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Poultry Feed Supplements (Vinegar and Yogurt) as Antibiotic Alternatives for Maximizing Growth Performance and Feed Efficiency

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Abstract:

Antibiotics are frequently used in food animal production in developing countries to promote the wellbeing and growth of animals. A major concern has been that repeatedly exposing these animals to small doses of antibiotics contributes significantly to antimicrobial resistance since a good fraction of the antibiotics used are the same or surrogates of antibiotics used in human therapeutic practices. There are heightened concerns globally on emerging drug-resistant superbugs and the lack of new antibiotics for treating human and animal diseases. With the increase in regulations regarding the use of antibiotic growth promoters and the rise in consumer demand for poultry products from 'Raised Without Antibiotics' or 'No Antibiotics Ever' flocks, the quest for alternative products or approaches has intensified in recent years. For the agricultural industry, there is an urgent need to develop strategies to replace antibiotics for food-producing animals, especially poultry and livestock. Alternative products play a crucial role in allowing farmers and veterinarians to reduce the use of antibiotics. A recent study demonstrated the use of probiotics (yogurt) and acidifier (vinegar) on overall growth performance and immune status of broilers which can serve as an alternative to antibiotics as growth-promoting agents in the commercial poultry sector.

Keywords: Antibiotics, antimicrobial resistance, poultry nutrition, acidifier, probiotics.

INTRODUCTION

Antibiotics have played a critical role in contributing to the economic effectiveness of animal production as feed supplements at sub-therapeutic doses, to improve growth and feed conversion efficiency, and to prevent infections (Castanon, 2007; Van *et al.*, 2020). Although these provide some benefits both to the animals and to producers at large, the practice is associated with a number of environmental (Durso and Cook, 2014) and ethical (Littmann *et al.*, 2015) issues.

In-feed antibiotics (IFAs) are a common and well-established practice in the animal industry that has contributed to the intensification of modern-day livestock production. However, with intensification of animal agriculture, concerns exist that the use of IFAs leads to development of antimicrobial resistance, posing a potential threat to human health. The wide distribution of antimicrobial-resistant bacterial isolates can play a role in the dissemination of antimicrobial resistance to other pathogenic and commensal bacteria (Iqbal and Iqbal, 2020; Iqbal and Ashraf, 2018; Iqbal and Ashraf, 2019; Saleem *et al.*, 2018a; Saleem *et al.*, 2018b; Shawish *et al.*, 2020). In the past two decades, an intensive amount of research has been focused on the development of alternatives to antibiotics to maintain animal health and performance. The most widely researched alternatives include probiotics, prebiotics, spray dried plasma, synbiotics, organic acids, enzymes, phytogenics, antimicrobial peptides, hyperimmune egg antibodies, bacteriophages, clay, and nutraceuticals such as copper and zinc. (Gadde *et al.*, 2017).

In this issue, Farooq *et al.* reports the use of vinegar as an acidifier and yogurt as a probiotic from two different sources i.e. camel milk (high salts) and sheep milk (high fat) having Nestle™ yogurt inocula given to birds in the feed enhanced the growth performance and immune status of broiler reducing the mortality rate. The study demonstrated that these poultry feed

supplements can be used as an alternative to antibiotics as growth-promoting agents in the commercial poultry sector (Farooq *et al.*, 2020).

Though the beneficial effects of many of the alternatives tested have been well demonstrated, there is the general consensus that these products lack consistency, as results vary greatly from farm to farm. Care must be taken in the choice of alternatives, such that they fit the needs of the individual production program. Combinations of products may prove more beneficial than using them alone to achieve an effect similar to that of antibiotics. Optimal combinations of various alternatives coupled with good management and husbandry practices will be the key to maximize performance and maintain animal productivity, while we move forward with the ultimate goal of reducing antibiotic use in the animal industry.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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