EFFECT OF ANTIBIOTICS (TETRACYCLINE) INCLUSION ON GROWTH PERFORMANCE OF BROILER STARTER BIRDS

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ABSTRACT

A total of sixty, day old Anak 2000 broiler birds were used in an experiment, which lasted for 56 days, to determine the effects of antibiotics (tetracycline) on the growth performance,of the birds.The birds were randomly assigned to three treatment diets in a completely randomized designed (CRD) and each treatment group was further sub-divided into four replicates. Three basal diets were used in the experiment. Treatment 1 was un-supplemented diet while treatment 2 and 3 were supplemented with 5g of antibiotics/25kg of starter diet and 2.5g of antibiotics/25kg of starter diet respectively. Feed and water were provided ad libitum. From the study, it was observed that there was a significant difference ($P<0.05$) among the treatments in average total body weight gain, daily weight gain, feed conversion ratio and feed efficiency. This point out that antibiotics inclusion in broiler starter diets has effect on the birds.

INTRODUCTION

The level of consumption of animal protein in Nigeria is estimated at 8g per day which is about 27g less than the minimum requirement by WHO (Obioha, 1992). The consumption of poultry products has increased tremendously compared to other kinds of meat (Sonaiya and Omole, 1983). However, high cost of inputs most especially feeds and day old chicks, limit the opportunity and advantage of poultry production in Nigeria as feed utilization accounts for 60-70% total production cost (Nwohu and Egbunike 1999). The objective of poultry production is to produce products of high quality with minimum cost in the shortest possible time. Towards attaining this goal, it is desirable to focus on nutritional strategies that will ensure greater productivity of poultry. The addition of feed additives such as antibiotics, enzymes, sweetners, binders, flavour compounds, hormones and unidentified factors such as arsenicals, copper sulphate and tranquillizers etc. have been effectively used to enhance certain characteristics of the feed and to improve growth rate in rabbits (Berepubo, 1992;Licios, 1996) and broilers (Weklie and Ajayi, 2001, Onu, 1995). Supplementing animal feed with antimicrobial agents to enhance growth has been a common practice for more than 30years and it is estimated to constitute more than half of the total antimicrobial drugs used worldwide.

MATERIALS AND METHODS

Experimental Site

This experiment was carried out at the Poultry Research Unit of The Department of Animal Science Ebonyi State University, Abakaliki. Sixty day old Anak 2000 boiler chicks were used in this experiment for a period of fifty-six days. The birds were housed in open sided poultry house whose sides and demarcations between pens were covered with wire gauze. The floors are concrete and covered with rice husk as litter materials (deep litter system).

Chemical and Data Analysis

Data collected was subjected to analysis of variance according to the procedure outlined by Snedecor and Cochran (1980). The difference between the treatment means were separated using the least significant difference (LSD) as outlined by Obi (1990).

Antibiotics (Tetracycline) Inoculation /Administration

The antibiotics (tetracycline) used was purchased from a nearby medicine store. The capsules were opened and their contents weighed using a sensitive weighing scale in the Food Science and Technology Laboratory of Ebonyi State University. Two quantities were measured out; 5g and 2.5g. The 5g was thoroughly mixed with 25kg of the starter diet. (This served as the treatment two diet). The 2.5g was mixed with the other 25kg starter broiler diet and it served as the treatment three diet.The 50kg starter diet was left un-supplemented, which was used for the control i.e. treatment one only.

RESULT

As indicated in table 3, there are significant differences ($P<0.05$) among treatments in average body weight gain, daily weight gain, feed conversion ratio and feed efficiency. But

there was no significant difference (P>0.05) in average initial body weight, final body weight, total feed intake and daily feed intake. Birds in treatment 2 had the highest but non-significant (P>0.05) daily feed intake than birds in treatments 1 and 3. The final weights of the birds in the three treatments are similar. The total body weight of the birds in treatment 1 and 3 are similar (P>0.05) but differ significantly (P<0.05) with that of treatment 2. Birds in treatment 3 competed favourably with birds in treatment 2. The best performance for the different treatments was found among birds in treatment 2 (i.e. those birds fed with diets containing 5g of antibiotics /25kg of starter diets) which has the highest total body weight gain, daily weight gain and feed efficiency.

DISCUSSION

The result obtained from this trial indicates that antibiotics inclusion in broiler startesr diets has a profound impact in increasing the better performance of the birds. The subsequent increase in total body weight, daily weight gain and better feed efficiency are in line with Dibner and Richards (2005) report which revealed that there were better performance of birds feed fermentation waste from an antibiotic (tetracycline) plant over the control. The observation in T2 can also be attributed to the level of antibiotic in the diet which might have destroyed pathogenic organism in the alimentary tract thereby reducing mobidity and mortality due to reduced sub clinical diseases (Rosen 1995) and promoting improved digestibility and utilisation of the diets according to Ewing and Cole (1994).

CONCLUSION

The findings from this study showed that inclusion of antibiotics in broiler starter diet had significant effect on the performance of the birds. However, there are tendencies for similar total feed intake, daily feed intake and final body weight gain. The administration should be withdrawn over a certain period (about six weeks) before slaughter to avoid any residue deposit. The inclusion rate/dosage should be minute, about 100-200g/ton of feed to avoid the emergence of carcinogens or development of bacteria resistance genes.

REFERENCE

Berepubo, N.A. (1992), Influence of Organic, Ampicilin on the growth rate and oestrus behaviour of female rabbits in the humid tropics J. Appl. Anim. Res. 3:39-45..

Dibner, J.J. and Richards, J.D. (2005). Poultry Sci, 84:634-643.

Esonu B.O. (2006), Animal Nutrition and feeding A. Functional approach second edition, Owerri, Nigeria.

Ewing S.D. and Cole M.A. (1994) Nig. Poult Sci. J. 1:4-11. Ezeokeke, C. (2005). Trop. J. Anim. Sci. 8:9-15.

Nwogu, F.C. and Egbunike. G.N. (1999) performance characteristics of broiler feed diets with soyabean meal and groundnut cake as protein sources. Tropics animals prod. Invest 2:51-59.

Obi U. (1990). Statistical methods of detecting differences between treatment means snaooress, Enugu, Nigeria.

Obioha, F.C. (1992) A Guide to poultry protectionist in the tropics 1st ed, Acena Publishers, Enugu, Nigeria 212 pp.

Rosen, G.D. (1995). In R.J. Wallace and A. Chesson (eds), Biotechnology in Animal Feeds and animal feeding: VCH VerlagsgeesellsChaft, weintum, Germany.

Snedecor, G.W. and Cochran, W.G. (1980) Statistical Methods (7th ed). The Iowa state University Press, Ames, Iowa, USA.

Sonaiya, E.B. and Omole T.A. (1983) Cassava meal and cassava peel meal as diet for growing pigs, anim. Feed Sci. Technol 8.2. 211-220.

Stewart M. (1990). Animal physiology. First edition. pg. 129.90 Tottenham court road, London.

Vidanarachchi, J.K. (2006). PhD Thesis, University of New England. Armidale. Australia.

Visek, W.J., Bates. N.E. (1978). Journal of Animal Science 46, 1447-1469.

Weklie, S.N. and Ajayi, F.O. (2001) The performance of broilers treated on graded levels of methronidazole (Flagyls): Proc. Of the 6th Animal conf. of Anim Soc. Asso.Of Nigeria, Sept. 17-19, 2001 Maiduri 87.

Yuri Bayarski (2001) Facts about antibiotics cook medical com (Spectrum) www.mercatorpharma.com.

Zaika, L.L. (1998). J. food safety 9.97-118.

Table 1: Composition of experimental starter diet

Ingredients	Percentage contribution
Yellow maize	45.00
Wheat offal	11.00
Fishmeal	4.50
Groundout cake	30.0
Palm kernel cake	4.0
Bone meal	3.0
Oyster shell	1.60
Vitamin-mineral premix	0.25
Methonine	0.15
Lysine	0.25
Salt	0.25
Total	100

Table 2: Proximate composition of the experimental diet

Nutrient	%
Crude protein%	23.470
ME kcal/kg	2758.700
Crude fibre	3.815
Ash	4.518
Crude fat (%)	4.360
Day matter	89.580

Table 3: Performance of broiler chicks fed starter diets inoculated with different antibiotics (tetracycline) levels.

Parameters	Experimental diets			
	T^1	T^2	T^3	SEM
Average initial body weight (g)	140^a	150^a	137.5^a	6.97
Average final body weight (g)	912.50^a	1043.75^a	950.00^a	48.50
Average body weight gain (g)	602.5_a	6566.25^b	588.75^a	18.65
Average daily weight gain	21.51^{ab}	23.43^b	21.02^a	0.66
Average total feed intake (g)	1821.00^a	1991.00^a	1966.75^a	80.86
Average daily fed intake (g)	65.03^a	71.41^a	68.45^a	2.81
Average feed conversion ratio	2.95^a	3.02^a	3.37^a	0.19
Average feed efficiency	0.23^a	0.33^b	0.29^a	0.01

Means within rows with unidentical superscripts differ significantly (P<0.05)