



**FOOD SAFETY IN ANIMAL-DERIVED PRODUCTS: THE ROLE OF GOOD
PRODUCTION PRACTICES AND CONTAMINATION CONTROL IN PUBLIC HEALTH
PROTECTION**

**SEGURANÇA ALIMENTAR EM PRODUTOS DE ORIGEM ANIMAL: O PAPEL DAS
BOAS PRÁTICAS DE PRODUÇÃO E DO CONTROLE DE CONTAMINAÇÃO NA
PROTEÇÃO DA SAÚDE PÚBLICA**

**SEGURIDAD ALIMENTARIA EN PRODUCTOS DE ORIGEN ANIMAL: EL PAPEL DE
LAS BUENAS PRÁCTICAS DE PRODUCCIÓN Y EL CONTROL DE LA
CONTAMINACIÓN EN LA PROTECCIÓN DE LA SALUD PÚBLICA**



10.56238/2ndCongressSevenMultidisciplinaryStudies-044

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ABSTRACT

Food safety in animal-derived products remains a constant challenge for public health, especially considering the risks of contamination throughout the production chain. This study analyzes the importance of Good Production Practices (GPP) and Good Manufacturing Practices (GMP) as fundamental strategies for the prevention of foodborne diseases. This is a literature review based on national and international scientific studies, legislation, and technical documents published between 2010 and 2024. Meat, milk, and eggs are highlighted as products with high susceptibility to biological, chemical, and physical contamination, particularly by microorganisms such as *Salmonella* spp., *Escherichia coli*, and *Listeria monocytogenes*. The essential role of the veterinarian in sanitary inspection and in the implementation of hygienic-sanitary measures is also emphasized, aiming to ensure food safety and protect public health.

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Keywords: Microbiological Contamination. Sanitary Surveillance. Operational Hygiene.

RESUMO

A segurança alimentar em produtos de origem animal continua sendo um desafio constante para a saúde pública, especialmente considerando os riscos de contaminação ao longo da cadeia produtiva. Este estudo analisa a importância das Boas Práticas de Produção (BPP) e das Boas Práticas de Fabricação (BPF) como estratégias fundamentais para a prevenção de doenças transmitidas por alimentos. Trata-se de uma revisão bibliográfica baseada em estudos científicos nacionais e internacionais, legislação e documentos técnicos publicados entre 2010 e 2024. Carne, leite e ovos são destacados como produtos com alta suscetibilidade à contaminação biológica, química e física, particularmente por microrganismos como *Salmonella* spp., *Escherichia coli* e *Listeria monocytogenes*. O papel essencial do médico veterinário na inspeção sanitária e na implementação de medidas higiênico-sanitárias também é enfatizado, visando garantir a segurança alimentar e proteger a saúde pública.

Palavras-chave: Contaminação Microbiológica. Vigilância Sanitária. Higiene Operacional.

RESUMEN

La inocuidad alimentaria de los productos de origen animal sigue siendo un reto constante para la salud pública, especialmente considerando los riesgos de contaminación a lo largo de la cadena de producción. Este estudio analiza la importancia de las Buenas Prácticas de Producción (BPP) y las Buenas Prácticas de Manufactura (BPM) como estrategias fundamentales para la prevención de enfermedades transmitidas por los alimentos. Se trata de una revisión bibliográfica basada en estudios científicos, legislación y documentos técnicos nacionales e internacionales publicados entre 2010 y 2024. La carne, la leche y los huevos se destacan como productos con alta susceptibilidad a la contaminación biológica, química y física, en particular por microorganismos como *Salmonella* spp., *Escherichia coli* y *Listeria monocytogenes*. También se destaca el papel esencial del veterinario en la inspección sanitaria y en la implementación de medidas higiénico-sanitarias, con el objetivo de garantizar la inocuidad alimentaria y proteger la salud pública.

Palabras clave: Contaminación Microbiológica. Vigilancia Sanitaria. Higiene Operacional.



1 INTRODUCTION

Animal-derived products play a fundamental role in human nutrition, as they are important sources of proteins, vitamins, and minerals. However, these foods may also act as vehicles for pathogenic microorganisms, representing a significant risk to public health when produced under inadequate hygienic and sanitary conditions. Foodborne diseases (FBDs) constitute a global problem, affecting millions of people annually. It is estimated that approximately 600 million people fall ill each year due to the consumption of contaminated food (WHO, 2015).

In this context, the implementation of Good Production Practices (GPP) and Good Manufacturing Practices (GMP) represents an essential strategy to ensure food safety and reduce the risks of microbiological, physical, and chemical contamination (FAO, 2020). Veterinarians play a key role in the inspection and sanitary control of these products, contributing directly to the protection of public health (Brazil, 2017).

Therefore, this study aims to analyze the importance of good production practices and contamination control in animal-derived products as a strategy for the prevention of foodborne diseases.

2 METHODOLOGY

This study consists of a literature review based on articles published in national and international scientific journals, legislation, technical documents, and official guidelines. The databases used included PubMed, SciELO, Google Scholar, and CAPES Periodicals. Studies published between 2010 and 2024 were included, using the following descriptors: “food safety,” “animal-derived products,” “good manufacturing practices,” and “food contamination”.

Inclusion criteria comprised full scientific articles, official guidelines, theses, dissertations, and legislation related to good production practices and contamination control in animal-derived products. Studies without peer review and materials lacking scientific foundation were excluded.

3 DEVELOPMENT

Animal-derived products such as meat, milk, and eggs present intrinsic characteristics that favor microbial growth, including high water activity, near-neutral pH, and an abundance of nutrients, making them highly susceptible to spoilage and microbiological contamination (Forsythe, 2013).



Contamination may occur at different stages of the production chain, including primary production, transportation, slaughter, processing, and storage, and can be classified as biological, chemical, or physical. Biological contamination is considered the most relevant and is mainly caused by bacteria such as *Salmonella* spp., *Escherichia coli*, and *Listeria monocytogenes*, which are frequently associated with foodborne disease outbreaks worldwide (Franco; Landgraf, 2023).

Foodborne diseases affect approximately 600 million people annually, demonstrating the relevance of food safety as a global public health issue (WHO, 2015). During primary production, factors such as inadequate management practices, failures in sanitary conditions, and the presence of carrier animals significantly contribute to food contamination (FAO, 2020).

During the slaughter process, contamination occurs mainly during evisceration, when contact between gastrointestinal contents and the carcass favors the dissemination of pathogenic microorganisms. In addition, improper handling by workers and insufficient sanitation of surfaces and equipment significantly contribute to cross-contamination (Forsythe, 2013).

According to Franco and Landgraf (2023), inadequate sanitation represents one of the main risk factors for contamination of animal-derived foods. Another important factor is improper storage, especially when temperature control is insufficient, allowing the proliferation of pathogenic microorganisms (Forsythe, 2013).

In this context, Good Manufacturing Practices (GMP) consist of a set of procedures aimed at ensuring the hygienic and sanitary quality of food. These practices include personal hygiene control, sanitation of facilities and equipment, pest control, and temperature control, and are fundamental to reducing contamination risks (Brazil, 2017).

In addition to GMP, the Standard Operating Procedures for Hygiene (SSOP) represent an important tool to ensure the hygiene of establishments and prevent food contamination (FAO, 2020).

In Brazil, the Regulation of Industrial and Sanitary Inspection of Products of Animal Origin (RIISPOA) establishes strict standards to ensure the sanitary safety of these products. In this context, the veterinarian plays a fundamental role in sanitary inspection, being responsible for ante-mortem and post-mortem inspection and for controlling the hygienic and sanitary conditions of establishments (Brazil, 2017).

Furthermore, the veterinarian's performance directly contributes to the prevention of foodborne diseases and the protection of public health (WHO, 2015). The implementation of



these measures is essential to ensure food safety and reduce risks to human health (FAO, 2020).

4 CONCLUSION

Animal-derived products represent important sources of nutrients; however, they may also pose risks to public health. In this context, the veterinarian plays a fundamental role throughout the production chain. Therefore, the implementation of good production practices is essential to ensure food safety, as these practices directly contribute to the prevention of foodborne diseases and to the protection of public health.

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