

EFFECT OF BAKER'S YEAST SUPPLEMENTATION ON CARCASS CHARACTERISTICS OF BROILER CHICKENS

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ABSTRACT

An experiment was conducted to evaluate the effect of baker's yeast (*saccharomyces cerevisiae*) supplementation as probiotic in broiler chickens diet and its effect on carcass characteristics. Two hundred and fifty five day old chicks were used for the study. The birds were fed diets containing graded levels of *saccharomyces cerevisiae* (SC). There were five treatment groups for both starter and finisher phases. Each treatment group had three replicates with 17 birds per replicate and fifty one birds per group in a completely randomized design (CRD). Treatments 1, 2, 3, 4 and 5 contained 0, 0.5, 1.0, 1.5 and 2.0% SC respectively. The results of the study showed that dietary inclusion of SC had significant ($P<0.05$) effect on the primal cuts and abdominal fat. Treatment group supplemented with 1.0% SC had the best values for breast and thigh. The highest percentages of abdominal fat 4.26% was recorded in the control group compared to other treatment groups. It is concluded that 1% SC should be supplemented in broilers diet for better performance.

Key words: Broilers, Baker's yeast, Supplementation, Carcass characteristics, effect

Introduction

Probiotics are life microorganisms that when consumed have beneficial effects on the host health. The use of probiotics as a supplement in diet of broilers chicken have been shown to have a positive effect. Studies have shown that the use of probiotics can lead to increase weight gain, improved feed conversion and reduced mortality. Additionally probiotics has been shown to improve overall meat quality of broilers chicken. Farhad (2011) reported that significant effect was observed in the value of probiotic had no significant effect on organs weight such as liver, gizzard and heart but abdominal fat compared to the control. Other researchers such as Ivanov (2004) and Dimcho *et al.* (2005) respectively reported more improvements in liver, gizzard and heart of broilers, mules and ducklings by supplementing diets with probiotics. Kannan *et al.* (2005) and Paryad and Mahmoudi (2008) reported that SC in broiler chicks' rations affects significantly all carcass characteristics measured (dressing percentage, breast, leg, liver, heart, gizzard and abdominal fat percentage). Yusrizal and Chen (2003) reported that supplementation of beta functions as probiotic from Chicory produced low level of abdominal fat. However the specific effects of probiotics on carcass characteristics can vary depending on the type and level of inclusion used. Therefore this study aim to determine the effect of baker's yeast (SC) supplementation on carcass characteristics of broiler chickens.

Materials and methods

The study was conducted at the Skill Acquisition Farm of the National Agricultural Extension and Research Liaison Services, Ahmadu Bello University, Zaria, located within the Northern Guinea Savannah Zone of Nigeria at latitude 11° 09' 06'' N and longitude 7° 38' 55'' E, at an altitude of 706m above sea level (GPS, 2022).

Source of Experimental Birds

A total of two hundred and fifty five commercial broiler chicks of Ross White strain were purchased from a reputable hatchery for this study. The Baker's yeast was purchased in Samaru market in Zaria, Kaduna State, Nigeria.

Experimental Diets

Five experimental diets (Broiler starter and broiler finisher) were formulated to meet the nutrient requirement of broilers as shown in Tables 1 and 2. Diet 1 serves as the control while diets 2, 3, 4, and 5 contained 0.5, 1.0, 1.5 and 2.0% of commercial dry yeast, respectively.

Table 1: Composition of Broiler Starter Diets Containing Varying Levels of Baker's Yeast (SC)

Ingredients	Levels of inclusion of SC (%)				
	0.0	0.5	1.0	1.5	2.0
Maize	50.66	50.63	50.60	50.55	50.52
Groundnut cake	25.31	24.81	24.31	23.82	23.32
Soya cake	12.59	12.59	12.59	12.59	12.59
Fish meal	3.00	3.00	3.00	3.00	3.00
Palm oil	3.69	3.72	3.75	3.79	3.82
Limestone	0.90	0.90	0.90	0.90	0.90
Bone meal	2.75	2.75	2.75	2.75	2.75
Common Salt	0.30	0.30	0.30	0.30	0.30
Premix**	0.30	0.30	0.30	0.30	0.30
Lysine	0.30	0.30	0.30	0.30	0.30
Methionine	0.20	0.20	0.20	0.20	0.25
Baker's yeast (SC)	0.00	0.50	1.00	1.50	2.00
Total	100.00	100.00	100.00	100.00	100.00

Table 2: Composition of Broiler Finisher Diets Containing Varying Levels of Baker's Yeast (SC)

Ingredients	Levels of inclusion of SC (%)				
	0.0	0.5	1.0	1.5	2.0
Maize	57.52	57.52	57.52	57.52	57.52
Groundnut cake	11.67	11.17	10.67	10.17	9.67
Soya cake	20.00	20.00	20.00	20.00	20.00
Fish meal	3.00	3.00	3.00	3.00	3.00
Palm oil	2.81	2.81	2.81	2.81	2.81
Limestone	1.10	1.10	1.10	1.10	1.10
Bone meal	2.80	2.80	2.80	2.80	2.80
Common Salt	0.30	0.30	0.30	0.30	0.30
Premix**	0.30	0.30	0.30	0.30	0.30
Lysine	0.30	0.30	0.30	0.30	0.30
Methionine	0.20	0.20	0.20	0.20	0.20
Baker's yeast (SC)	0.00	0.50	1.00	1.50	2.00
Total	100.00	100.00	100.00	100.00	100.00

Carcass Analysis

At the end of 8th week of age, 2 birds were selected from each replicate (based on average group weight) making a total of 6 birds per treatment; fasted overnight, weighed and slaughtered for carcass analysis. The live weight, slaughtered weight, de-feathered weight and dressed weight were recorded while the breast, back, thigh, drum stick, wings, neck, head, legs, liver, spleen, heart, gizzard, kidney, abdominal fat, lungs and weight of intestine were expressed as percentages of dressed weight. The dressing percentage was calculated using the formular below

$$\text{Dressing \%} = \frac{\text{Dressed weight} \times 100}{\text{Live weight}}$$

Statistical Analysis

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

RESULTS AND DISCUSSION

The results of the carcass characteristics of broiler finisher chickens supplemented with SC are presented in Table 3. The primal cuts and organs measured were significantly ($P < 0.05$) affected by the dietary treatments. Birds supplemented with 0.5% and 1% SC did not differ statistically in terms of breast percentage. Thigh was significantly ($P < 0.05$) higher in treatment group fed the control and

2.0% SC supplemented group. The abdominal fat was significantly ($P<0.05$) higher (4.26%) in the control group compared to the other treatment groups. The breast was significantly ($P<0.05$) higher in treatment groups fed 0.5 and 1.0% SC. The back and wing was significantly ($P<0.05$) higher in treatment group fed 1.5% SC while the liver was significantly ($P<0.05$) higher in the control group. The present findings is in agreement with the work of Manal and El-Naga (2012) who reported that feeding broilers chicks diet containing 0.5% dry yeast gave significantly higher dressing percentage and had significantly lower abdominal fat compared to other dietary treatments. Also Kannan *et al.* (2005), Zhang *et al.* (2005) and Paryad and Mahmoudi (2008) reported that SC in broiler chick's rations affected significantly all carcass characteristics parameters measured. The decrease in abdominal fat and better dressing percentage in this study may be related to improvement of digestion and absorption of nutrients.

Table 3: Effect of supplementation of *Saccharomyces cerevisiae* (SC) as probiotic on the carcass of broiler chickens

Parameters	Levels of inclusion of SC (%)					SEM
	0.00	0.5	1.0	1.5	2.0	
Live weight (g)	2366.67 ^b	2450.00 ^{ab}	2566.67 ^a	2483.33 ^a	2433.33 ^b	46.11
Slaughtered weight (g)	2300.00 ^{bc}	2400.00 ^{ab}	2500.00 ^a	2416.67 ^a	2383.33 ^b	46.46
Defeathered weight (g)	2200.00 ^b	2233.33 ^b	2400.00 ^a	2283.33 ^b	2250.00 ^b	41.96
Dressed weight (g)	1666.67 ^b	1733.33 ^b	1816.67 ^a	1733.33 ^b	1716.67 ^b	39.51
Dressing percentage (%)	70.42 ^c	70.75 ^a	70.78 ^a	69.80 ^d	70.55 ^b	0.05
Major cuts expressed as percentages of dressed weight (%)						
Thigh %	20.07 ^a	18.49 ^b	18.70 ^b	18.04 ^b	20.11 ^a	0.53
Drum stick %	13.52 ^b	14.63 ^a	13.16 ^b	14.23 ^{ab}	14.05 ^{ab}	0.40
Breast %	25.39 ^b	28.55 ^a	29.02 ^a	25.64 ^b	25.48 ^b	1.08
Back %	20.01 ^b	20.24 ^{ab}	19.95 ^b	20.88 ^a	18.59 ^c	0.43
Wings %	10.71 ^b	10.95 ^b	10.53 ^b	12.23 ^a	11.05 ^b	0.42
Organs expressed as percentages of dressed weight (%)						
Gizzard full %	4.12 ^a	3.88 ^{ab}	3.75 ^b	4.18 ^a	3.69 ^b	0.17
Liver %	3.04 ^a	2.29 ^b	2.56 ^b	2.75 ^b	2.52 ^b	0.32
Heart %	0.66 ^{ab}	0.57 ^b	0.58 ^b	0.74 ^a	0.71 ^a	0.06
Spleen %	0.12 ^{ab}	0.11 ^b	0.13 ^{ab}	0.16 ^a	0.13 ^{ab}	0.02
Kidney %	0.92 ^a	0.74 ^a	0.91 ^a	0.64 ^b	0.63 ^b	0.10
Abdominal fat %	4.26 ^a	2.84 ^b	2.42 ^b	2.68 ^b	2.41 ^b	0.32
Gizzard empty %	2.94 ^a	2.89 ^a	2.56 ^b	2.97 ^a	2.82 ^a	0.09
Lungs %	0.99 ^a	0.75 ^b	0.93 ^a	0.89 ^{ab}	0.95 ^a	0.07
Weight of intestine (g)	7.44 ^{ab}	6.65 ^b	7.10 ^b	7.20 ^{ab}	7.88 ^a	0.32

^{abc}: Means with different superscripts along same rows show significant differences ($P<0.05$)

SEM: Standard Error of Means

CONCLUSION AND RECOMMENDATION

It is concluded that inclusion of baker's yeast (SC) reduced the abdominal fat and had better dressing percentage and higher breast percentage. It is therefore recommended that baker's yeast should be included in the diet of broilers at 1% for better performance.

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