

## Comparison of Growth Performances, Meat Quality Traits and Necrotic Enteritis Exposure in Broiler Chickens Fed Probiotics Compared to Antibiotic as Growth Promoters

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Antibiotics have been banned in European poultry industry due to public health hazards caused by antibiotic residues and microbial resistance. Necrotic enteritis caused by *Clostridium perfringence* results in an economic damage. Therefore, alternatives should be identified to withdraw antibiotics from animal feeds. This study was conducted to determine the effects of probiotics on growth performance, meat quality and necrotic enteritis exposure in broiler chickens. Experimental diets were based on maize and soybean meal. Five dietary treatments were prepared as feed without growth promoters (Negative control; T1); *Bacillus licheniformis* isolated from healthy poultry (T2); commercial probiotic containing *Bacillus* species (T3); a combination of *B. licheniformis*, commercial probiotic, *Lactobacillus* spp. and *Saccharomyces* spp. (T4) and with antibiotic, Zinc Bacitracin (positive control; T5). The inclusion rate of growth promoters was 0.1 g/kg of basal diet. In T4 all four probiotics were included at equal level (0.025/0.1 g of the combination). A total of 420 day-old broiler chicks (Cobb 500) were randomly assigned to experimental pens. Each treatment replicated 6 times with 14 birds in a pen. Results revealed that birds fed growth promoters had higher ( $P < 0.05$ ) weight gain than those fed no growth promoters. Birds fed antibiotic and commercial probiotic had similar growth (2 kg) and feed conversion ratio (1.5) compared to negative control, 1.8 kg and 1.6 respectively. Antibody levels against alpha toxin were higher ( $P < 0.05$ ) in birds fed no growth promoters compared to those fed growth promoters, indicating an aggravated *C. perfringence* infection. A better juiciness, mouth feel and overall acceptance were identified in breast meat of broilers fed T4 compared to those from other birds. In conclusion, *Bacillus* species incorporated probiotics can be used as alternatives to antibiotic growth promoters, to gain similar growth performances and better quality breast meat.

**Keywords:** Antibiotic, *Bacillus* species, Growth performance, Meat quality traits, Necrotic enteritis