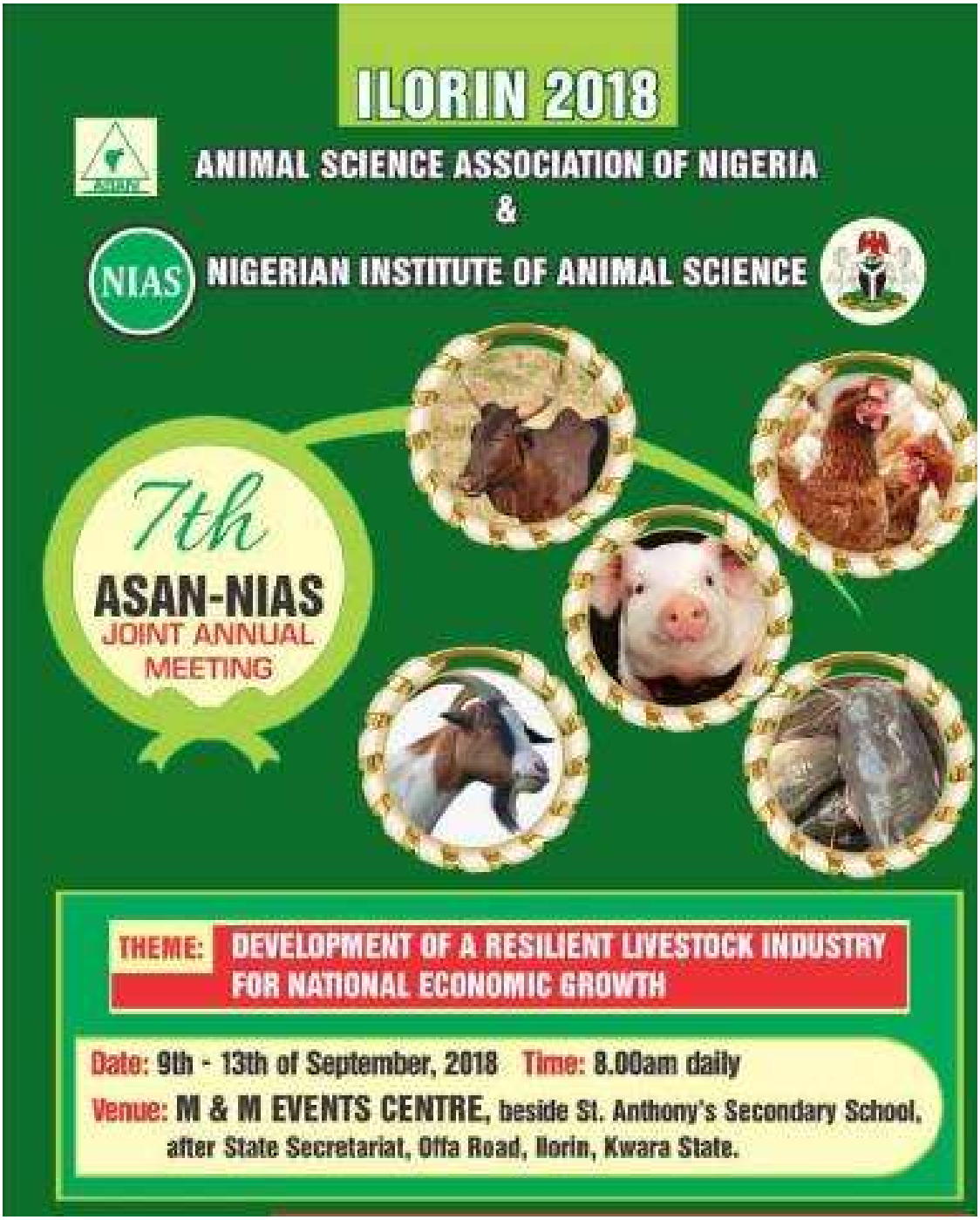

BOOK OF PROCEEDINGS

Performance and Carcass Characteristics of Hubbard Broiler Chickens Administered Varying Dosages of Aqueous Extract of Tamarind (*Tamarindus indica*) Pulp

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Abstract: The study was conducted to determine the growth performance and carcass characteristics of broilers supplemented with varying dosages of aqueous tamarind extract in a drinking water. A total of 300 day –old chicks were randomly distributed into four treatment groups, replicated 5 times with 15 broilers per replicate. The control group was given 0g/5L tamarind aqueous extract while the other groups received 36g/5L, 72g/5L and 108g/5L tamarind aqueous extract in drinking water respectively. Feed and water were provided *ad libitum* throughout the experimental period. The growth performance of broilers was evaluated based on their feed consumption, live weight, feed conversion ratio (FCR) while the carcass characteristics was evaluated based on the dressing weight, slaughter weight and carcass weight. The result of the growth performance showed that there was no significance difference ($p>0.05$) between the growth parameters and the feed conversion ratio (FCR) of the broiler chickens. The highest feed intake was recorded in T4 administered 108g/5L of Aqueous extract of tamarind pulp (AETP) which also recorded the highest average weight gain (901.37g). There was also no significance difference ($p>0.05$) in the carcass characteristics of the broiler chickens. It was concluded that up to 108g/5L of drinking water can serve as a natural alternative to antibiotics for optimal growth of the birds.

Keywords: Tamarind Pulp, Growth Performance, Aqueous Extract, Carcass Characteristics

DESCRIPTION OF PROBLEM

Due to rising human population, there is an increase in the demand for protein (1). In order to meet this demand, there is rise in the production of both animal and plant protein. Poultry meat is a good source of animal protein that has contributed in the consumption of animal protein (2). Research on the introduction of feed supplements and additives is also on the increase (2). Antibiotics being a growth enhancer in poultry in the past have a potential side effect on public health (3). The international ban on the use of antibiotics in animal feeds as increased the effort of researchers to study the natural source of antibiotics (4) and example of such natural source of antibiotics is the tamarind. Initially, the fruit shows a reddish- brown colour that turns black or brown becoming more aromatic and sour on ripening. It is a fruit pulp used for seasoning as a food component and in juices (5). Tamarind fruit has high level of carbohydrate and protein more than most fruit but contains a smaller amount of Vitamin A and iron (6). The aim of this study is to determine the effect of aqueous tamarind pulp extract as antibiotics on the performance and carcass characteristics of Hubbard broiler chickens.

MATERIALS AND METHODS

The experiment was carried out at the Poultry and Rabbitry unit of the Teaching and Research Farm of the Department of Animal Production, Federal University of Technology, Minna, Niger State. Minna is located in the Southern Guinea Savannah Vegetation Zone between latitude $9^0$28' North to $9^0$37' North and longitude $6^0$23' East to $6^0$33' East with annual rainfall of 1000mm – 1500mm and average temperature of 32^0C (NSADP, 2009). The sticky tamarind pulp was soaked in water and washed with hands to separate the seeds from the pulp. The pulp and the water mixture were then blended to get homogenized solution. The treatments were labeled T1 (0g/5L), T2 (36g/5L), T3 (72g/5L), and T4 (108g/5L) respectively. 300-hundred-day old broiler chicks were used for this study. The chicks were randomly allotted to four treatments with 5 replicates per treatment in a completely randomized design (CRD). Each replicate has 15 birds which were raised on deep litter system. Feed and water were provided ad-*libitum*. Data were collected on feed intake, weight gain, feed conversion ratio and

carcass evaluation. Feed intake was measured by finding the difference between feed served and feed leftover. Body weight was taken weekly and calculated by dividing the total weight of the birds by the number of the birds in each replicate. The feed conversion ratio was determined by measuring the feed utilization efficiency as average feed intake/ average weight gain. At the end of the experiments, two birds were randomly selected from each replicate and starved overnight. The selected birds were weighed individually before slaughtering. The slaughtered weight, defeathered weight and dressed weight were recorded. Data obtained from this experiment were subjected to statistical analysis using analysis of variance (ANOVA) as described by (7). Treatment means were compared and separated using (8).

Table 1: Performance characteristics of Hubbard broiler chickens administered varying dosages of aqueous tamarind extract

Parameter	T1 (0g/5L)	T2 (36g/5L)	T3 (72g/5L)	T4 (108G/5L)	SEM
Feed Intake (g)	1511.36	1477.89	1511.68	1546.89	61.60
Water Intake (ml)	3428.74	3479.00	3526.91	3498.89	124.82
Average Weight Gain (g)	836.80	887.43	891.74	901.37	54.99
FCR	3.49	3.51	3.46	3.47	0.68

Table 2: Carcass Characteristics of Broiler Chickens Administered Varying Dosages of Aqueous Tamarind Extract

Parameters (g)	T1(0g/5L)	T2(36g/5L)	T3(72g/5L)	T4(108g/5L)	SEM
Live Weight	1560	1640	1580	1430	19.83
Slaughter Weight	1390	1480	1430	1420	18.28
Dress Weight	1350	1440	1380	1380	15.76
Carcass weight	1142	1240	1230	1230	18.09
Gizzard Weight	180	120	200	110	27.02
Intestine weight	190	200	170	178	7.49

RESULTS AND DISCUSSION

The feed intake, feed conversion ratio and average daily weight gain of broiler chickens that were administered varying doses at 36g/5L, 72g/5L and 108g/5L in their drinking water is represented in Table 1. During the period of the experimental trial, the average daily weight gain of broiler chickens that were administered 108g/ 5L water was significantly higher than the average daily weight gain of broiler chickens that received aqueous extract at T (0g/5L), T (36g/5L) and T (72g/5L) in their water. During the entire experimental period, the average daily weight gain tended to be highest in the group that received aqueous tamarind pulp extract at 108g/5L, though the difference in weight gain between the groups were not significant ($p>0.05$). Throughout the experimental period, the feed intake and feed conversion ratio of the broiler chickens in all groups were not significantly different ($p>0.05$). The reason in increase in water intake as the aqueous tamarind extract increases could be attributed to its appetizing effect according to (5). However, (10) who studied the effect of tamarind on broiler diets recorded a decreasing feed intake with increase in the tamarind pulp extract, which is attributed to the nature of the feed. (9) studied the effect of crude aqueous and ethanol extract of tamarind as antibacterial and they found that the ethanol extract produces strong antibacterial against *Escherichia coli*. The carcass characteristics of broiler chickens administered varying doses of tamarind extract is shown in Table 2. This study agrees with the findings of (10) who reported that there was no significant difference ($p>0.05$) in all treatments on slaughter and dressed weight of the broiler chickens. It was observed for the cut parts with the group on 36g/5L of water recording the highest slaughter weight, dress weight, dress weight and intestinal weight.

CONCLUSION AND APPLICATION

This present study concludes that the feed intake, weight gain and feed conversion ratio of broiler chickens were not affected when administered varying dosages of aqueous extract of tamarind pulp as well as the carcass characteristics without any deleterious effect on the carcass yield and the yield of cut- up parts of broiler chickens.

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