DOI: https://doi.org/10.19261/medmol25

PP5.45

Bilateral cooperation Romania-Republic of Moldova for food safety: cross-border approach to microbiological risks in fresh meat traded

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Introduction. Food safety is a major public health concern, particularly in the context of the consumption of poultry meat, which is prone to contamination by zoonotic bacteria. Microbial contamination reflects hygiene conditions along the food chain as well as the misuse of antibiotics in animal production.

The objective of the study was to investigate the microbiological profile and antimicrobial resistance of bacteria isolated from refrigerated poultry meat and potential risks for public health.

Research material and methods. The experimental material was collected from commercial markets from c. Chisinau, Republic of Moldova. For bacteriological investigation were used the selective and differential culture media. For morphological indicators of bacterial colonials were notified size, color, mucoid/non-mucoid appearance. Bacterial identification was performed using MALDI-TOF mass spectrometry (Bruker Biotyper).

Results. A wide diversity of Gram-negative bacteria was isolated, with *Enterobacteriaceae* predominating. *Escherichia coli* and *Proteus mirabilis* were the most frequent isolates, followed by *Klebsiella spp., Citrobacter spp*., and *Morganella morganii*. The results highlighted a broad spectrum of colony appearances, reflecting a complex microflora which contaminated the samples. The detection of ESBL producing *Escherichia coli* and *Klebsiella pneumoniae/oxytoca* is consistent with global reports of poultry as a major ESBL reservoir. The isolation of *Escherichia coli* in intense blue colonies on ESBL agar underscores its dominance as both a commensal and a resistant pathogen. Another important point is antibiogram results showed frequent resistance to third-generation cephalosporins (ceftazidime), aztreonam, fluoroquinolones, and tetracyclines. Resistance to fluoroquinolones such as enrofloxacin is especially worrisome, since these antibiotics are still widely used in veterinary medicine and represent critical antimicrobials in human therapy. Thus, our findings from Moldova fit within a broader global pattern of poultry as a reservoir and amplifier of resistance genes.

Conclusions. This study demonstrated that refrigerated poultry meat sold in commercial markets from c. Chisinau, Republic of Moldova, harbors a diverse microbiota, dominated by *Escherichia coli, Proteus mirabilis, Klebsiella spp.*, and *Citrobacter spp.*, alongside opportunistic non-fermenters such as *Pseudomonas aeruginosa* and *Acinetobacter pittii*. The repeated detection of ESBL-producing Enterobacteriaceae, particularly *Escherichia coli* and *Klebsiella pneumoniae*, highlights poultry meat as an important reservoir of antimicrobial resistance genes with zoonotic potential.

Keywords: poultry meat; microorganisms; antimicrobial resistance; bacterial colonies.

Acknowledgments: The research was funded within the project PN-IV-P8-8.3-ROMD-2023-0053, entitled "Cross-border collaboration for safer food: advanced research on infectious pathogens in fresh marketed meat", contract no. 26 ROMD/20.05.2024.