

# Enhancing Growth Performances of Broilers Through Dietary Supplementation of Cinnamaldehyde and Eugenol: A Natural Alternative to Conventional Antibiotic Growth Promoters

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Finding alternatives to antibiotic growth promoters (AGPs) has been a challenge for the broiler industry due to increasing restrictions on their use. The study aimed to evaluate the effect of three inclusion levels (3%, 6%, 9% per kg of feed) of cinnamaldehyde and eugenol on the growth performance of broilers as a potential substitute to AGPs. A total of four hundred eighty Cobb-500-day-old chicks were raised to the age of 35 days in a randomized block design with eight dietary treatments, each replicated six times with 10 birds per each replicate. Treatments based on added Growth promoters (GP) to the basal diet: negative control-NC (without GP), positive control-PC (AGP -Zinc bacitracin), cinnamaldehyde at 3% (T3), 6% (T4), 9% (T5) or eugenol at 3% (T6), 6% (T7), 9% (T8) added per kg of feed. The feed intake (FI) and live body weights were measured separately for each replicate at weekly intervals. The weight gain, feed conversion ratio (FCR) and Performance efficiency factor (PEF) were calculated for the total growing period. One-way Analysis of Variance procedure was used to compare the performances of the treatments. Birds fed PC diet significantly increased ( $p < 0.05$ ) live weight ( $2056 \pm 22.23$  g), weight gain ( $2009 \pm 22.07$  g) and improved FI ( $2887.9 \pm 38.4$ ) compared to the other treatments. However, except for the birds fed the highest level of cinnamaldehyde (T5), other cinnamaldehyde and eugenol fed birds significantly increased ( $p < 0.05$ ) the live weight and weight gain compared to the NC birds. The significantly lowest ( $p < 0.05$ ) FCR was recorded in 3% cinnamaldehyde fed birds (T3). The highest ( $p < 0.05$ ) PEF was also recorded in 3% cinnamaldehyde fed birds, and that was statistically similar to PC. Conclusively, the present study demonstrated that birds fed diets containing 3% and 6% cinnamaldehyde and 3%, 6% and 9% of eugenol, improved the growth performances compared to birds fed without growth promoters (NC) by improving FCR.

**Keywords:** Alternative, Antibiotic growth promoters, Inclusion levels