

# A Phytobiotic Stability Effects on Chicken Health Care

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## Introduction

In recent years, there has been a growing concern regarding the use of antibiotics as growth promoters in poultry production due to the emergence of antibiotic resistance. As a result, alternative strategies are being explored to enhance broiler chicken health and meat safety. One such strategy is the use of phytobiotics, which are natural plant-derived compounds with potential antimicrobial and immunomodulatory properties. This article aims to examine the impact of a phytobiotic mixture on broiler chicken health and meat safety. It will explore the potential benefits, mechanisms of action, and current research findings related to the use of phytobiotics in broiler production. The demand for poultry meat has significantly increased over the past few decades, leading to intensive broiler production systems. However, the use of antibiotics as growth promoters in poultry feed has raised concerns due to their potential contribution to antibiotic resistance in both animals and humans. Consequently, there is a growing need to explore alternative strategies that promote broiler chicken health and ensure meat safety. Phytobiotics, which are derived from various plants, have emerged as a promising alternative to antibiotics in promoting poultry health. These compounds possess a range of bioactive properties, including antimicrobial, antioxidant, and immunomodulatory effects. This article aims to explore the impact of a phytobiotic mixture on broiler chicken health and meat safety.

Phytobiotics have gained attention in the poultry industry due to their potential benefits. Several studies have reported improved growth performance, feed efficiency, and nutrient utilization in broiler chickens supplemented with phytobiotic compounds. These effects are attributed to the ability of phytobiotics to enhance digestive enzyme secretion, improve gut health, modulate the gut microbiota, and reduce the incidence of gastrointestinal disorders. Furthermore, phytobiotics have been found to possess antimicrobial properties against common poultry pathogens, reducing the need for antibiotics and potentially improving meat safety.

## Description

The beneficial effects of phytobiotics on broiler chicken health and meat safety can be attributed to their diverse mechanisms of action. Firstly, phytobiotics contain bioactive compounds such as essential oils, tannins, flavonoids, and saponins, which possess antimicrobial properties. These compounds can inhibit the growth of pathogenic bacteria and fungi, thereby reducing the risk of microbial contamination in the chicken's gastrointestinal tract and meat. Secondly, phytobiotics exert immunomodulatory effects by enhancing the activity of immune cells, promoting antibody production, and modulating pro-inflammatory cytokines. This immune-enhancing action

improves the resistance of broiler chickens against infectious diseases, leading to improved overall health. Lastly, phytobiotics can act as antioxidants, protecting cells and tissues from oxidative damage, which can occur during periods of stress or disease challenge.

Numerous studies have investigated the impact of phytobiotics on broiler chicken health and meat safety. For instance, research has shown that the inclusion of phytobiotics in broiler diets can improve growth performance, feed conversion ratio, and carcass quality. Phytobiotics have also been found to enhance the gut morphology, increase the villus height-to-crypt depth ratio, and improve nutrient absorption. Additionally, studies have reported reduced bacterial colonization, including *Salmonella* and *Campylobacter*, in the gastrointestinal tract of broiler chickens supplemented with phytobiotics. These findings suggest that phytobiotics can play a significant role in reducing the risk of foodborne pathogens in broiler meat.

The use of phytobiotics as an alternative to antibiotics in broiler chicken production shows promising results in improving broiler. The poultry industry faces increasing pressure to meet the growing demand for safe and high-quality poultry products while reducing the use of antibiotics in animal production. In recent years, the concept of phytobiotics has gained attention as a potential alternative to antibiotics in enhancing broiler chicken health and ensuring meat safety. Phytobiotics are natural compounds derived from plants that have shown promising antimicrobial, anti-inflammatory and immunomodulatory properties. This review explores the impact of a phytobiotic mixture on broiler chicken health and meat safety, considering both the physiological effects on the birds and the implications for consumer health.

Global poultry industry plays a vital role in providing a significant portion of the world's animal protein supply. However, the intensification of broiler chicken production has led to concerns regarding the use of antibiotics as growth promoters and their potential contribution to antibiotic resistance in both animals and humans. Consequently, there is a pressing need to find effective alternatives that can promote broiler health and ensure the safety of poultry meat without compromising productivity. Phytobiotics, also known as plant-derived feed additives, have emerged as a viable alternative to antibiotics due to their natural origin and multifaceted bioactive properties. These compounds include essential oils, extracts, and bioactive compounds derived from various plant sources. This review aims to shed light on the impact of phytobiotics on broiler chicken health and meat safety, focusing on their effects on bird performance, immune function, gut health, and meat quality.

Studies investigating the impact of phytobiotics on broiler performance have reported mixed results. Some trials have shown improvements in growth rates, feed efficiency, and carcass yield with the use of phytobiotic supplementation, while others have not observed significant effects. The variability in results can be attributed to factors such as the composition of the phytobiotic mixture, dosage, bird age, and environmental conditions. Understanding the specific mechanisms underlying these effects will be crucial in optimizing phytobiotic use for maximum performance benefits.

A robust immune system is vital for broiler chickens to withstand various environmental stressors and diseases. Phytobiotics have demonstrated immunomodulatory properties by enhancing the production of pro-inflammatory cytokines, stimulating immune cell proliferation, and promoting antibody responses. These immune-stimulating effects can lead to improved disease resistance and reduced reliance on antibiotics, making phytobiotics an attractive option for sustainable poultry production. The gastrointestinal tract of broiler chickens plays a crucial role in nutrient absorption, digestion, and protection against pathogens. Antibiotic growth promoters have been traditionally used to manipulate gut microbiota and improve nutrient utilization.

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Similarly, phytobiotics have shown potential in modulating gut microbiota composition, increasing the abundance of beneficial bacteria, and suppressing harmful pathogens. This positive influence on gut health can lead to better nutrient absorption, reduced intestinal inflammation, and improved overall bird health.

One of the most significant concerns in the poultry industry is the transmission of foodborne pathogens to consumers through contaminated meat products. Phytobiotics' antimicrobial properties have been extensively studied, and they have shown inhibitory effects against a wide range of pathogenic bacteria, including *Salmonella* spp., *E. coli*, and *Campylobacter* spp. Incorporating phytobiotics into broiler diets may reduce pathogen colonization in the intestines, subsequently lowering the risk of pathogen transmission to the meat during processing.

In addition to the positive effects on bird health and meat safety, phytobiotics have also been associated with improvements in meat quality attributes. Studies have reported reduced lipid oxidation, enhanced color stability, and improved sensory characteristics in meat from broilers fed with phytobiotic supplementation. These findings suggest that phytobiotics have the potential to enhance meat quality, thus increasing consumer satisfaction. The use of phytobiotics as an alternative to antibiotics in broiler chicken production holds promise for improving bird health and ensuring meat safety. Phytobiotics have demonstrated beneficial effects on broiler performance, immune function, gut health, antimicrobial activity, and meat quality. However, further research is needed to optimize the composition, dosage, and delivery methods of phytobiotics to maximize their efficacy and commercial application [1-5].

## Conclusion

As the poultry industry continues to navigate the challenges of antibiotic resistance and consumer demands for safe and sustainable food, phytobiotics offer a viable solution that can contribute to the overall health and welfare of broiler chickens while meeting the stringent requirements for meat safety and quality.

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Not applicable.

## Conflict of Interest

There is no conflict of interest by author.

## References

1. Chodkowska, Karolina A., Hubert Iwiński, Karolina Wódz, Tomasz Nowak and Henryk Róžański. "In vitro assessment of antimicrobial activity of phytobiotics composition towards of Avian Pathogenic *Escherichia coli* (APEC) and other *E. coli* Strains Isolated from Broiler Chickens." *Antibiotics* 11 (2022): 1818.
2. Bartkiene, Elena, Modestas Ruzauskas, Vadims Bartkevics and Iveta Pugajeva, et al. "Study of the antibiotic residues in poultry meat in some of the EU countries and selection of the best compositions of lactic acid bacteria and essential oils against *S. enterica*." *Poul Sci* 99 (2020): 4065-4076.
3. Aljumaah, Mashaal R., Gamaleldin M. Suliman, Abdulaziz A. Abdullatif and Alaeldein M. Abudabos. "Effects of phytobiotic feed additives on growth traits, blood biochemistry, and meat characteristics of broiler chickens exposed to *Salmonella typhimurium*." *Poul Sci* 99 (2020): 5744-5751.
4. Pateiro, Mirian, Paulo ES Munekata, Anderson S. Sant'Ana and Rubén Domínguez, et al. "Application of essential oils as antimicrobial agents against spoilage and pathogenic microorganisms in meat products." *Int J Food Microbiol* 337 (2021): 108966.
5. Salminen, A., M. Lehtonen, T. Suuronen and K. Kaarniranta, et al. "Terpenoids: natural inhibitors of NF- $\kappa$ B signaling with anti-inflammatory and anticancer potential." *Cell Mol Life Sci* 65 (2008): 2979-2999.

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