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EFFECT OF PROBIOTICS ON GROWTH PERFORMANCE OF NOILER CHICKS

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Abstract

A six week feeding trial was conducted to investigate the effect of probiotic on growth performance of Noiler chicks. Three hundred and twenty (320) day old Noiler chicks were acquired from Amo farm Sieberer hatchery limited in Awe, Oyo State for this experiment. The chicks were randomly distributed into four experimental treatments with four replicates of twenty birds each. Experimental treatments consisted of probiotics at three inclusion rates (0.25g, 0.5g, 1.0g) per 1kg of feed respectively. The experiment commenced on the bird's arrival and the chicks were placed on the diets for a period of six weeks representing the chick phase. Results of the experiment showed that there were significant ($P<0.05$) differences in final weight gain, weight gain, daily weight gain, total feed intake, daily feed intake and feed conversion ratio. Birds fed with diet supplemented with probiotic at 1.00g/1kg feed (T_4) had the highest average final weight of 889.43g, weight gain of 855.73g, and the best feed conversion value of 2.12 while the control (T_1) had the least final weight gain of 536.94g and weight gain of 503.94g. The study indicated that dietary inclusion of probiotic at the rate of 0.1% of the diet supported a superior performance of Noiler chicks as a natural growth promoter in Noiler diet.

Key words: Growth promoter, Performance, Noiler, Probiotics.

INTRODUCTION

In Nigeria, where the production of animal protein falls far short of meeting the demands of a rapidly growing population (Adene and Oguntade, 2006) and the state of nutrition is characterized by gross inadequate protein intake, poultry is the most common livestock being raised (Amar-Klemesu and Maxwell, 2000). The Nigerian poultry industry in particular has been rapidly expanding in recent years and is, therefore, one of the most important and commercialized subsectors of the Nigerian agriculture (Adene and Oguntade, 2006). The poultry industry serves as a major source of animal protein in form of meat and eggs and has great potential of solving the national problem of inadequacy of animal products. Local chickens are among the many local resources of the poor people, living in the rural areas, which could be harnessed and utilized for poverty alleviation (Njue *et al*., 2002). The indigenous poultry species, which includes Noiler chicken, makes significant contributions to animal protein availability in Nigeria through cheap poultry products, such as meat and eggs.

Noiler chicken, a dual purpose breed of chicken with different plumage colours predominantly black, brown and barred, was recently developed by Amo Farm Sieberer Hatchery Limited, Nigeria for smallholder farmers to address the challenges of food and financial insecurities among rural population, especially women. Noiler chicken is bred to survive on low quality feedstuffs to provide good quality meat and eggs.

The poultry industry has become an important economic activity in Nigeria. In large-scale rearing facilities, where poultry are exposed to stressful conditions, problems related to diseases and deterioration of environmental conditions often occur and result in serious economic losses. Prevention and control of diseases have led during recent decades to a substantial increase in the use of veterinary medicines. However, the utility of antimicrobial agents as a preventive measure has been questioned, given extensive documentation of the evolution of antimicrobial resistance among pathogenic bacteria. So, the possibility of antibiotics ceasing to be used as growth stimulants for poultry and the concern about the side-effects of their use as therapeutic agents has produced a climate in which both consumer and manufacturer are looking for alternatives. Probiotics are being considered to fill this gap and already some farmers are using them in preference to antibiotics (Kabir *et al*., 2005).

In poultry nutrition, probiotic species belonging to *Lactobacillus, Streptococcus, Bacillus, Bifidobacterium, Enterococcus, Aspergillus, Candida,* and *Saccharomyces* have a beneficial effect on broiler performance (Islam *et al.,* 2004), modulation of intestinal microflora and pathogen inhibition (Mountzouris *et al.,* 2007), intestinal histological changes (Kabir *et al.,* 2005), immunomodulation (Kabir *et al.,* 2004), certain haemato-biochemical parameters (Islam *et al.,* 2004), improving sensory characteristics of dressed poultry meat and promoting microbiological meat quality of Chicken (Kabir *et al.,* 2005).

The objective of this study, therefore, was to determine the effect of probiotics on the growth performance of Noiler chicken.

Materials and Methods

The experiment was conducted at the Poultry Unit of the School of Animal Technology, Akperan Orshi Polytechnic, Yandev, Gboko. Yandev is located within the Guinea savannah belt of Nigeria, with an annual rainfall range of 1350-1400mm, the mean temperature ranges between 26^0C – 36^0C, with a relative humidity range of 36-69% (AOPOLY Meteorological Station).

Three hundred and twenty day old Noiler chicks were acquired from Amo farm Sieberer hatchery limited in Awe, Oyo State for this experiment. The birds were randomly distributed into 4 treatments with 4 replicates of 20 birds each.

Experimental treatments consisted of Lacto Dry® at 3 inclusion rates (0.25g, 0.5g, 1.0g) per 1kg of feed respectively. The experiment commenced on the bird's arrival and the chicks were placed on these for a period of six weeks representing the chick phase. Prior to the arrival of the birds, the poultry house was thoroughly cleaned and disinfected. The feeders and drinkers were kept clean. Feed and water was made available to the birds *ad libitum*. On arrival, the birds were given feed containing probiotic in different inclusion level of 0.00g, 0.25g, 0.50g, 1.00g per 1kg of feed throughout the period of the experiment.
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The measured performance parameters includes; final body weight (g), body weight gain (g), feed intake (g), feed conversion ratio and mortality rate (%). All collected data were analyzed by Analysis of Variance (ANOVA) using SPSS Inc. (2006) program.

Results and Discussion

Results of the effect of probiotics on growth performance of Noiler Chickens are presented in Table 1.0.

Table 1.0: The Effect of Probiotics on Growth Performance of Noiler Chickens

Parameters	T_1	T_2	T_3	T_4	SEM
Initial weight (g/bird)	33.00	33.60	32.06	33.70	0.32
Final Weight (g/bird)	536.94^{d}	645.04^{b}	599.80^{c}	889.43^{a}	0.27
Weight gain (g/bird)	503.94^{d}	611.44^{b}	567.74^{c}	855.73^{a}	0.37
Daily weight gain (g/bird)	12.00^{b}	14.56^{b}	13.52^{b}	20.37^{a}	0.29
Total feed intake (g/bird)	1562.50^{b}	1559.38^{b}	1611.84^{a}	1599.30^{a}	0.94
Daily feed intake (g/bird)	1420.45^{c}	1417.61^{c}	1465.31^{a}	1453.91^{b}	0.01
Feed conversion Ratio	4.62^{c}	3.17^{b}	4.64^{c}	2.21^{a}	0.01
Mortality (%)	0	0	0	0	

abc – Means on same row with different superscripts are significantly (P<0.05) different.

The results showed that there were significant differences (P<0.05) in final weight gain, weight gain, daily weight gain, total feed intake, daily feed intake and feed conversion ratio. Birds fed with diets supplemented with probiotics at 1.00g/1kg feed (T_4) had the highest average final weight of 889.43g, weight gain of 855.73g, and the best feed conversion value of 2.12 while the control (T_1) had the least final weight of 536.94g and weight gain of 503.94g. Highest total feed intake of 1611.84 g was recorded in birds fed diet supplemented with probiotics at 0.50g/1kg feed (T_3) while diet supplemented at 0.25g/1kg feed (T_2) had the least total feed intake of 1559.38g.

The average final weight of Noilers was found to be significantly higher (P<0.05) for probiotic (Lactic dry) supplemented with diet in T_4 followed by T_2, T_3 than T_1 (Control). Body weight gain followed the same pattern. These results are in agreement with that given by Alloui *et al.* (2011) and Mehdi *et al*. (2011) who stressed that application of probiotics in chicken diet increased final body weight gain and improved feed conversion ratio.

Chicks in groups fed diets supplemented with probiotics (T_4, T_3) except T_2 significantly (P<0.05) exhibited a higher feed intake compared to chicks fed the control diet. Feed conversion ratio in T_4 was significantly higher (P<0.05) than others. The results agree with the findings of Yeo and Kim (1997) and Anjum *et al.* (2005) who reported that the use of probiotics in chicken diets significantly improved the daily body weight gain and feed efficiency. This may be attributed to increases in microbial resistance to antibiotics and residues in chicken (Perreten, 2003).

According to Bedford (2000) and Choudhari *et al.* (2008), a more balanced micro flora population in gut is expected to lead to a greater efficiency in digestibility and utilization of food, which consequently, result in enhanced growth and improved feed conversion ratio.

The results obtained in this study indicated that dietary inclusion of probiotics supported a superior performance of the chicks. Hence, probiotics can be applied as antibiotics growth promoter substitutions in Noiler diets.

Conclusion and Recommendation

The result from this study showed that there was a great potential for improvement in feed intake, weight gain, feed conversion and growth rate of Noiler chicks fed diet supplemented with probiotics at inclusion rate of 1g/kg.
Therefore, probiotics may be used as an alternative to replace the adverse effect of antibiotics.

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