



From Aroma to Agriculture: Essential Oils as Game Changers in Poultry Industry

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Abstract:

This review examines using essential oils (EOs) as an alternative approach in poultry farming to clarify their beneficial roles. Eos are characterized by diverse bioactive compounds such as terpenes and phenolics, known as powerful alternatives due to their strong antimicrobial, antioxidant, and growth-stimulating properties. Their role in modulating gut health, boosting disease resistance, and potentially improving product quality was discussed herein. Combining these natural substances into poultry farming can address the growing environmental concerns. In this overview, we focus on EOs as a novel and progressive option in poultry farming, aiming to harmonize environmental sustainability with agricultural efficiency.

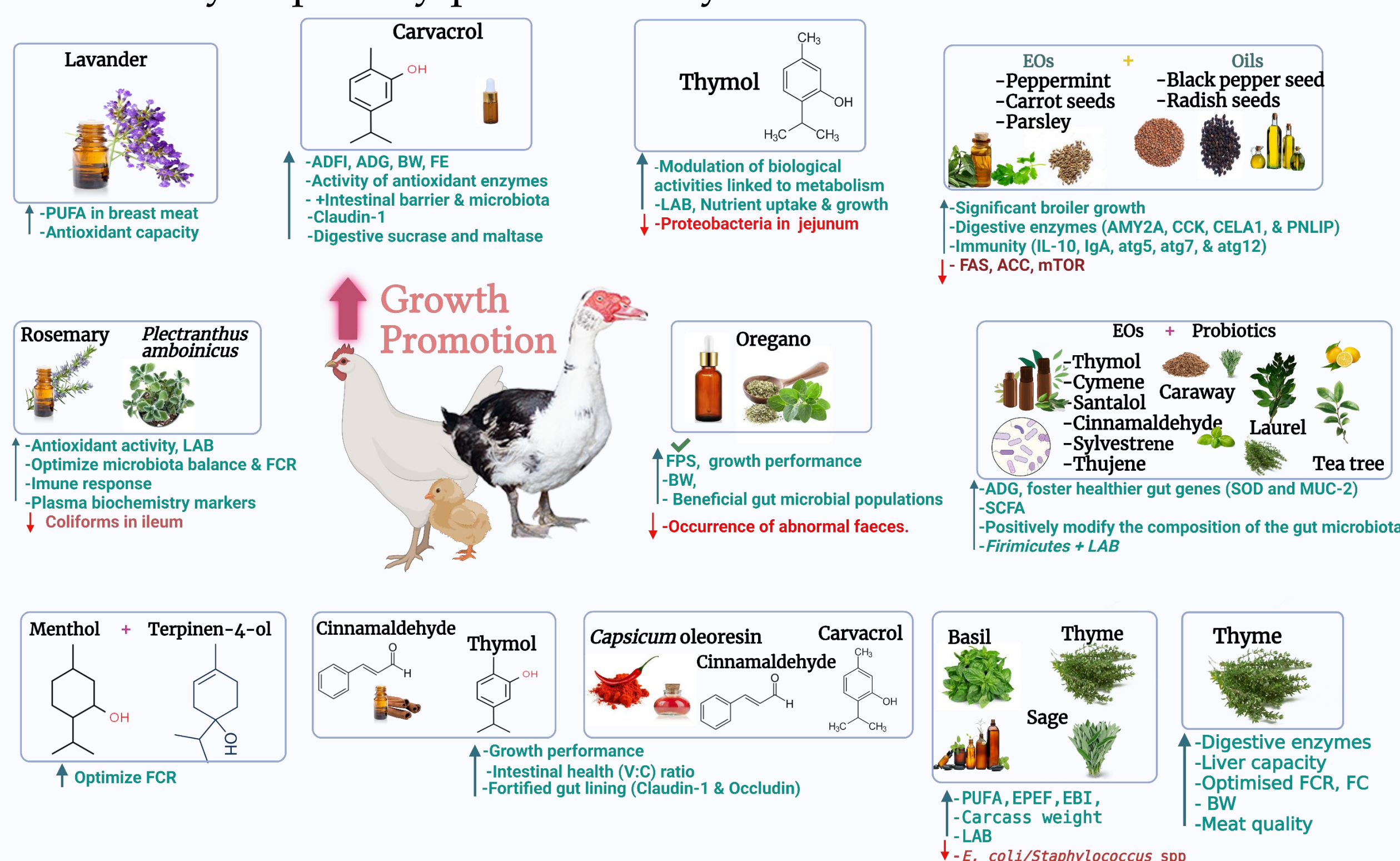
Introduction

EOs have been identified as utile components in the development of novel strategies for disease management, presenting an innovative and interesting approach to biosecurity in poultry farming. Their ability to act against various pathogens (i.e. *Salmonella* and *Campylobacter* spp, including *E. coli* and others) positions them as crucial in maintaining poultry health and welfare. Therefore, this paper aspires to provide a critical and integrative review of the prospects of EOs in poultry farming, evaluating their impact and discussing the potential of integrating these natural substances into the poultry sector.

They can interact with microbial cell membranes and inhibit the growth of some gram-positive and gram-negative bacteria. In poultry production, the use of EOs has been correlated with improved health and productivity indicators, such as enhanced growth performance, better FCR, and improved meat and egg quality.

Poultry Production and Growth Promotion

EOs are potential growth promoters in poultry farming, indicating that their inclusion in feed could lead to improved productivity (Fig. 1). The economic advantage of utilizing EOs, considering their impact on growth metrics, has been deemed promising, suggesting that they offer a cost-effective strategy to enhance the overall efficiency of poultry production systems.

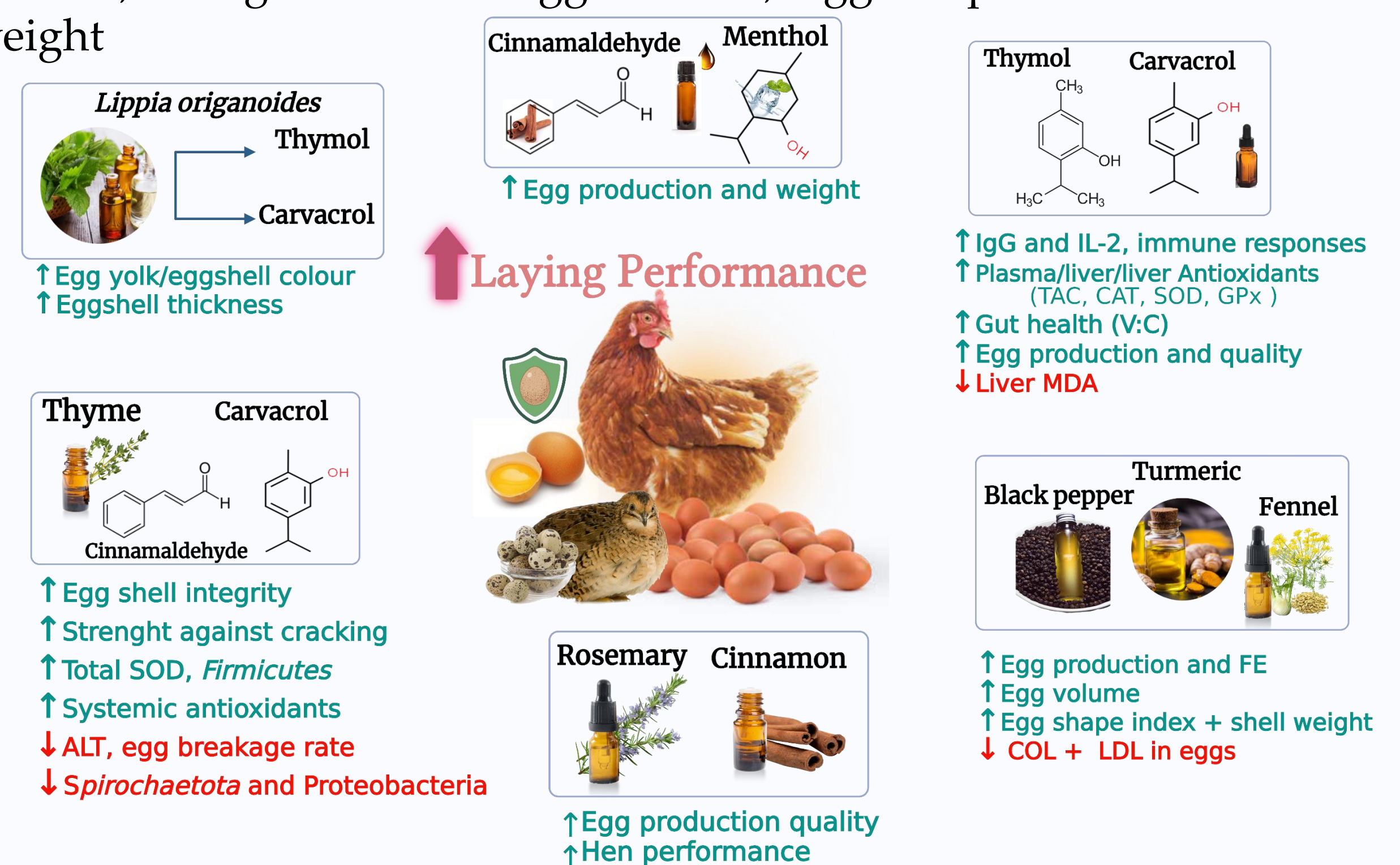


Conclusion

EOs have proven effective in promoting growth, feed efficiency and disease management in poultry, offering a sustainable alternative to traditional antibiotics. This aligns with the industry's shift towards practices that are sustainable and accepted by consumers. Future strategies should continue to update EO supplementation to enhance poultry performance and welfare, contributing to a resilient and successful poultry industry.

Benefits of Essential oils on egg quality

EOs attribute the similar significant effects on egg production quality and on overall hen performance (Fig. 2). These enhancers have led to notable improvements in various parameters of poultry production. Specifically, there was a marked increase in hen-day egg production and FE, alongside better egg volume, egg shape index and shell weight



Essential oils in Disease Management.

EOs have shown promising results in mitigating diseases caused by avian pathogens, which pose significant economic burdens on the poultry industry. Their ability to modulate immune responses and improve tissue integrity without inducing resistance offers a sustainable alternative to combat poultry diseases (Fig. 3).

