

Prepared Chicken in Open Market: Meat or Poison

Osuji Malachy Ikeokwu^{1*}, Eneogwe Ezinwa² and Uko Favour Kingsley³

¹*Department of Microbiology, Faculty of Natural and Applied Sciences, Spiritan University, Nneochi Abia State, Nigeria*

²*Department of Health Information Management, Imo State College of Health Technology and Management Sciences Amaigbo, Imo State, Nigeria*

³*Department of Microbiology, Faculty of Natural and Applied Sciences, Legacy University Okija Anambra State, Nigeria*

***Corresponding Author:** Osuji Malachy Ikeokwu, Department of Microbiology, Faculty of Natural and Applied Sciences, Spiritan University, Nneochi Abia State, Nigeria.

Received: October 07, 2026; **Published:** October 30, 2026

Abstract

Chicken meat is a major source of animal protein but may serve as a vehicle for the transmission of foodborne pathogens when handled under poor hygienic conditions. This study evaluated the bacteriological quality of retail chicken meat sold in selected markets and identified possible contamination risk factors associated with processing, transportation, and sale. A total of sixteen chicken samples comprising portions obtained from weighing and cutting tables were randomly collected under aseptic conditions and transported to the Laboratory, for analysis within one hour of purchase. Standard microbiological procedures were employed, including sterilization of laboratory materials, ten-fold serial dilution, and spread plate inoculation on Nutrient Agar, MacConkey Agar, and *Salmonella-Shigella* (SS) Agar. Inoculated plates were incubated at 37°C for 24 hours for bacterial enumeration and isolation. The bacteriological analysis of gizzard, intestine, and head samples revealed varying levels of microbial contamination across sampling sites and meat portions. However, all samples exhibited high bacterial contamination, indicating poor microbiological quality. Observational findings identified several risk factors contributing to contamination, including inadequate hand hygiene among handlers, use of unsterilized equipment and surfaces, unsanitary transportation practices, exposure of meat to environmental contaminants, and infestation by flies at points of sale. The study concludes that hygiene and sanitation practices among meat vendors and handlers were inadequate and pose significant public health risks. There is an urgent need for improved hygiene education, enforcement of sanitary meat handling practices, and implementation of food safety measures throughout the poultry supply chain. Further studies involving molecular characterization and pathogenicity assessment of isolated organisms are recommended to better determine the health risks associated with contaminated poultry meat and to support the development of effective control strategies.

Keywords: *Chicken Meat; Bacteriological Quality; Microbial Contamination; Food Safety; Hygiene Practices; Poultry Meat; Foodborne Pathogens; Public Health*

Introduction

Food is regarded as the primary source of energy for both humans and animals. Most foods have live bacteria unless they are cooked or sterilized. It acts as a significant channel for the transfer of harmful organisms to consumers. The presence of harmful organisms in food products can significantly affect their safety, pose health risks to consumers, and reduce their shelf life. This can lead to foodborne illnesses, poisoning, and financial losses due to spoilage. Meat can become contaminated with various pathogens if it is not handled properly [1]. In

the 1980s, the poultry industry began to thrive as a successful agribusiness in Bangladesh, and significant growth has taken place in this sector over the past few decades [2,3].

Literature Review

Raw chicken contains pathogens at levels that can lead to foodborne illnesses, which aids in assessing the risk of consumer exposure and the impact of these diseases. This study identifies particular bacteria that are frequently associated with outbreaks, such as *E. coli*, *Salmonella*, *Campylobacter*, and *Staphylococcus* are pathogens that inform clinical monitoring and responses to outbreaks. It identified important contamination points throughout production, slaughter, transportation, and retail, allowing for targeted interventions (such as cold chain management, sanitation, and HACCP procedures) to effectively reduce risk. Contemporary poultry processing needs a high production rate to satisfy consumer demand, as poultry meat is susceptible to contamination by microorganisms due to various factors, including its nutrient content, high water activity, and neutral pH levels [4]. Healthy broilers that are sent for slaughter processing may carry a significant amount of microorganisms, including foodborne pathogens like *Salmonella* and *Campylobacter*. These pathogens can spread throughout the processing facility.

They are present on the surfaces of feet, feathers, skin, and in the intestines. A significant number of these organisms will be eliminated during processing; however, additional contamination may happen at any point in the processing operation. The process of transforming a live, healthy bird into a safe poultry product creates several chances for microorganisms to settle on the surface of the carcasses. Throughout the different processing steps, there are chances for the carcass to become contaminated. This can occur due to environmental factors, the processes within the facility, contact with knives and equipment, the hands of workers, and cross-contamination between carcasses. Certain processing operations can lead to an increase in contaminating microorganisms or promote their growth

Methodology

Eight samples of already prepared weighed chicken were randomly obtained each from different tables called weight and cut (16 samples in all). The samples were collected into sterile nylon bag. Samples purchased was freshly prepared on the day of analysis and was immediately transferred under aseptic condition to the Department of Microbiology laboratory, Legacy University for microbiological analysis within one hour of purchase.

Sterilization of materials

All the glass wares used for the experiment was sterilized using the laboratory hot air oven at a temperature of 160°C for 1 hour, while media was autoclaved at a temperature of 121°C for 15 minutes at 15 psi. The wire loop was sterilized over a Bunsen flame until it is red-hot, while the glass spreader was sterilized by dipping into 70% ethanol and passing over a Bunsen flame.

Alcohol (70%) was used to disinfect working benches in the laboratory and media preparation room.

Three media were used (Nutrient agar, SS agar and MacConkey agar). Spread plate method was used after 10-fold serial dilution. Inoculated plates were incubated for 24 hrs at 37°C.

Results

The bacteriological assay conducted using portions of the meat (Gizzard, intestine and head) from the various sites showed varying trends across sites and meat. The general phenomenon observed across all samples however was high microbial contamination.



Figure 1: Samples, sterile lab equipment.

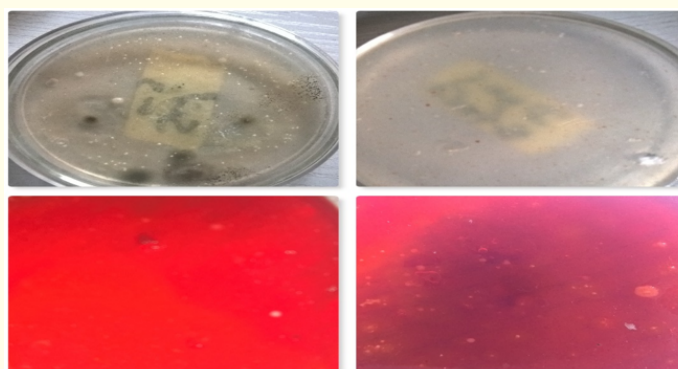


Figure 2: Plates after incubation.

Discussion and Conclusion

Field observational studies, along with laboratory analysis results, identify several risk factors related to meat contamination in markets, including the lack of hand washing and the use of unsterilized surfaces. Another consideration is how the meat is transported from the location where the animals are slaughtered to the place where it is sold. The existing method of using outdated and unclean vehicles, such as those with open carriages, exposes the meat to a polluted environment and increases the risk of contact with flies and other insects, leading to greater contamination. These vehicles are not adequately cleaned and sanitized before transporting the meat, which increases the risk of contamination from contact with contaminated surfaces of the vehicles [5].

The third factor is the existing conditions at the point of sale, which were observed to be unsuitable and not conducive to safety and health. The meat is left out in the open, making it vulnerable to flies, which are a significant source of contamination. The handlers are responsible for the same mistake of directly handling items without adequate hand washing and sanitation. In summary, the assessment of the bacteriological quality of chicken meat and contact surfaces in the two markets has shown a concerning lack of hygiene and sanitation practices among meat vendors and handlers. The results have emphasized the immediate requirement for thorough education and awareness initiatives to enhance meat handling practices among those working in the meat industry. This will help safeguard public health and ensure the safety of meat products available for sale.

Recommendation

Based on the results of this study, it is suggested that additional research be conducted to clarify the pathogenicity of the isolated strains of *Escherichia coli*, *Enterococci* spp., and *Staphylococcus* spp. Using molecular techniques or comprehensive biochemical analysis to determine the risks linked to eating foods contaminated with these organisms. Efforts should be made to assess how different malpractices at abattoirs and sales points directly affect microbial quality. This assessment will help create effective systems to manage these issues and enhance the microbial quality of meat in the market. Poultry meat can carry bacteria and is significant in the spread of diseases. This study aims to offer guidelines for good hygiene practices in the production and consumption of chicken meat to help prevent disease. The findings of this study may assist in the effective planning and execution of a food safety system aimed at controlling and preventing foodborne pathogenic bacteria. Contamination of chicken meat suggests poor microbiological quality at retail chicken outlets, which can be addressed by implementing measures to prevent contamination during processing and distribution.

Bibliography

1. Mead PS., *et al.* "Food-related illness and death in the United States". *Emerging Infectious Diseases* 5.5 (1999): 607-625.
2. Akbar A and Anal KA. "Food safety concerns and food-borne pathogens: *Salmonella*, *Escherichia coli* and *Campylobacter*". *FUUAST Journal of Biology* 1.1 (2011): 5-17.
3. Akbar A and Anal KA. "Prevalence and antibiogram study of *Salmonella* and *Staphylococcus aureus* in poultry meat". *Asian Pacific Journal of Tropical Biomedicine* 3.2 (2013): 163-168.
4. Lee GY., *et al.* "Prevalence and classification of pathogenic *Escherichia coli* isolated from fresh beef, poultry, and pork in Korea". *International Journal of Food Microbiology* 134.3 (2009): 196-200.
5. Alam ST., *et al.* "Antibiogram of preprocessed raw chicken meat from different supershops of Dhaka city, Bangladesh". *Journal of Emerging Global Health* 2.01&02 (2024): 45-52.

Volume 22 Issue 11 November 2026

©All rights reserved by Osuji Malachy Ikeokwu., *et al.*