

CARCASS QUALITY OF BROILER FINISHER FED VARYING LEVELS OF CASSAVA PEEL MEAL SUPPLEMENTED WITH ENZYME AS A REPLACEMENT FOR WHEAT BRAN

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Abstract

An experiment was conducted to evaluate carcass characteristics of broiler finisher chickens fed graded levels of cassava peel meal supplemented with enzyme as partial replacement for wheat bran. A total of 144 one day-old broiler chicks of Abor acre strain were assigned to 5 experimental diets in a completely randomized design. The birds were fed graded levels (0, 10, 20, 30, and 40% at finisher phase and the treatments were coded as T1, T2 T3, T4, and T5 respectively). There were significant ($p < 0.05$) differences on live weight, head, neck, wings, breast, drumsticks, thigh, shank and back. Broiler finisher chickens fed 10% sundried cassava peel meal (SCPM) had the highest (2040.00g) live weight while birds on 40% SCPM presented the least (1267.00g). Birds fed the control diet 0% SCPM recorded the highest ($p < 0.05$) weight on head (78.67g), neck (84.67g), wings (194.67g), breast (539.00g), drumsticks (257.67g), thigh (274.67g), shank (102.00g) and back (370.00g) Birds fed 30% SCPM showed least (55.00 and 204.00g) significant ($p < 0.05$) values of neck and back respectively. Conclusively, feeding broiler finisher chickens with graded levels of sundried cassava peel meal supplemented with enzyme did not influence birds' carcass indices.

Keywords: broiler finisher chicken, wheat bran, carcass, enzyme

Introduction

Cassava peel is one of the agro-industrial by-products that is readily available in countries where cassava is cultivated and processed into food for man. These by-products constitutes a potential source of livestock feeds' ingredients. The utilization of cassava and its by-products for livestock feeding has long been realized. However, the use of cassava peel as feed for non- ruminant animals is limited by its high fibre content and hydro-cyanic acid which is deleterious to their growth and development (Tewe, 2004). Many processing methods that have been used to enhance the feeding value of cassava include sun-drying parboiling (Akinfala *et al.*, 2007). Various authors have reported the use of cassava peels for feeding livestock. The major limitation in the use of cassava for feeding livestock is its low protein content. Replacement of 20% maize with cassava peel meal had no adverse effect on broiler performance (Oyebimpe *et al.*, 2006). Therefore, the objective of this study was to evaluate.....

Materials and Methods

Location of the study area

The experiment was carried out at the Poultry Unit, Teaching and Research Farm of Oyo State college of Agriculture and Technology Igbo-ora, Oyo State, Nigeria. The experimental site was in savannah forest zone of Latitude 7.43°N and Longitude 3.8°E, with an elevation 140m above sea level.

Procurement, processing, and milling of ingredients

The fresh cassava peels were procured from Garri processing factory at Oyo State College of Agriculture and Technology (OYSCATECH), Igbo-ora and sundried on polythene nylon until dried to touch and milled. Thereafter, they were mixed together as designed.

Experimental diets and treatments

Five experimental diets were formulated and manufactured for the experiment. The diets contained cassava peels meal as source of fibre to partially replace wheat bran at 0, 10, 20, 30 and 40% and designated as T1, T2, T3, T4 and T5 respectively. Treatment 1 was the control without cassava peels meal with no enzyme while treatments 2, 3, 4 and 5 had cassava peels meal and supplemented with

enzyme. Enzyme was included in the dietary treatments at the rate of 6g/100kg. The experimental diets composition is presented in Table 1.

Table 1: Ingredients composition of experimental finisher broiler chickens' diets (5 – 8 weeks of age)

Ingredients (kg)	T1 (0%)	Treatments			
		T2 (10%)	T3 (20%)	T4 (30%)	T5 (40%)
Maize	64.00	64.00	64.00	64.00	64.00
Soya bean meal	25.00	25.00	25.00	25.00	25.00
Wheat bran	6.00	4.00	3.50	3.00	2.50
CPM	0.00	2.00	2.50	3.00	3.50
Limestone	2.00	2.00	2.00	2.00	2.00
Bone meal	2.00	2.00	2.00	2.00	2.00
Lysine	0.25	0.25	0.25	0.25	0.25
Methionine	0.25	0.25	0.25	0.25	0.25
Salt	0.25	0.25	0.25	0.25	0.25
Premix	0.25	0.25	0.25	0.25	0.25
Enzyme (g)	0.00	6.00	6.00	6.00	6.00
TOTAL	100.00	100.00	100.00	100.00	100.00
Calculated values					
ME (Kcal/kg)	2984.96	2985.79	2986.62	2987.45	2988.28
Crude Protein (%)	18.67	18.61	18.55	18.49	18.43
Crude Fibre (%)	1.70	1.87	1.87	1.87	1.87
CPM = Cassava Peel Meal ME = Metabolizable Energy					

Statistical Analysis

Data obtained were subjected to one way analysis of variance (ANOVA) by using SPSS (2021), mean value of variables showing significant ($p < 0.05$) differences were separated using Duncan's multiple range test (Duncan's; 1955).

Results and discussion

Results of cut parts of broiler finisher fed experimental fed is presented on Table 2. The experimental diets were significantly ($p < 0.05$) influenced live weight, head, neck, wings, breast, drumsticks, thigh, shank and back. Live weight showed highest significant ($p < 0.05$) effect of 2383.30g from broiler placed on 0% SCPM diet while least (1267.00g) was obtained from 40% SCPM. Head showed higher

significant ($p < 0.05$) value of 78.67g from birds fed on 0% SCPM while least (51.67g) was observed from birds fed on 40% SCPM. Neck gave highest (84.67g) significant ($p < 0.05$) influenced from 0% SCPM while least (55.00g) was noticed from birds placed on 30% SCPM. Highest (194.67g) significant ($p < 0.05$) different of wings were observed from birds placed on 0% SCPM while least (123.00g) was obtained on 40% SCPM. Breast had least (287.33g) significant ($p < 0.05$) effect on 40% SCPM while 539.00g (highest) significant ($p < 0.05$) different was obtained from birds placed on 0% SCPM. Drumsticks showed highest (257.67g) significant ($p < 0.05$) effect from 0% SCPM while least (145.00g) significant ($p < 0.05$) was observed from 40% SCPM but was statistically ($p > 0.05$) similar with 10%, 20% and 30% SCPM. Highest significant ($p < 0.05$) effect of thigh (274.67g), shank (102.00g) and back (370.00g) was observed from birds fed 0% SCPM diet while least thigh (155.00g) and shank (60.00g) were obtained from birds placed on 40% SCPM but back showed least value of 204.00g on 30% SCPM.

The decrease in the head, neck, wings, breast, drumstick, thigh, shank and observed from birds fed 40% SCPM was an indication that nutrients required for tissue synthesis were not sufficient. This could be attributed to poor utilization of fibre due to high levels of cyanide acid in the 40% SCPM and enzyme used did not function as expected beyond 30% SCPM inclusion levels, hence, this in line with report of Amusa *et al.* (2020) who opined significant ($p < 0.05$) differences on all cut part observed and least significant ($P < 0.05$) effect of cut parts were observed when test ingredient was subjected to 40% inclusion level but contracted with Amaefule *et al.*, 2006 who observed no significant ($p > 0.05$) differences in carcass of broiler chicken fed rice milling waste-based diets.

Table 2: Cut parts of broiler finisher chickens fed graded levels of sun dried cassava pulp meal

Parameters (g)	Treatments (%SCPM)					SEM
	T1 (0)	T2 (10)	T3 (20)	T4 (30)	T5 (40)	
Live weight	2383.30 ^a	2040.00 ^b	1647.00 ^c	1683.30 ^c	1267.00 ^d	106.00
Head	78.67 ^a	59.67 ^{ab}	54.33 ^b	51.67 ^b	50.67 ^b	3.69
Neck	84.67 ^a	65.67 ^{ab}	62.00 ^{ab}	55.00 ^b	63.00 ^{ab}	3.90
Back	370.00 ^a	238.33 ^b	240.00 ^b	204.00 ^b	212.67 ^b	20.26
Wings	194.67 ^a	149.00 ^{ab}	133.67 ^b	123.67 ^b	123.00 ^b	9.04
Breast	539.00 ^a	378.67 ^{ab}	325.33 ^b	317.33 ^b	287.33 ^b	31.59
Drumsticks	257.67 ^a	181.00 ^b	169.67 ^b	161.67 ^b	145.00 ^b	13.08
Thigh	274.67 ^a	185.67 ^b	169.00 ^b	172.33 ^b	155.00 ^b	14.41
Shank	102.00 ^a	71.33 ^b	70.67 ^b	69.33 ^b	60.00 ^b	4.62

^{a,b,c,d} means with different superscript letters within rows are significantly different ($p < 0.05$)

SEM= Standard error of mean

Conclusion

Feeding of broiler finisher chickens with graded levels of sundried cassava peel meal with enzyme supplementation did not influence birds' carcass characteristics in this research.

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