GROWTH PERFORMANCE OF BROILER FINISHERS FED PROCESSED CASSAVA PEELS IN A MIXED DIETS

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ABSTRACT
An experiment was carried out to evaluate the growth performance of broiler chicken fed processed cassava peels at finishers phase using different processing methods. The cassava peels were processed using five different methods: SUCP(sun dry), BOCP (boiling), ENCP (ensiling), SOCP (soaking), NOCP (control, no cassava peels). Diets formulated contained 10% of each treatment except treatment NOCP which is the control. A total number of one hundred and fifty day-old chicks were purchased from a reputable hatchery and fed commercial feed for four weeks.The birds were alloted into five dietary treatments at fourth week and were fed ad-libitum with the test ingredient. Proximate composition of the feed , daily feed intake (FI) and body weight gain (BWG) were also determined. The values obtained forcrude protein was from (18.08 – 18.99%), crude fibre was from (11.20 – 13.80%), ash was from (4.20- 10.70%) and ether- extract was in the range of 5.42 – 7.40%. Daily feed intake was in the range of 1.45kg in treatment NOCP to 1.75kg)in BOCP, weight gain ranged from1.32 to 1.84kg, final body weight varied from 2.24 – 2.84kg. Feed conversion ratio also vaied from 0.87 in SUCP to 1.25 in NOCP. It can be concluded from the result of this study that substitution of maize with 10% of the differently processed cassava peels improved the growth performance of broiler finisher. Birds on treatment ENCP (ensiled cassava peels) performed better than other treatments on processed cassava peels, but lower than birds on control diet.
Keywords: Cassava peels, Processing methods, performance, Feed intake and Weight gain

INTRODUCTION

Chickens constitute one of the most common sources of animal protein in developed countries, but this is not the case in developing countries mostly due to the cost of chicken which is beyond the reach of common man. Cost of chicken production is very high due to recent increase in price of conventional feed ingredients particularly energy source which is a major factor affecting the poultry business. The ever rising cost of maize is brought about by its declining production and competition for its use by man and other livestock species (Hamzat *et al.,* 2003). Therefore, there is need to explore the use of alternative feed source that can yield the same output as conventional feedstuff and at a cheaper cost. Cassava (*Manihot esculenta*) is one of the most abundant sources of starch among staple crops and a potential alternative to corn and wheat as an energy source in monogastric diet (Morgan and Choct, 2016). However, cassava peels contain high levels of hydrogen cyanide (HCN) and high fibre which is the most limiting factor restricting its use in the diets of poultry. The hydro-cyanide has to be reduced greatly in the peels in order to promote its acceptability and utilization. Several processing methods have been applied to fresh cassava peels to reduce the cyanide content; these include soaking, sun drying, ensiling and boiling (Tewe *et al.,* 1976, Esonu and Udedibe, 1993). In regard to this, different processing methods were used to make the cassava peels more nutritional, palatable and less toxic, and evaluating the effects of the processed cassava peels on the growth performance of broiler finishers.

MATERIALS AND METHOD

The experiment was carried out at Federal College of Animal Health and Production Technology, Moor-Plantation, Ibadan. Fresh cassava peels were obtained at Gari Processing Unit of Federal College of Agriculture, Ibadan. The cassava peels were divided into four treatments such as; treatment SUCP was sundried BOCP was boiled for 30 minutes, ENCP was ensiled for 2 weeks and SOCP was soaked for 72 hours, all the treatments were later sundried why not air-dried?. All the differently processed cassava peels were included in the diets at a rate of 10% as shown in Table 1.

Table 1: Gross composition kg/1 00kg) of the experimental diets in kilograms

Ingredients	SUCP	BOCP	ENCP	SOCP	NOCP
Cassava peels	10.00	10.00	10.00	10.00	-
Maize	45.00	45.00	45.00	45.00	55.00
Groundnut cake	10.00	10.00	10.00	10.00	10.00
Soya bean meal	12.00	12.00	12.00	12.00	12.00
Wheat offal	18.00	18.00	18.00	18.00	18.00
Fish meal	2.00	2.00	2.00	2.00	2.00
Bone meal	2.00	2.00	2.00	2.00	2.00
Premix	0.25	0.25	0.25	0.25	0.25
Salt	0.25	0.25	0.25	0.25	0.25
Methionine	0.25	0.25	0.25	0.25	0.25
Lysine	0.25	0.25	0.25	0.25	0.25
Crude protein	18.20	18.08	18.45	18.62	18.99
Crude fiber	11.20	11.85	12.15	11.68	13.30
M. NOCP (k/cal/kg)	2810.0	2800.5	2823.1	2835.2	2851.8
Total (kg)	100.00	100.00	100.00	100.00	100.00

M.NOCP – metabolizable energy

Experimental Animals and Management

One hundred and fifty day-old chicks of Arbor acre strain were purchased from a reputable hatchery in Ibadan. On arrival, the chicks were placed in brooding unit that has been washed and disinfected. Clean water and commercial starter feed were supplied twice daily until four weeks old. After four weeks, the birds were randomly alloted to five dietary treatments containing 10% of the test ingredient. They were fed at 8.00am and 5.00pm daily Daily feed intake and weight gain were determined at finisher phase till 8 weeks old. They were reared in deep litter system, feeders and drnikers were properly washed daily.

Experimental design and statistical analysis

One hundred and fifty birds were alloted to five treatments replicated three times in a completely ramdomised design. All data obtained were subjected to analysys of variance.

RESULTS AND DISCUSSION

Table 1 showed the gross compostion of the experimental diets, the crude protein ranged from 18.08 – 18.99%, which was within the recomended 18% protein requirement for broiler finisher, the ash (4.20- 8.20%), crude fiber (11.20 – 13.80%), ether extract (5.42 – 7.40%) were all within the recomended values that can meet the nutrients requirement of broiler finisher. Table 2 revealed the growth performance of broiler finshers fed 10% of the differently processed cassava peels, variations were observed in the daily feed intake among the treatments. There were significance no differences ($p>0.05$) among the treatments, the control recorded the lowest feed intake of 1.47kg while the highest feed intake(1.75kg) was observed in treatment BOCP which contained boiled cassava peels. The high feed intake observed in treatment BOCP could be ascribed to low metabolisable energy and protein as birds are known to satisfy their energy and protein requirements (Atteh, 2004). The digestibility of cassava starch has been found to be higher than that of maize (Pascual, 1997). These facts imply that cassava starch would be more highly digested than maize starch, thus the cassava-containing diets could have less retention time in the gut and thus increase the FI of the birds. Variations were also observed in weight gain among the treatments. The highest value of 1.84kg was observed in treatment NOCP (control) feed without cassava peels while treatment SUCP (sundried) recorded the lowest (1.32kg). There was no significant differences ($p>0.05$) in final body weight gain among the treatments, NOCP (control) recorded the highest (2.84kg) while SUCP (sundried cassava peels) recorded the lowest value (1.32kg), there were no significant differences ($p>0.05$) among treatments BOCP, ENCP, and SOCP.

There was a reduction in the BWG of birds fed differently processed cassava diets compared to birds on control diet. In spite of the starch quality of cassava, most studies have reported a poorer performance with diets containing cassava compared to those with maize. The results of the current study are in line with the work of Broch *et al* (2017) who observed a linear reduction in BWG of the broiler birds when the dry residue of cassava level was increased in the maize–soybean-based diets.

The increased feed Cconversion Ratio in broiler birds fed processed cassava diets in this study is directly related to the high FI and low BWG. Previous findings by Khempaka *et al.* (2009) reported a poor FCR when higher levels of cassava were included in the diet. However, FCR was high with the diets containing the higher levels of cassava inclusion which was in line with previous findings by Rafiu *et al* (2015) also reported that FCR increased as cassava increases in the diets.

CONCLUSION

The findings of the present study indicated that cassava peels can replace maize up to 10% without compromising growth performance. Cassava can be more beneficial to broiler chickens when properly processed. ENCP (ensiled) recorded the highest value of weight gain among the processed cassava peels.

Table 2: Proximate composition (%) of the experimemtal diets

Parameters	SUCP	BOCP	ENCPC	SOCPD	NOCPE	SEM
Dry Matter?	86.70	87.20	88.60	87.70	89.10	0.19
Crude Protein?	18.26	18.08	18.45	18.20	18.99	0.19
Crude Fibre?	11.68	11.85	12.15	11.20	13.80	0.26
Ash	4.20	6.10	4.90	10.70	8.20	0.65
Ether Extract	7.40	6.10	5.49	5.42	5.92	0.98
Nitrogen Free Extact	58.10	57.87	59.01	54.48	53.09	0.59

SEM= standard error of means, SUCP (sundried cassava peel),BOCP (boiled cassava peel),ENCP (Ensiled cassava peel),SOCPD (Soaked cassava peel),NOCP (Control)

Table 3: Performance characteristics of broiler finshers fed processed cassava peel meal

Parameters	SUCP	BOCP	ENCP	SOCP	NOCP	SEM
Initial weight (kg)	1.02	1.01	1.00	1.00	1.00	0.02
Final weight (kg/bird)	2.24	2.61	2.66	2.67	2.84	0.30
Weight gain (kg/bird)	1.32	1.61	1.66	1.67	1.84	0.52
Daily feed intake (kg)	1.52	1.75	1.61	1.57	1.47	0.28
Feed conversion ratio	1.15	1.09	0.97	0.94	0.79	0.36

SEM= standard error of means, SUCP(sundried cassava peel), BOCP(boiled cassava peel),ENCP(Ensiled cassava peel), SOCP(Soaked cassava peel), NOCP(Control)

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