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EFFECT OF FEED ACIDIFIERS ON PERFORMANCE OF BROILERS

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ABSTRACT

One hundred and eighty day-old broiler chicks were randomly distributed into four groups, each group having three replicates. Each replicate contained fifteen chicks. The treatments were T_0 - control diet without acidifier prepared as per national standards (2005), T_1 – control diet + feed acidifier acidlacdry @ 3 kg/t, T_2 – control diet + acidlacdry @ 4 kg/t, T_3 – control diet + acidlacdry @ 5 kg/t. The starter ration was offered upto three weeks and finisher ration thereafter upto six weeks of age. The body weights of broilers at 6th weeks of age were significantly higher in T_3 (1893.80), T_2 (1893.70) and T_1 (1836.50) groups. The most efficient feed conversion ratio were observed in T_3 (1.75), T_2 (1.76) and T_1 (1.80) treatment groups as compared to control. The carcass characteristics viz., dressing yield, drumstick yield, giblet yield and abdominal fat pad were not affected by treatments indicative of the fact that use of acidifiers doesn't play any role in improving the carcass traits. However, the use of feed acidifier acidlacdry @ 3, 4 and 5 kg/t improved gut health and nutrient utilization resulting into improved production performance in broilers

Key words: Broilers, acidifiers, ration, management, body weights, carcass.

Indian poultry industry has made a phenomenal and remarkable progress, evolving from a small-scale backyard venture to the status of commercial, full-fledged, self-sufficient and most progressive agro-based industry. The growth in poultry production observed in recent decades resulted from contributions of some technologies and innovations in the fields of genetics, health, nutrition, management and others. The economics of production is very important criteria for broiler production and feed is the major important factor affecting the productive performance and economics of broiler production, next to genetic potential. Moreover, it is a major input constituting 70-75% of the total cost of production. Prime objectives of poultry producers are always aimed to improve feed efficiency and productivity by reducing the cost of production per bird. Livestock performance and feed efficiency are closely interrelated with the qualitative and quantitative microbial load of the host animal, including the load in the alimentary tract and in the environment. Acidifiers are composed of selected organic acids with antimicrobial property and pH regulating activity in the gut. Organic acids if incorporated in poultry feed may create favourable conditions in the intestine for the efficient digestion and amalgamation of feed. Organic acids in poultry may serve many functions such as protein digestion in the stomach, stimulate feed consumption, inhibit the growth of pathogenic bacteria and improves protein and energy digestibility by reducing microbial competition with host nutrients[10]. The present study was carried out to evaluate the performance of broiler supplemented with acidifiers.

MATERIALS AND METHODS

The experiment was carried out on 180 broiler chicks and a standard management practices were done followed by vaccination for Ranikhet disease (RD) on day seven (07), for Infectious bursal disease (IBD) on day 16 and again RD booster on day 28. The diet prepared were iso-caloric and iso-proteinous for broiler starter and finisher rations (As per National Standards 2005). The control, T_0 was given diet without acidifier, T_1 was given diet with feed acidifier AcidLacDry @ 3 kg/t of feed, T_2 was given diet with AcidLacDry @ 4 kg/t of feed and T_3 with AcidLacDry @ 5 kg/t of feed. The weighed amount of ration was offered every day in the morning and evening to all the treatment groups. The left over feed was collected and weighed separately on the next day morning to arrive at the actual daily feed consumption, which was inclusive of feeding losses, if any. The individual birds were weighed at the end of each week and the total body weight gain per week was calculated by subtracting the initial weight of bird by the final weight attained during that particular week and weekly recorded weights were used for subtracting the initial body weight to calculate the cumulative weight gain of the birds at different weeks. The feed conversion ratio was calculated by dividing the total feed consumption by total weight gain. The carcass trait was calculated on weight of edible carcass, different edible organs and abdominal fat pad over live weight. All the data in the experiment were analyzed by Completely Randomized Design[6].

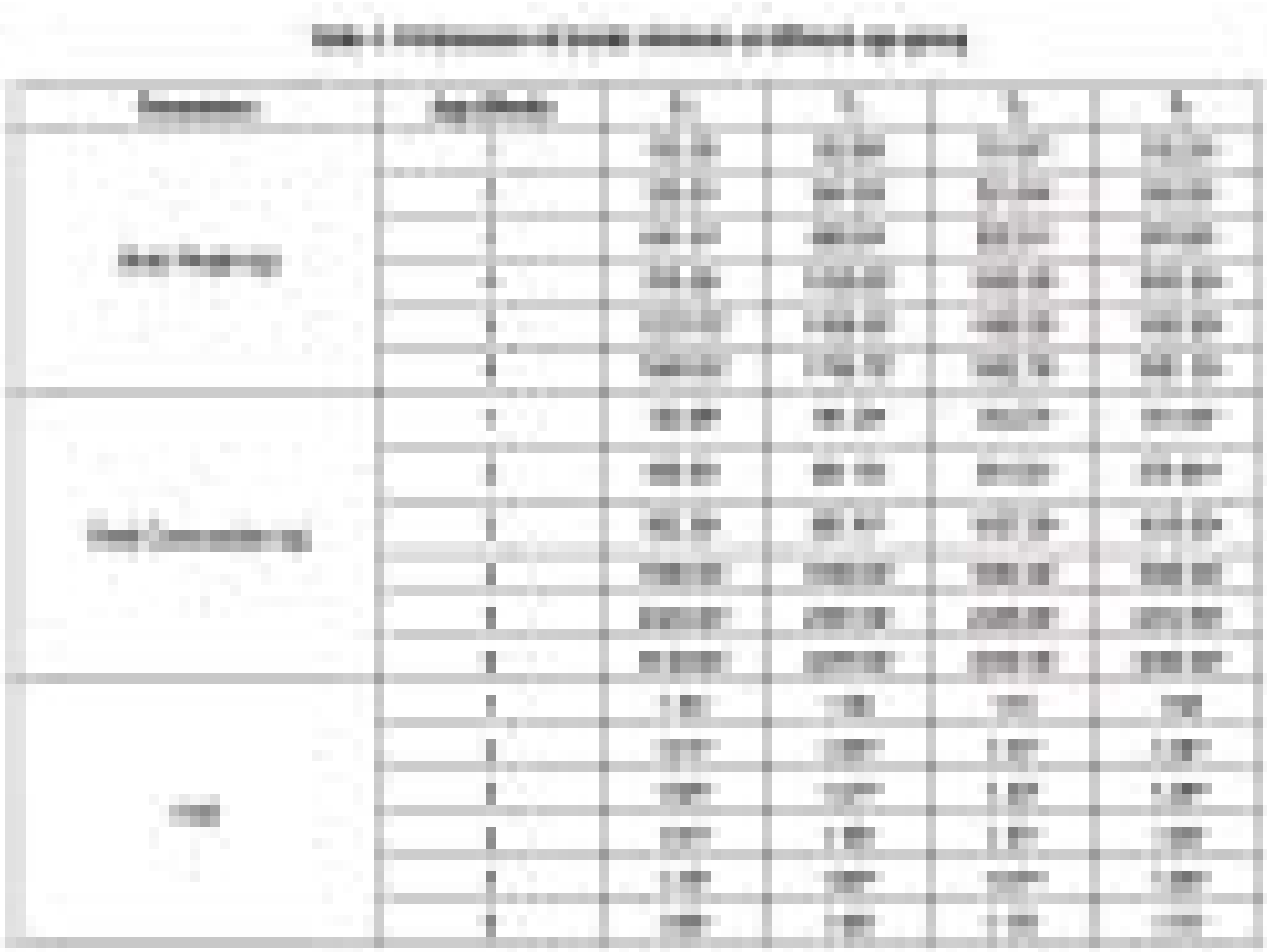
RESULTS AND DISCUSSION

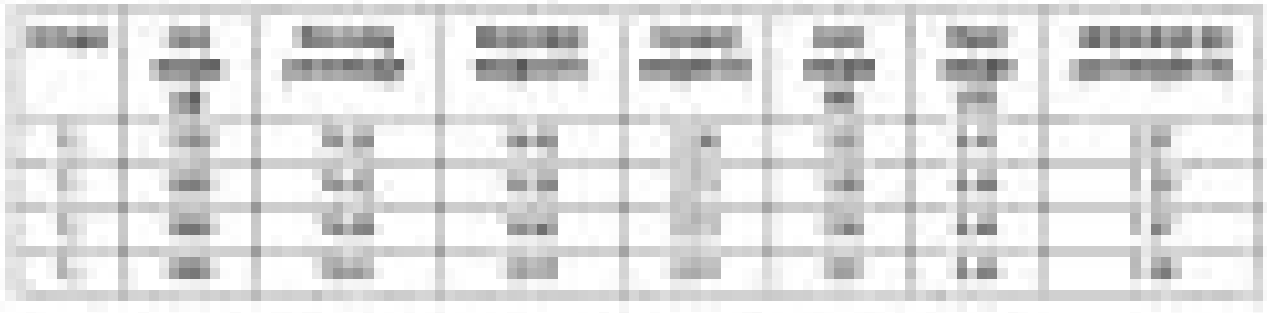
The means, standard errors and critical differences for the weekly weight gain of broilers at different age groups for the effect of different level acidifier are depicted in Table 1. The analysis of variance for the mean cumulative weight gain between treatment groups showed highly significant differences ($P < 0.01$). However, the differences within treatment groups were non-significant. The highest mean cumulative weight gain at 6th week was recorded for treatment group T_2 followed by group T_3 and T_1 respectively. The mean cumulative weight gain is estimated from the mean weekly body weights from different groups and hence showed similar trend with that of previous workers[2, 4, 5, 8, 9].

The means and standard errors for the feed consumption of the broiler with different level acidifier preparations at different age groups are presented in Table 1.The analysis of variance showed highly significant differences between the treatment groups. The highest mean cumulative feed consumption at 6th week was recorded for treatment group T_2 followed by T_1, T_3 respectively. The data pertaining to cumulative feed consumption indicated that the birds from treatment groups T_1, T_2, T_3 recorded 3, 4.2, 2.9 percent more feed consumption as compared to control and the findings were in agreement with[1, 4, 5, 8].

The means and standard errors for the feed conversion ratio of broilers with different level acidifier preparations at different age groups are shown in Table 1. The analysis of variance showed highly significant differences between the treatment groups. However, the differences within treatment groups were non-significant. The cumulative feed conversion ratio from different treatment groups, revealed that the birds receiving feed acidifier (AcidLacDry) @ 3 (T_1), 4 (T_2) and 5 (T_3) kg/t of feed recorded the better feed conversion ratios, indicating that these birds were most efficient in feed utilization and the similar tends were observed by few workers[3, 4, 8 & 9].

The analysis of variance for dressing percentage and different cutup parts of the carcass showed (Table 2) non-significant differences between the treatment groups. The highest dressing percentage was observed in T_2. The highest weight in drumstick giblet was also observed in T_2 followed by T_0 and T_1 respectively. The highest weight in abdominal fat pad was recorded in T_0. Better performance was observed in T_2 group. This may be due to the optimal dose level of feed acidifier i.e. 4 kg per ton of feed providing the favourable condition in the gut for maximum utilization of nutrients. These findings were in close accordance with the findings of the previous workers[5, 7 & 8].





CONCLUSION

The study revealed that, feed acidifier used at the dose level of 4 kg per ton of feed is beneficial for improving overall performance with respect to growth rate, feed conversion ratio, live weight and dressing percentage of the broiler birds. This might be due to optimal favourable condition in intestinal gut of the broilers for maximum absorption of nutrients by inhibition of intestinal bacteria competing with the host for available nutrients and a reduction of possible toxic bacterial metabolites. But further investigation needs to be carried out for determining the level of pH and concentration of the microbes in intestinal gut for optimal performance of the broilers. However, the use of acidifiers in the rations of broilers may be advocated for the efficiency in feed utilization and overall successful production.

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