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EFFECTS OF FEEDING VARIOUS LEVELS OF POSTBIOTICS PRODUCED BY LACTIC ACID BACTERIA ON GROWTH PERFORMANCE, GASTROINTESTINAL MICROBIOTA COUNT, AND DIGESTIBILITY OF SOME NUTRIENTS IN BROILER CHICKENS

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ABSTRACT

The purpose of this study was to evaluate the impact of adding postbiotics produced from two species of lactic acid bacteria, *Lactobacillus acidophilus* (Lap) and *Lactiplantibacillus plantarum* (Lpp), to broiler chicken diets on their productivity, gastrointestinal microbiota count, and nutrient digestibility. Using a completely randomized design, 315 one-day-old broiler chicks (Ross- 308) were randomly divided into seven groups and three replications, with fifteen unsexed chicks per replicate. The basal diet was administered without supplements (negative control) or supplemented with Tetracycline (TET) at 0.02% (positive control). The other five groups: T1, T2 (basal diet supplemented with Lap 0.25%, and Lap 0.50% respectively); T3, T4 (basal diet supplemented with Lpp 0.25%, and Lpp 0.50% respectively); T5, (basal diet supplemented with 0.25% Lap + 0.25% Lpp). Results indicated that feeding broiler chickens with postbiotics supplements (excluding T1) and a positive control (TET) resulted in significant improvements (P≤0.05) in body weight gain, feed intake, feed conversion ratio, production index, and economic efficiency compared to the negative control group. Also, postbiotics supplements showed the highest level (P≤0.05) Lactobacilli count of jejunum, and the lowest level of E. coli bacteria decreased significantly (P≤0.05) in all groups compared to the negative control. Additionally, postbiotics (excluding T1) and TET treatments improved (P≤0.05) digestibility of dry matter, protein, fat, protein efficiency ratio and passage rate compared to the negative control group. The results suggest that postbiotics supplements can enhance growth performance, nutrient digestibility, protein efficiency, passage rate, and intestinal microbiota count of broiler chickens..

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INTRODUCTION

Poultry farming is exposed to a wide varied range of stressors, that affect production (Abdul-Majeed *et al.*, 2022), and still has numerous challenges even with the advancement of understanding on the nutritional needs of birds and the chemical composition of feed. The most crucial of which is finding natural growth stimulants that do not affect the health of the poultry or the consumer in the future (Okey, 2023).