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EFFECT OF BACTOFORT INCLUSION IN DIET AS PROBIOTIC ON GROWTH PERFORMANCE AND ABDOMINAL FAT PERCENTAGE OF BROILER CHICKENS

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Abstract

The effect of feeding broiler chicks on diets containing different levels of bactofort as probiotic on growth performance and abdominal fat percentage were studied. A total of 300-day old broilers of Ross strain were used for the study. The birds were randomly divided into five experimental groups. Each group was further subdivided into three replicates with twenty chicks per replicate in a complete randomized design. The chicks were fed on basal diets containing energy of 3008 ME and crude protein of 23.31%. The bactofort was added to the basal diets at levels of 0.0 which serves as the control group and others at 6.25, 8.75, 11.25 and 13.75g respectively. The growth performance parameters were recorded, the percentage of abdominal fat was also recorded. The result indicated that the control group had significantly ($P<0.05$) the highest body weight gain followed by group supplemented with 8.75g bactofort. Feed intake was significantly ($P<0.05$) higher in the control group compared to other treatment groups. The best feed conversion ratio was recorded in group fed 11.25g bactofort. The percentage of abdominal fat was higher in the control group compared to other treatment groups. It is concluded that inclusion of bactofort in the diet of broilers can improve the performance and meat quality. It is therefore, recommended that bactofort can be added as probiotic at 8.75g/100kg diet for better feed conversion ratio and lower abdominal fat.

Key words: Bactofort, Broiler, Probiotic, Gowth performance, Adominal fat

INTRODUCTION

For decades, antibiotics have been used in animal feed to improve the health and performance of animals. However there is an increasing concern in the use of these antibiotics due to the resistance in both humans and livestock (Vandana *et al.,* 2013). The application of probiotics in animal production have been reported to improve livestock production. Probiotics are living microorganisms in feed which when consumed provide stability to the intestinal microflora (Majidi-Mosleh *et al*., 2017). Commonly used probiotics are *Lactobacillus acidophilus, Bifidobacterium bifidum, Enterococcus feccium, Streptococcus faecium.* Bactofort is a multi-strain probiotic. There is evidence that probiotic bacteria can neutralize toxins produced by pathogenic bacteria by producing bacteriocins (Mc Donald *et al*., 2002). Probiotic is said to have multiple influence on the host (Vandana *et al*., 2013). This study therefore, investigate the effect of bactofort inclusion in diet on growth performance and abnominal fat percentage of broiler chickens.

Experimental Site

The study was conducted at the National Agricultural Extension and Research Liaison Services, Skill Acquisition Farm, Ahmadu Bello University, Zaria, located within the Northern Guinea Savannah Zone of Nigeria at latitude 11^{o} 09' 06'' N and longitude 7^{o} 38' 55'' E, at an altitude of 706m above sea level [GPS 2019] .

Source of Experimental Birds

A total of three hundred commercial broiler chicks of Ross White strain were purchased from a reputable hatchery for this study The Bactofort was purchased from commercial dealers in Kaduna State, Nigeria.

Measurement of growth performance and abdominal fat percentage

Feed intake and body weight of the birds were recorded weekly. Body weight gain was calculated as the difference between the final weight and the initial weight. Feed conversion was calculated as the ratio between feed intake and weight gain. Abdominal fat was expressed as percentage of dressed weight.

Statistical Analysis

Data obtained from the experiment were subjected to the analysis of variance (ANOVA) using the general linear model procedure of (SAS, 2001). Significant differences among treatment means were separated using Duncan

Experimental Diets

Five experimental diets were formulated to meet the nutrient requirement of broilers. Diet 1 serves as the control while diets 2, 3, 4, and 5 contained 6.25, 8.75, 11.25 and 13.75g of commercial bactofort, respectively.

Table 1: Calculated Analysis of the experimental diet

Calculated Analysis					
ME (Kcal/kg)	3008	3008	3008	3008	3008
Crude protein (%)	23.31	23.31	23.31	23.31	23.31
Ether extract (%)	8.11	8.12	8.12	8.13	8.14
Crude fibre (%)	3.70	3.68	3.66	3.65	3.63
Calcium (%)	1.28	1.28	1.28	1.28	1.28
Lysine (%)	1.24	1.23	1.22	1.22	1.21
Methionine (%)	0.35	0.34	0.34	0.34	0.34
Available P (%)	0.57	0.57	0.58	0.58	0.59

Results

Table 1 shows the effect of bactofort inclusion in diet as probiotic on the performance of broiler chickens. The result shows that final body weight and body weight showed significant (P<0.05) differences across all the treatment groups. The final body weight and body weight gain was higher in the control group followed by the treatment group fed 8.75g bactofort. The least final body weight and body weight gain was observed in treatment group fed 13.75g. The total feed intake showed significant differences (P<0.05) across the treatment groups. The control group had the highest (8,069.70g) feed intake followed by treatment group fed 8.75g. The least feed intake (7370.60g) was observed in treatment group fed 13.75g which did not differ statistically with treatment group fed 6.25g. Feed conversion ratio did not differ statistically across all the treatment groups, although in terms of figures treatment group fed 11.25g bactofort had the least feed conversion ratio.

2: Effect of bactofort inclusion in diet as probiotic on growth performance of broiler chickens

	Levels of Bactofort inclusion (g)					
Parameters	**0.00**	**6.25**	**8.75**	**11.25**	**13.75**	**SEM**
Initial body weight (g)	40.29	40.12	40.01	40.19	40.25	0.11
Final body weight (g)	3042.59^{a}	2884.63^{d}	2954.23^{b}	2926.21^{c}	2808.67^{e}	2.14
Body weight gain (g)	3002.30^{a}	2844.50^{d}	2914.22^{b}	2886.02^{c}	2768.42^{e}	2.14
Average daily gain (g)	107.23^{a}	101.59^{d}	104.08^{b}	103.07^{c}	98.87^{e}	0.40
Total Feed Intake(g)	8069.70^{a}	7371.40^{d}	7499.20^{b}	7398.30^{c}	7370.60^{d}	4.00
FCR	2.69	2.59	2.57	2.56	2.67	0.07

^{abc}: Means with different superscripts along same rows show significant differences (P<0.05)
SEM: Standard Error of Means FCR= Feed conversion ratio

Figure 1 shows the carcass abdominal fat of broilers fed bactofort at different levels of inclusion. The control group had the highest abdominal fat followed by treatment group fed 6.25g. The least (15g) abdominal fat was recorded in treatment group fed 8.75g.

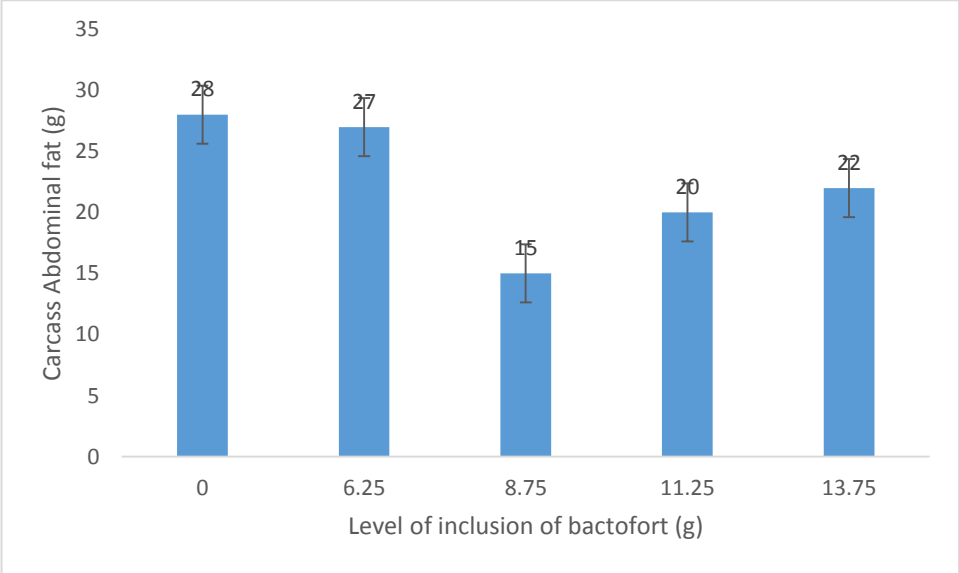


Figure 1: Abdominal fat of broilers fed bactofort at different levels of inclusion

Discussion

Probiotics inclusion in diet is said to increase the weight gain of birds (Altaf *et al*., 2009). This could be because the microbes present in probiotics would secrete amylase, protease, and lipase, which would enhance the activities of the endogenous enzymes to release more energy from hydrolyzing the energy in the feed ingredients (Owosibo *et al*., 2013). Such higher quantity of liberated energy would help to improve the weight gain of chicks fed probiotics rations (Owosibo *et al*., 2013). The present study showed that the control had higher weight gain. Birds on control ration showed poor feed conversion ratio in terms of values compared to treatments with bactofort. These findings are supported by the work of (Gonzalez *et al.*, 2001), that reported best FCR for chicken raised on ration containing probiotics. The improved FCR might be due to maintaining normal intestinal micro flora by competitive exclusion and antagonism, altering metabolism by increasing digestive enzyme activities and by promoting digestion (Owosibo *et al.*, 2013).

The demand of safe and quality meat in the market has considerably increased over time. This has necessitated the use of natural supplements which positively affect the animal health, increase productivity and improve quality of the product. The use of bactofort reduced the abnominal fat content of the treatment groups compared to the control. This is in agreement with the work of Mansoub (2010) who reported that feeding of probiotic culture of *L. acidophilus* and *L. casei* alone or in combination significantly decreased the triglycerides level in serum. This reduction in lipid content was attributed to the change in fat digestion and gallbladder acids (Moharrery, 2006).

Conclusion and Recommendation

It is concluded that inclusion of bactofort in the diet of broilers can improve the performance and meat quality. It is therefore, recommended that bactofort can be added as probiotic at 8.75g/100kg diet for better feed conversion ratio and lower abdominal fat.

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