

Production Performance, Gut Microbial Count, Antibody Titer and Selected Welfare Indices of Broiler Birds Fed Higher Level of Animal Protein Concentrate With or Without Organic Acids Blend and Microencapsulated Phyto-Essential Oil

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Abstract : Organic acids and micro encapsulated phyto essential oils have revealed great potential as an antibiotic replacement and as an additive to work tremendously for the health maintenance of broiler chicken. To explore more about organic acids, a total of 600 day-old broiler chicks (Cobb-500) were procured from a local hatchery and distributed into 5 treatment groups having 6 replicates of 20 birds each; the duration of the biological trial was of 35 days. Group T1 served as a control group that were fed on corn soy-based diet only. T2 were fed with a diet having 6% poultry by-product meal (PBM) diet, T3, T4, and T5 were served as the same diet as T2 but supplemented with an organic acid, phyto essential oils alone, and a combination, respectively. The findings declared significant improvement ($p < 0.05$) in body weight gain and FCR in groups T3, T4, and T5 while feed intake was not affected. European broiler performance indicators like production efficiency factor (EPEF) and broiler index (EBI) were improved significantly ($p < 0.05$) by the treatments T3, T4, and T5 compared with T1 and T2. Carcass evaluation depicted significantly better ($p < 0.05$) dressed and eviscerated weight along with carcass yield (T3, T4, T5). Broilers fed organic acid and phyto essential oils supplemented diet had significantly lower ($p < 0.05$) Clostridium perfringens, Escherichia coli and Salmonella and increased Lactobacillus counts. Likewise, antibody titer against ND, IB, and IBD were also significantly ($p < 0.05$) improved by the treatments T3, T4 and T5 compared with the T1 and T2. Litter moisture content was significantly ($p < 0.05$) reduced by treatments T3, T4, and T5 on day 28 and 35 compared with the T1 and T2. These findings of the present study revealed that supplementation of organic acids blend and phyto-essential oils as an substitute to improve the performance of broilers without the use of feed antibiotics in broilers fed with 6% poultry by-product meal based diet.

Keywords : organic acid, phyto essential oils, growth performance, PBM, gut health, microbiota, immunity

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