

Performance of Broiler Starter Fed Diets Containing *Parkia biglobosa* Stem Back Powder as Replacement to Antibiotics

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Abstract

The research was carried out in the Department of Animal Science, College of Agriculture, Federal University of Agriculture Zuru, Kebbi State, Nigeria. To determine the performance of broiler starter fed diets containing Pakia biglobosa stem back as replacement to antibiotic was evaluated in a four weeks experiment. Day old chicks birds were share into four (4) treatment and each treatment replicated five times with ten (10) birds per replicate. Feed intake, body weight gain and feed conversion ratio were determined and compared. The result indicated that final body weight, body weight gain and feed conversion ratio shows that there is no significant difference ($P>0.05$) between all the treatment. It is concluded that feeding birds with diets containing parkia biglobosa stem back as replacement to antibiotics at the starter phase improve growth performance.

Keyword: Performance, broiler starter, *Parkia biglobosa*, stem back powder, replacement, antibiotics

Introduction: Poultry production is an aspect of livestock production that deals with rearing of birds of different breeds either for meat or egg production. One of the major problem facing poultry production in the Africa is high cost of feed ingredient particularly grains, proteins concentrates, vitamins and mineral premix. The competition between human and domestic fowl for some feedstuffs greatly hampers the production of quality meat and egg. The broiler chicken industry has now occupied the second place in volume in the world just after pork. (Sina and Traore, 2002) The is representing about 29% of the total meat production from farm animal and is rearing every year (Ntui, V.O., Uyoh, E.A., Urua, I.S., Ogbu, U. and Okpako, E.C. (2012). Thus the growth of poultry production has been based on strong consumer demand for products that are cheap, safe and healthy.

Parkia biglobosa known as African locust bean, a tropical tree which is mature to Africa and widely is distributed in the savanna region (Adewusi, 1992). The tree is usually and carefully preserved by inhabitants of the area where it grows because they are available sources of reliable food, especially the seed which serves as a source of useful ingredient for

consumption as “Daddawa” in Hausa and “Iru” in Yoruba (Campbell, 1980). Locust bean is a spreading tree of medium size with compound leaves and leaflets. The fruit represent by bunches of pods which from the nutritive part of the plant. Each pod which may vary between 5 and 11 inches in length contains a yellow dry powdery pulp inside which is embedded a number of dark brown and black seeds (Oyenuga, 1978).

Materials and Methods: Study Area: The research was conducted at the poultry unit of the College of Agriculture, Zuru, Kebbi State. Zuru is located in the South Eastern Region of kebbi State of Nigeria with a total land mass of 653km³ its lies between institute 11.42 406⁰N and longitude 5.2289⁰E. Zuru is bounded in the west by Gwandu and Yauri while in the east it shares boarder with Kuyanbana. Zuru has a population of about 165, 547 (N.P.C, 2006). The major activities in Zuru is farming and rearing of animals. The average rainfall is about 1825mm with a mean temperature of 27⁰C. Wet season from April to October. The climate of the area is tropical with month season of November to January is the Harmattan Period (Baba, M.D., Yelwa, J.M., Dabai, J.S. and Sakaba, A.M. 2003).

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Housing of the Birds: The chicks were housed in a broader on poultry farm of the College, the brooder has a concrete floor and well roofed with zinc materials, before the arrival of the chicks, the brooder was thoroughly wash and disinfected using germicide (izal) to eliminate all possible pathogens, the brooder was partitioned into four components, all equipments needed for the experiment was equally well cleaned and disinfected before bring used, few hours before the arrival of the chicks, the brooder was kept warm using charcoal as a source of heat, the chicks were raised from day old on two commercial starter feeds.

Medications: Day old chicks were given anti-stress immediately on their arrival to the brooder house and subsequently on weekly basis, after weighing

operations, all the chick were vaccinated accordingly, multi-vitamins was also added to their water for about five weeks, other recommended antibiotics and vaccines were given to them.

Experimental Design: Birds were randomly grouped into four treatments (labelled T1, T2, T3 and T4) and was laid out in a complete randomize design (CRD), comprises of fifty (50) birds in each treatment which was replicated five times and the initial weight of the birds was recorded. Each treatment was fed one of the experimental diets for four weeks.

Experimental Diets: Four experimental diets was formulated and tag T1, T2, T3, and T4 *Parkia biglobosa* stem bark powder was included in each treatment percent of T1(0.0%), T2 (0.1%), T3 (0.2%), and T4 (0.3%) as shown in the table below.

Table 1: Gross and calculated chemical composition of experimental diets

Ingredients	T1 (0.0% PBSB)	T2(0.1% PBSB)	T3(0.2% PBSB)	T4(0.4% PBSB)
Maize	18	18	18	18
PBSB	0.0	0.1	0.2	0.3
SMB	11.6	11.6	11.6	11.6
GNC	4	4	4	4
Wheat offal	4	4	4	4
Fish meal	0.8	0.8	0.8	0.8
Bone meal	1.2	1.2	1.2	1.2
Premix	0.12	0.12	0.12	0.12
Lysine	0.08	0.08	0.08	0.08
Methionine	0.12	0.12	0.12	0.12
Salt	0.08	0.08	0.08	0.08
Total	100	100	100	100
Calculated chemical composition				
Energy	2944kcal/kg	2944kcal/kg	2944kcal/kg	2944kcal/kg
Protein	23.9%	23.9%	23.9%	23.9%
Calcium	1.3%	1.3%	1.3%	1.3%
Phosphorus	0.8%	0.8%	0.8%	0.8%
Fiber	4.2%	4.2%	4.2%	4.2%

Data Collection: The feed intake was recorded by subtracting the amount given from the left over of the previous day, body weight gain was monitor weekly and the mortality was recorded as it occurs.

Data Analysis: Data collected were subjected to analysis of variance (ANOVA). SPSS software was used to determine the significant difference at 5% (P<0.05), the means was separated by Duncan's multiple range test.

Results and Discussion: Performance of broiler fed diets containing *Parkia biglobosa* stem bark as replacement to

antibiotics was determined and compared the result indicated that initial body weight gain shows no significant (P>0.05) different in all the treatment. The result of final body weight gain differs significantly (P>0.05) between all the treatments even though the highest value was recorded in treatment 3 (T3) as against other treatment, the result body weight gain follow a similar trend with that of final body weight, Total feed intake has no significant (P<0.05) difference between all the treatment. The results of feed conversion ratio did not differ (P>0.05) between the treatment even though the best value was recorded in T4 (1.90) compared with other treatment.

Table 2: Performance characteristic of broiler fed diets containing *Parkia biglobosa* stem bark powder as replacement to antibiotics

Parameters	T1	T2	T3	T4	SEM
Initial body weight g/b	55.00	55.00	55.00	55.00	0.00

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Final body weight g/b	1726.00 ^a	1731.00 ^a	1757.00 ^b	1718.00 ^c	43.62
Body weight gain g/b	1671.00 ^a	1676.00 ^a	1702.00 ^b	1663.00 ^a	41.16
Body weight gain b/b/d	59.67	59.85	60.78	59.39	42.56
Feed intake g/b	3253.00	3221.00	3361.50	3174.00	40.19
Feed intake g/b/d	116.17	115.03	120.05	113.35	2.33
Feed conversion ratio	1.94	1.92	1.97	1.90	0.52

abc:- meaning values in the same row with different super script are significantly (P<0.05) different.

The performance characteristics of broiler starter fed diets containing *Parkia biglobosa* bark stem as replacement to antibiotic, shown on Table 2. There was significant difference (P<0.05) between final body weight and body weight gain between all the treatment. Performance of broiler birds fed 30g (T4) was better compared to other treatment, body weight gain implies that diets of broiler starter increase weight gain, it could also be attributed to the higher feed intake of the birds as compared to the report of Mitruka and Rawsley (2007) they are all within the range. In this case chicken fed 30g (T4) has the higher feed intake than other treatment (T1) 0.00g, (T2) 10g and (T3) 20g. The feed conversion ratio of the chicken implies birds on T4 have the highest recorded value and they are more efficient feed converters to meat. The total feed intake per birds has no significant (P>0.05) difference in all the treatment although high mean value was recorded in T3 (3361.50) this is in accordance with report of Ntui, *et al.*, 2012 in which they found that improve feed intake with increasing test material type of plant, type of nutrient and metabolites in the plant materials used.

Conclusion and Recommendation: Performance of broiler starter fed *Parkia biglobosa* stem bark as replacement to antibiotic, it was evaluated in four (4) weeks experiment. Day old chicks were share into four (4) treatment and each treatment was replicated five (5) times with 50 birds per treatment. Feed intake and body weight gain was determined and compared. The result of final body weight and body weight gain shows there is significant differences between the treatment mean while the result of initial body weight, body weight gain per bird per day, and feed conversion ratio shows there is no significant differences between all the treatment mean. It is concluded that feeding broiler starter with diets containing *Parkia biglobosa* stem bark at 30% in other to replace antibiotics enhance growth performance. However it is recommended that further investigation should carried but to determine the optimum inclusion level of *Parkia biglobosa* stem bark powder in diets and including levels in other poultry species, haematological indices and carcass analysis.

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