PERFORMANCE OF BROILERS FINISHER GIVEN DIFFERENT LEVELS OF YOGHURT WHEY AS A SOURCE OF PROBIOTIC

Dikko, A. H., S. S. Egena, Kwota, M.A. and Ibrahim, H. ***
**Federal University of Technology Minna*
*** IBB University Lapai*

Corresponding Author's E-mail: dikkoaliyu@ymail.com

Abstract

This study was conducted to evaluate the performance of finisher broilers following the addition of yoghurt whey as a-probiotics through drinking water. The birds of five (5) weeks of age were randomly allocated to three (3) treatments with three replicates each. The birds were fed a single ration of 3067.63Kcal/Kg and 20% CP. Treatment one (T_1) had zero level of yoghurt whey while Treatment two (T_2) were given 1ml of yoghurt whey and Treatment three (T_3) 2ml of yoghurt whey administered in four (4) litres of drinking water once. Parameters measured were mean body weight, mean weight gain, mean feed consumption, mean feed conversion ratio and protein efficiency ratio. The result obtained showed no significant difference ($P>0.05$) in the body weight gain, feed conversion ratio. However significance difference ($P<0.05$) was observed in the final body weight gain and feed intake. In conclusion, birds could be given yoghurt whey at higher dosage to enhance performance.

Introduction

In Greek, probiotics mean "life" (Gibson and Fuller, 2000) and this may be refer to as a live microbial feed supplement which beneficially affect the host animal by improving its intestinal balance (Fuller, 1989). With increasing concern about antibiotics resistance, the ban on sub-therapeutic antibiotic usage in Europe and the potential ban in the United State, there is an increasing interest in finding alternative to antibiotics in poultry production.

probiotic food have been consumed for centuries as natural component. A food can be said to be functional if it contain a component (which may or may not be a nutrient) that affect one or a limited number of functions in a targeted way so as to have positive effect on health (Bellisle *etal*, 1998). The addition of probiotics to diet benefit the host animal by stimulating appetite (Nahashon *et al*, 1992), improve intestinal microbial balance (Fuller, 1989), stimulate the immune system (Tom and Powries, 2001), decrease Ph and release bacteriocin (Rolfe, 20009). Probiotics compete with other microbes for adhesive sites, improve egg mass, egg weight and egg size in layers. It also depresses serum and egg yolk cholesterol concentration in hens (Mohan *et al*, 1995; Kurtoglu *et al*, 2004).

The objective of the study was to evaluate the performances of finisher broilers following the administration of yoghurt whey as a source of probiotics through drinking water and to also evaluate the degree of nutrient utilization by broiler finisher birds given yoghurt whey through drinking water

Materials and Methods

The study was conducted at the poultry unit of the teaching and research farm of the School Agriculture and Agricultural Technology, Federal University of Technology Minna. The experiment was carried out for five weeks. Feed ingredients which include maize, groundnut cake, fish meal, premix, bone meal, salt, methionine, lysine and palm oil were purchased from Sammy ventures Nigeria limited behind U.K Bello art theatre Minna Niger state. These were used to formulate a finisher ratio of 20.0% CP and 3067.63Kcal/Kg of energy. The probiotic culture used for the study was extracted from yoghurt. The ingredients for yoghurt production which include, milk and yogourment starter culture were obtained from Minna central market. The yoghurt and whey were produced at the Microbiology laboratory of the Federal University of Technology. Experimental birds (Hubbard chicks) of 35 weeks old were purchased from Step by Step intergraded Service Minna.

Compiete randomized design was used. The birds were divided into three Treatments groups (T_1, T_2, and T_3) with three replicate each. Each replicate was allocated 12 birds. T_1 which was the control, was administered zero (0) level of yoghurt whey, T_2 was administered 1ml of yoghurt whey and T_3 was administered 2ml of yoghurt whey. The administration of yoghurt whey was done once for all treatments in the third week and through the drinking water. The parameters measured the mean weekly feed intake, mean weekly body weight gain, feed conversion ratio, protein efficiency ratio, and final body weight. The chemical analysis for experimental diet and feaces collected during the digestibility trails were analyzed using A.O.A.C., 1990 guidelines. Data collected were subjected to one way Analysis of Variance (ANOVA) using SPSS (2003) and means were separated by the method of Duncan (1995).

Results and Discussion

Table 4.1 shows the chemical composition of the experimental diet. The CP level in the diet falls within the range recommended for broiler finisher birds. Table 4.2 shows the average weekly feed intake, average weekly body gain, feed conversion ratio and final body weight. The table shows a non significance differences ($P>0.05$) in body weight gain and feed conversion ratio. Though there was no significance difference in feed conversion among the treatments, feed conversion was better in T_3 and least in T_1. This is in agreement with the findings of Hamid *et al*, (1994) and Silva *et al*, (2000) who reported improvement in feed conversion

with the use of probitics. T_2 had a better weight gain compare to those in T_1 and T_3. High body weight T_2 and T_3 may be due to the formation of lactic and bacteria in the gut lowering the Ph of the digestive system. This is line with the findings of Fioramonti *et al*, (2003). However, significance difference ($P<0.05$) was observed in the final body weight and feed intake. T_2 had the highest feed intake (534.97±129.78) followed by T_3 with (500.10±111.86) while T_1 had least with (462.380±118.45). In respect with final body weight, T_2 had the highest final body weight (954.23±317.74) followed by T_1 (876.19±307.61) and T_3 had the least (859.97±290.10). Table 4.3 shows the apparent nutrient digestibility of broilers given different level of yoghurt whey. The table reveal that the digestibility of nutrients evaluated were significant different ($p<0.05$) in crude fibre, Ash, and Nitrogen Free Extract. This is in agreement with the findings of Fioramonti *et al*, (2003) who reported that birds given probiotics has the ability to produce lactic acid by bacteria in their gut which made the binding site to be acidic thereby making digestion and absorption to be positively influenced by probiotic supplementation.

Conclusion

The result obtained from the study shows that T_2 birds that were given 1ml of yoghurt whey in 4 litres of drinking water performed a little better than T_1 which was the controlled.

Recommendation

Farmers should look for alternative probiotic as birds given yoghurt whey did not perform much better than controlled.

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Table 4.1. Chemical composition of experimental diet

Parameters	% composition
Dry matter	90.11
Crude protein	20.00
Crude fibre	5.6
Ether Extract	15.2
Ash	8.0
NFE	42.06

Table 4.2 Average weekly feed intake, average weekly body gain, feed conversion ratio and final body weight

Parameters	T_1	T_2	T_3	LS	
Average weekly body weight gain	180.09 ± 64.47^{c}	205.70 ± 46.09^{a}	193.33 ± 60.32^{b}	*	
Average weekly feed intake	462.38 ± 118.45^{c}	534.97 ± 129.78^{a}	500.10 ± 111.86^{b}	*	
Average feed conversion ratio	2.60±0.53	2.75±0.82	2.69±0.56		NS
Final body weight	876.19±307.61	954.23±317.74	859.97±290.10	NS	

abc means in the same row bearing different superscripts are significantly different (P<0.05)
T2 Treatment two (1ml of yoghurt whey)
T3 Treatment three (2ml of yoghurt whey)
* Significantly different
NS Not significant

Table 4.3 Apparent nutrient digestibility of broilers given different levels of yoghurt whey

Parameters	T1	T2	T3	SEM	LS	
Dry matter	74.95	74.63	75.14	±1.29	Ns	
Crude protein	78.50	74.63	75.14	±0.93		NS
Crude Fibre	86.74^{a}	81.55^{b}	79.50^{c}	±1.14		*
Ether Extract	89.73	91.47	87.50	±1.05		NS
Ash	78.25^{c}	86.90^{a}	82.04^{b}	±1.32		*
NFE	70.86^{c}	73.91^{b}	76.69^{a}	±1.08		*

Abc means in the same row bearing different superscripts are significantly different (P<0.05)
T2 Treatment two (1ml of yoghurt whey)
T3 Treatment three (2ml of yoghurt whey)
SEM Standard Error of Mean
* Significant different
NS Not significant