THE EFFECT OF REPLACING MAIZE WITH CASSAVA PEEL MEAL ON THE PERFORMANCE OF WEANED RABBITS

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ABSTRACT

A 12-week feeding trial was conducted to determine the optimal replacement level(s) of dried cassava peel meal (DCPM) for maize in diets for weaner rabbits. Four experimental diets were formulated such that dried cassava peel meal replaced maize at 0, 50%, 75% and 100% levels, respectively. Each diet was fed to five replicates of 3 weaner rabbits of mongrel type (Newzealand White and Flemish Giant). Fecal collections were done as from the 10th day of the feeding trial for determination of dry matter digestibility.

Dried cassava peel meal significantly ($P<0.05$) depressed feed intake of the rabbits at 100% replacement level. At both 75% and 100% replacement levels, DCPM also significantly ($P<0.05$) depressed body weight gain of the rabbits. Feed conversion ratio was not affected by the treatments but dry matter digestibility was significantly ($P<0.05$) depressed by DCPM at the three levels. Feed cost savings in percent were 8.25, 18.65 and 32.72, respectively for the three levels of replacement.

Key words: **cassava peel meal, maize replacement, rabbits.**

INTRODUCTION

Unlike other farm animals, Rabbits have characteristics that make small and large scale production favourable. These include adaptability to seasonal variations as regards the amount of feed available during droughts, flexibility to adaptation to intensified production and climatic conditions and its unique caecotrophic habit. It requires a small area to establish and furthermore does not require a huge capital outlay.

Cassava is a staple food in.the humid tropics and the peels are produced in large quantities and in most cases disposal becomes difficult. There is guaranteed future in the steady supply of the peels and as a waste product it does not attract competition between man and animals.

Cassava peel contains 5.29 - 5.61% crude protein, 1.18 - 1.39% ether extract, 10.31 - 20.97% crude fibre, 4.44 - 5.93% ash and 66.63% NFE (Oyenuga, 1968). Its low energy content makes it attractive where high energy content of the diet is not desirable (Obioha and Anikwe, 1982). The use of cassava peel in animal feed is hampered by its high content of prussic acid especially the bitter variety but this could be taken care of by adopting different processing methods, such as boiling (Longe, 1980; Longe et al, 1977; Obioha and Anikwe, 1982), ensiling and Sundrying (Obioha et al 1984).

Although DCPM has been found useful as feed ingredient in the diets of poultry and swine (Obioha and Anikwe, 1982; Obioha, 1975; Longe et al, 1977). There is no information in literature about its value for rabbits. The study herein reported was therefore conducted to determine its optimal replacement level(s) for maize in the diets of weaner rabbits.

MATERIALS AND METHODS

Cassava peels collected 48 hours after peeling from the National Root Crops Production Centre, Mgbirichi, Owerri were sun-dried for 3 days and ground in a hammer mill.

A sample of the dried cassava peel meal was analysed for proximate chemical composition (AOAC, 1980). Based on the result of the chemical analysis, four Weaner Rabbit experimental diets were formulated such that the dried cassava peel meal replaced maize at 0%, 50%, 75% or 100% (Table 1).

Sixty 6-week-old Weaner Rabbits of mongrel type were randomly assigned to the four treatment diets at 15 Rabbits per treatment. Each treatment was further replicated five times and each replicate group of 3 rabbits housed in a hutch of 180 x 45cm. Dry matter of DCPM and the treatment diets was determined by oven drying and crude protein by the Macro Kjeldahl procedure (A.O.A.C. 1980). Mineral analyses were made by methods of Grueling (1966). The animals were fed for ten days before the collection of fecal material for digestibility trial.

Data collected were subjected to analyses of variance as outlined by Snedecor and Cochran (1978). When analyses of variance indicated a significance for treatment effects, specific differences between means were detected as outlined by Obi (1990). The experiment lasted for 12 weeks.

RESULTS AND DISCUSSION

The nutrient composition of the DCPM is shown in Table 2 and that of the treatment diets in Table 3. The DCPM was low in crude protein but high in nitrogen free extract and crude fibre. The results of the analyses confirmed the earlier reports by Longe et al (1977) and Obioha and Anikwe (1982). It is lower than maize in crude protein and this reflected in the crude protein contents of the diets containing it. Its lower energy value was also reflected in the energy values of the diets containing it.

Data on the performance of the treatment groups are shown in Table 4. DCPM significantly (P 0.05) depressed feed intake at 100% replacement level. At both 75% and 100% replacement levels, DCPM also significantly (P 0.05) depressed body weight gain of the rabbits. Feed conversion ratio was not affected by treatments but dry matter digestibility was significantly (P 0.05) depressed by DCPM at the three replacement levels. This could possibly be due to the high fibre content of DCPM as also observed by Longe et al (1977).

Feed intake of the rabbits increased up to the 75% replacement level before a sharp decline at 100% replacement level. This would be as a result of the high fibre and low energy content of these diets. On the other hand, there could still be traces of hydrogen cyanids in the peels that gave the negative effect at 100% replacement level.

Feed cost analysis of the diets showed feed cost savings of 8.25, 18.65 and 32.72%, respectively, for 50%, 75% and 100% replacement levels.

In conclusion, the optimal replacement level of maize with dried cassava peel meal from this trial is 50% for weaner rabbits. In other words, cassava peel meal can replace up to 50% of the maize in the diet
of weaner rabbits without any deleterons effects.

REFERENCES

AOAC. Association of Official Analytical Chemists, 1980. *Official Methods of Analysis*, 13th ed. Wash. DC.

GRUELING, H. T. 1966. The chemical analysis of plant tissue *Mimeo No. 6622.* Agronomy Department Cornell University, Ithaca NY.

TABLE 1: COMPOSITION OF THE TREATMENT DIETS

Ingredients (%)	Levels of Replacement (%) 0	50	75	100
Maize	50.00	25.00	12.50	0.00
Dried cassava peel meal	0.00	25.00	37.5	50.00
Soyabean meal	20.00	20.00	20.00	20.00
Brewers Dried Grain	15.00	15.00	15.00	15.00
Sorghum Bran	10.00	10.00	10.00	10.00
Bone meal	4.50	4.50	4.50	4.50
Salt	0.25	0.25	0.25	0.25
*Vit/Tm Premix	0.25	0.25	0.25	0.25
	100.00	100.00	100.00	100.00

* To provide the following per kg of feed:-

Vit A - 10, 000.00 iu; D_3 - 2, 000.00 iu; B_1 - 0.75g; B_2 - 5g; Nicotinic acid - 25g; Calcium pantothenate 12.5g; B_{12} - 0.015g K_3 - 2.5g; E - 25g; Biotin - 0.050g; Folic acid - 1g; Choline chloride 250g; Cobalt - 0.400g; Copper 8g; Manganese 64g; Iron - 32g; Zn - 40g; Iodine - 0.8g; Flavomycin - 100g; Spiramycin 5g; 3 - Nitro - 50g; DL - Methionine - 50g; Selenium 0.6g; Lysine 120g; BHT - 5g.

TABLE 2. CHEMICAL COMPOSITION OF DRIED CASSAVA PEEL

Dry Matter, %	88.3
Crude protein, % of DM	4.06
Crude fibre, % of DM	21.63
Ether extract, % of DM	2.00
Total Ash, % of DM	2.81
Nitrogen free extract, % of DM	69.50

TABLE 3: CHEMICAL COMPOSITION OF THE TREATMENT DIETS

	Levels of replacement (%)			
%	0	50	75	100
Crude protein	19.57	18.42	17.93	17.65
Ether Extract	3.68	3.11	2.98	2.01
Ash	9.08	10.03	10.01	11.25
Crude fibre	5.73	9.62	11.98	13.05
Calcium	0.12	0.16	0.18	0.22
Available Phosphorus	0.42	0.36	0.33	0.39
Lysine	1.20	1.10	1.10	1.00
Methionine & Cystine	0.70	0.70	0.71	0.70
ME (Kcal/Kg)	2937.5	2850.5	2649.1	2575.0

TABLE 4 EFFECT OF DRIED CASSAVA PEEL MEAL ON THE PERFORMANCE OF WEANER RABBITS

	Levels of Replacement (%)				
	0	50	75	100	SEM
Initial body wt (kg)	0.58	0.58	0.58	0.58	0.00
Final body wt (kg)	1.44	1.44	1.35	1.22	0.09
Body weight changes (g)	860[a]	860[a]	770[b]	640[b]	9.10
Daily weight gain(g)	9.60[a]	9.60[a]	8.60[b]	7.11[b]	0.21
Feed Intake (g)	490[a]	500[a]	511[a]	400[b]	4.48
Feed conversion ratio	5.19	5.21	5.94	5.63	0.31
Feed cost (₦/kg feed)	3.27	3.00	2.66	2.20	-
Feed cost savings(%)	-	8.25	18.65	32.72	-
Dry matter digestibility (%)	91.10[a]	85.23[b]	83.23[b]	82.27[b]	3.46

ab means with different superscripts are significantly different ($P<0.05$)

LONGE, O. G. 1980 Effect of processing on the chemical composition and energy value of cassava. *Nutr. Rep. Int.* 21: 819 - 828.

LONGE, O. G.; E. C. FAMOJURO and V. A. Oyenuga 1977: Available carbohydrates and energy values of cassava peels, yam and plantain peels for chicks *East African Agric. Jour.* 42: 408 - 413

OBI, I. U., 1990: *Statistical methods of detect ing differences between treatment means.* Snaap Press, Enugu, Nigeria, 2nd Edition.

OBIOHA, F. C. and P. C. ANIKWE, 1982. Utilization of ensiled and sun dried cassava peels by growing swine. *Nutr. Rep. Int.* 26: 961 - 972.

OBIOHA, F. C. AZUBUIKE, H. E. and OKOLI, O. O. 1984. The effect of partial replacement of maize with cassava peel meal on layer performance. *Nig. J. Anim Prod.*, 10: 93 - 97

OYENUGA, V. A., 1968. Nutritive value of cereal and cassava diet for growing fattening pigs in *Nigeria. Brit. Jour. Nutr*, 15: 325 - 338.

SNEDECOR, G. W. and COCHRAN, W. G.1978. *Statistical methods.* Iowa State University Press, Ames Iowa, 6th Edition.