research highlights the necessity for systematic microbiological meat evaluation and hygienic practices to ensure the quality of meat products.



Fig 3 Counting colonies in petri dishes

Selected References

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- 2.ISO/TS 17728:2015 method
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