INTERNAL ORGANS WEIGHT OF BROILER CHICKEN FED GRADED LEVELS OF SUNDRIED CASSAVA PEELS MEALSAS A REPLACEMENT OF WHEAT BRAN

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ABSTRACT

A study was conducted to evaluate internal organs of broiler chicken fed graded levels of cassava peels meal as a replacement for wheat bran. A total of 144 day old broiler chicks of Abore acre breeds were assigned to 4 experimental diets in a completely randomized design. The birds were fed graded levels (0, 10, 20, and 30% at the finisher phase and were tagged as T1, T2 T3, and T4 respectively). On day 56 of the experiment, three birds per treatment were randomly selected from each of the replicates; starved overnight, slaughtered, eviscerated and internal organs were weighed with sensitive scale. There were no significant ($p>0.05$) differences among internal organs weight (heart, liver, kidney, spleen, whole gizzard etc). It can be concluded that farmers can replace wheat bran with sundried cassava peels on meal the broiler chicken diets without detrimental to the internal organs weight of the broiler chicken

Keywords: Broiler, cassava peels, organs, sundried, and farmers

INTRODUCTION

The high cost of fibre caused by high demand by livestock and industries has necessitated the need to source for other viable alternative fibre sources for the animals. One of such alternative is cassava peels. Cassava peel is one of the agro-industrial by-products that are readily available in countries where cassava is cultivated and processed into food for man. The peel accounts for between 10 to 13% of tuber by weight. It contains about 5 % crude protein and reasonable amount of minerals (Tewe and Kasali, 1986). 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 (Akinfala *et al*., 2007), Parboiling (Salami, 1999), Soaking in water. (Salami and Odunsi, 2003) among others. These have however achieved different level of success. Treatment of cassava peels with alkaline solution of lye (Oladunjoye *et al*., 2010), enzyme supplementation of cassava peels (Midau *et al*., 2011) are some of the available technical information for enhancing the nutritive value of cassava peels. Sun drying would reduce a considerable amount of hydro-cyanide (HCN) content of cassava roots. It also has the advantage of saving cost of energy and equipment both of which may be limiting in small scale farming systems. Therefore, this study was directed toward investigated internal organs weight of broiler chicken fed graded levels of sundried cassava peels meals as a replacement for wheat bran.

MATERIALS AND METHODS

Location of the study

The experiment was carried out at the poultry unit, Teaching and Research Farm, Oyo State College of Agriculture and Technology, Igboora, Oyo State Nigeria, latitude 7°15`N and longitude 3°30`E with average annual rainfall of 1278mm and average temperature of 27oC (Sanusi, 2011).

Milling of experimental ingredients

Sun-dried cassava peels and other ingredients were milled separately at the feed mill unit of Training and Research Farm, Oyo State College of Agriculture and Technology, Igbo-ora. Thereafter, they were mixed together as designed.

Experimental diets

Four experimental diets were formulated having percentage crude protein ranged between 21.75% - 21.51% with energy ranged between 2934.54ME kcal/kg – 2968.57ME kcal/kg at starting phase. Wheat bran was main fibre source for the control diet while the other four diets
(2, 3 and 4 were partially replaced with varying levels of sundried cassava peels meal 10%, 20% and 30% SDCPM in nutrient to nutrient inclusion rates respectively as shown on table 1.

Table 1: Experimental diets for broiler finisher (5-8 weeks)

Ingredients (kg)	T1 (0%)	T2 (10%)	T3 (20%)	T4 (30%)
Maize	64.00	64.00	64.00	64.00
S.B.M	25.00	25.00	25.00	25.00
Wheat bran	6.00	5.50	5.00	4.50
C.P.M	0.00	0.50	1.00	1.50
Limestone	2.00	2.00	2.00	2.00
Bone meal	2.00	2.00	2.00	2.00
Lysine	0.25	0.25	0.25	0.25
Methionine	0.25	0.25	0.25	0.25
Salt	0.25	0.25	0.25	0.25
Premix	0.25	0.25	0.25	0.25
Total	**100.00**	**100.00**	**100.00**	**100.00**
Calculated analysis				
ME (kcal/kg)	2984.96	2985.79	2986.62	2987.45
Crude Protein (%)	18.67	18.61	18.55	18.49
Ether Extract (%)	3.65	3.66	3.67	3.68
Crude Fibre (%)	1.70	1.87	1.87	1.87
Calcium (%)	1.47	1.47	1.48	1.47
Phosphorus (%)	0.53	0.52	0.52	0.52
Ash (%)	0.83	0.81	0.90	0.94
Lysine (%)	1.16	1.15	1.15	1.14
Methionine (%)	0.55	0.55	0.54	0.54

(C.P.M –Cassava Peels Meal S.B.M – Soya Bean Meal)
M.E – Metabolizable Energy

Statistical analysis

All data generated were subjected to analysis of variance (ANOVA) using special statistical package (SPSS). Where significant difference between means was observed, New Duncan Multiple Range Test (DNMRT) was used to separate the means.

RESULTS AND DISCUSSION

Effect of varying levels of sundried cassava peels meal on internal organs weight of broiler finisher was shown on table 2. Organs are body parts, composed of several types of tissues, capable of carrying out specialized function. There were no significant (P>0.05) different on parameters examined. Heart weight was highest on T1 (15.00g) while least was observed on T4 (12.00g). Liver had best weight on T2 (52.67g) whileT4 had least (42.33g). Kidney recorded highest value of 12.33g while least value of 5.00g was observed on T1.Proventriculous had best weight on T3 (18.33g) while T2 had least value (13.67g). Spleen had best value of 3.67g on T1 while least value was recorded on T4 (2.33g). Whole gizzard was recorded highest value on T2 (68.00g) while least value was observed on T3 (60.67g). Empty gizzard recorded best value on T1 (52.33g) while least value was observed on T4 (49.00g). Whole intestine was recorded best value on T2 (143.67g) While least value was observed on T3 (135.33g). Intestine length recorded best value on T2 (100.33g) while least value was observed on T4 (89.67g).Lungs recorded best value on T2 (18.33g) while least value of 12.67g was observed on T1. The gizzard weight was more than 33.5 to 36.5g reported by Idahor, (2012). The non significant differences (p>0.05) on the weights of internal organs across dietary treatments showed

that sundried had positive effect to detoxify HCN that present in the cassava peels meal (SCPM) that broiler chicken were tolerated as a result of non toxic effect observed on the liver and other internal organs. Hence, sundried method adopted was able to reduced hydrogen cyanide content in the cassava peel to safe levels that internal organs could tolerate and is the simplest and avoidable way of detoxify anti-nutritional factors.

Table 2: Internal organs weight of broiler finisher (5-8 weeks)

Parameters (g)	T1 (0%)	T2 (5%)	T3 (10%)	T4 (15%)	SEM
Heart	15.00	14.00	14.33	12.00	0.93NS
Liver	51.67	52.67	46.67	42.33	1.88NS
Kidney	5.00	5.67	12.33	7.33	1.30NS
Proventriculous	14.00	13.67	18.33	15.33	0.88NS
Spleen	3.67	3.33	2.67	2.33	0.41NS
Whole gizzard	67.33	68.00	60.67	65.00	2.25NS
Empty gizzard	52.33	51.33	49.33	49.00	1.75NS
Whole intestine	137.00	143.67	135.33	140.67	3.25NS
Length intestine	94.00	100.00	91.67	89.67	1.98NS
Lungs	12.67	18.33	14.67	15.33	0.99NS

abc = Means within the same row with the same superscripts were not significantly (P>0.05) different. SEM = Standard Error of the Mean, NS = Not Significant

CONCLUSION

Sundried cassava peels meal could be used to replace what offal up to 30% levels of inclusion in the diet of broiler finisher without any detrimental effect to the internal organs weight.

RECOMMENDATION

Based on the outcome of this study, further study is recommended to investigate whether sundried cassava peels meal could be detrimental or not to internal organ weights of broiler finisher.

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