The prevalence of *Yersinia enterocolitica* and antibiotic resistance patterns in chicken and turkey meat offered in Najafabad, Isfahan

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Extended Abstract

Introduction: Foodborne diseases remain a significant public health concern worldwide, with pathogens such as *Yersinia enterocolitica* being major contributors to gastroenteritis. This bacterium, commonly transmitted through contaminated food, can cause severe gastrointestinal symptoms, particularly in children and immunocompromised individuals. Poultry, including chicken and turkey, is often identified as a source of *Y. enterocolitica* contamination. The rapid consumption and increased use of poultry meat have raised concerns regarding the prevalence of foodborne pathogens and the growing resistance to antibiotics used for treatment. This study aims to determine the prevalence of *Y. enterocolitica* in chicken and turkey meat offered in Najafabad County, Isfahan, Iran and evaluate the antibiotic resistance patterns of isolated strains.

Methods: In this descriptive cross-sectional study, a total of 100 samples, including 50 samples each of chicken and turkey meat, were randomly collected from meat supply centers in Najafabad, Isfahan, Iran. The samples were transferred under sterile conditions to the Food Safety Laboratory. Isolation of *Y. enterocolitica* was performed using selective culturing techniques with PSB and CIN agar media. The antibiotic resistance profile of the isolated *Y. enterocolitica* strains was determined using the disk diffusion method against several antibiotics, including ampicillin, azithromycin, ciprofloxacin, tetracycline, cephalothin, nalidixic acid, gentamicin, amoxicillin, chloramphenicol, and kanamycin. Statistical analysis of the data was conducted using SPSS, with one-way ANOVA applied to assess the significance of differences between the prevalence in chicken and turkey meat.

Results: The study found that 22% of the 100 meat samples (50 chicken and 50 turkey) were contaminated with *Y. enterocolitica*. Of these, 24% of chicken meat and 20% of turkey meat samples tested positive for the bacterium. The prevalence of *Y. enterocolitica* contamination was statistically significant between the two types of meat (P < 0.05). Antibiotic resistance testing revealed the highest resistance to ampicillin (20%), cephalothin (18%), and amoxicillin (14%), while the lowest resistance was observed against ciprofloxacin, gentamicin, and chloramphenicol, with no resistance detected. Statistical analysis showed no significant relationship between the highest and lowest antibiotic resistance levels.

Discussion: The findings of this study underscore the persistent problem of *Y. enterocolitica* contamination in poultry, especially in chicken and turkey meats. The prevalence observed in this research is consistent with previous studies that reported similar contamination rates in poultry products, though variations in contamination levels have been noted across different regions. The high prevalence of *Y. enterocolitica* in both chicken and turkey emphasizes the importance of proper handling, storage, and cooking of poultry to mitigate foodborne illnesses. The observed antibiotic resistance, particularly against commonly used antibiotics like ampicillin and amoxicillin, is concerning. It reflects a global issue of increasing antimicrobial resistance, which complicates the treatment of infections caused by *Y. enterocolitica*. The low resistance rates observed for ciprofloxacin, gentamicin, and chloramphenicol suggest these antibiotics may remain effective treatment options. However, their use should be monitored and restricted to avoid further resistance development. The study's results align with global concerns regarding the overuse and misuse of antibiotics in both human medicine and agriculture.

Conclusion: This study reveals a significant presence of *Y. enterocolitica* in both chicken and turkey meats in Najafabad County, with notable antibiotic resistance observed in several strains. The results emphasize the need for improved food safety practices, including proper meat handling, hygiene, and cooking standards. Additionally, the high levels of antibiotic resistance in the isolates highlight the necessity of restricting antibiotic use in treating foodborne infections to preserve the efficacy of available treatments. Public health strategies should be enhanced to mitigate the risk of *Y. enterocolitica* contamination in poultry products, and further research is recommended to explore more effective control measures and monitor the evolving antibiotic resistance patterns in foodborne pathogens.

Keywords: Chicken meat, Turkey meat, *Yersinia enterocolitica*, Gastroenteritis