

Growth Performance and Intestinal Morphology of Isa Brown Pullet Chicks Fed Diets Containing Turmeric and Clove

Authors : Ayoola Doris Ayodele, Grace Oluwatoyin Tayo, Martha Dupe Olumide, Opeyemi Arinola Ajayi, Ayodeji Taofeek Ayo-Bello

Abstract : Antibiotics have been widely used in animal nutrition to improve growth performance and health worldwide for many decades. However, there are rising concerns on the negative impact of dependence on antibiotic growth promoters (AGP) to improve animal performance despite its tremendous use. The need to improve performance in poultry production creates demand for natural alternative sources. Phytogetic feed additives (PFA) are plant-derived natural bioactive compounds that could be incorporated into animal feed to enhance livestock productivity. The effect of Turmeric, clove and turmeric + clove as feed additive was evaluated on performance and intestinal morphology of egg type chickens. 504- fifteen day old Isa brown chicks were weighed and randomly distributed to nine dietary treatments by a 3 x 3 factorial arrangement (test ingredient x inclusion level) in a completely randomized design, with four replicates of 14 birds each. The birds were fed Chick starter diet containing (2800 kcal/kg ME; 20.8% CP). Dietary treatments were Group 1 (T1- basal diet with 0% Turmeric inclusion), (T2- basal diet with 1% Turmeric inclusion), (T3- basal diet with 2% Turmeric inclusion). Group 2 (T4- basal diet with 0% clove inclusion), (T5- basal diet with 1% clove inclusion), (T6- basal diet with 2% clove inclusion). Group 3, turmeric + clove combination on 1:1 ratio weight for weight (T7- basal diet with 0% turmeric + 0% clove inclusion), (T8- basal diet with 0.5% turmeric + 0.5 clove% inclusion), (T9- basal diet with 1% turmeric + 1% clove inclusion). Performance parameters were evaluated throughout the experiment. The experiment spanned from day 15 to 56. Data were analyzed using Analysis of Variance (ANOVA) followed by Duncan's Multiple Range Test with significance of $P \leq 0.05$. Significant differences ($P > 0.05$) were not observed in final body weight, weight gain, feed intake and FCR among birds fed with diets containing across the treatments. However, birds fed with test ingredients showed higher numerical values in final body weight and weight gain when compared to the birds without additive. Birds on T8 had the highest final body weight value of 617.33 g and low values in all the control treatments (T1 -588 g, T4- 572 g and T7 -584 g). At day 56, intestinal samples were taken from the jejunum and ileum to evaluate the villus height, crypt depth and villus: crypt depth ratio. Addition of turmeric, clove and turmeric + clove in the diet produced significant ($P < 0.05$) effect on Jejunum and ileum of birds. Therefore, Turmeric and clove can be used as feed additives for pullet birds because they have a positive effect on growth performance and intestinal morphology of pullet chicks.

Keywords : clove, intestinal morphology, isa brown chicks, performance, turmeric

Conference Title : ICANFFT 2020 : International Conference on Animal Nutrition, Feeding and Feed Technology

Conference Location : Stockholm, Sweden

Conference Dates : July 16-17, 2020