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The Effects of Banana Peels on Blood Parameters of Grower Rabbits

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Abstract
The study was conducted to assess the blood parameters of grower rabbits fed inclusion levels of banana peels meal (BPL). A total of thirty six (36) grower rabbits aged 5-7 weeks with mean initial weight of 837.50± 0.2g were used. The parameters taken were initial weight and blood samples for analysis. Significant differences were observed in all the parameters measured ($p<0.05$) except initial weight, red blood cells and white blood cells ($p>0.05$). The mean weekly weight gain of the rabbits on diet T4 was highest but relatively similar to that of T2 and T3 ($p>0.05$). Based on the results obtained, banana peels has no detrimental effects on rabbits hence should be fed up to 30% inclusion level, and at the same time reduce the competition between man and animal for conventional ingredients such as maize, rice, guinea-corn and their offal's etc.
Keywords: *Banana peels meal, growing rabbit, Blood Parameters*

Introduction

In developing countries, the vast majority of people have low protein intake. These Countries are mostly located in the warm humid tropics where the level of animal protein intake represents about one tenth of the level of intake in some advanced countries (Alade *et al,* 2002). Poultry keeping provide a method by which rapid transformation in animal protein consumption can be achieved in the humid tropics. However this can take place only after the production process has been modernized (Oluyemi and Robert, 2007).To alleviates this protein malnutrition rabbit production is the only cheapest and reliable way (Mohammed, 2003). There are many good reasons for rabbit production, first it is an alternative livestock species secondly, it is a means of utilizing small rural holdings in a profitable manner and thirdly it is a more efficient means of converting low quality feed ingredients into meat for human consumption. Besides, Rabbit production can also be a family hobby for semi-rural and urban families and at the same time could give the families a supply of very nutritious meat with all amino acids required for the human body. And the meat is low in cholesterol and high in omega 3 fatty acids (McCroskey, 2000).Rabbits have a potential as meat producing animals in the tropics, particularly on subsistence type small farms. Such characteristics as small body size, short generation interval, high reproductive potential, rapid growth rate and the ability to utilize forages and fibrous agricultural by-products are attributes in favor of rabbit production (Cheeke, 1986).Raising rabbits on a small scale in an urban environment can provide a means of converting garden and other food wastes into high quality protein for the family, while also providing excellent manure for the garden, which can be fed directly to the rabbit without composting. (Survey, 1997).Banana plant is not truly a tree, even though they have been known to reach heights of 8 meters or more. The plants are all fiber, and grow by sending out successive groupings of leaves from the stalk, on each trunk, approximately 10 leaves are visible at any one time, while the same number of new leaves wait within the stalk to emerge as the older one falls off. After four or five successions of this process, the plant will flower. There are both male and female flowers on each plant, the male flowers do the pollinating and the female flowers turn into bananas. The leaves and peels of banana have little or no use in the tropic rather is regarded as waste (Oboh, 2006).

Materials and Methods

Study Area

The research was conducted at Federal College of Education Teaching and Research Farm, located in Yola, Adamawa State. It lies within the Guinea Savannah Zone of Nigeria within latitude 09.11° north and longitude 12.28° south. It has a tropical climate made up of dry and rainy seasons. The rainy season commences in April and ends late October while the dry season starts in October and ends in April. It has an annual rainfall of 800-900mm. The ambient temperature ranges from 25-40^{0}C (Adebayo and Tukur, 1999). And the data obtained were subjected to Minitab computer software for analysis.

Experimental Animals

Thirty six (36) rabbits aged 5-7 weeks were used for the experiment. The rabbits were of mixed breed. They were purchased around Yola and its environs from individuals.

Housing and Management

The rabbits were housed in a cages made of wood and wire mesh constructed in such a way that it maintains 0.6m above the ground for easy cleaning. Two cages were constructed. Each cage was divided into eighteen compartment/hutches measuring 36 x 36 x 45cm width, length and height. One-week adaptation period was allowed before data collection commences to enable the animals adjust to new environment and diets. Feeds were given twice a day- 7:30am and 3:30pm daily. Initial weight of each animal was obtained in the morning before feeding on weight taking days. Daily records of feed intake were taken while weight gains were also recorded weekly. The experiment lasted for 70 days.

Treatments and Experimental Design

Thirty six grower rabbits were randomly allocated to four dietary treatments in a complete randomized block design. Each treatment was replicated three times with three rabbits per replicate.

Data Collection

Daily feed intake and weekly weights were recorded, blood samples were taken to laboratory for analysis and no mortality was recorded during the experiment period

Table 1: Composition of Experimental Diets: Treatments

Ingredients	T1	T2	T3	T4
Maize offal	81	71	61	52.5
GNC	10	10	10	9
F/meal	8.5	8.5	8.5	8
B/peels	0	10	20	30
Premix	0.25	0.25	0.25	0.25
Salt	0.25	0.25	0.25	0.25
Total	100	100	100	100
Calculated analysis				
ME (kcal/kg)	3072.7	2824.5	3132.9	3169.1
CP (%)	17.7	17.3	17.0	15.9
CF (%)	4.5	4.6	5.6	6.2
Calcium	0.5	0.6	0.5	2.1
Phosphorous	0.8	0.3	1.0	1.9

Parameters Measured

Blood parameters and Statistical Analysis

Hematological parameter such as PCV, MCV, MCH and MCHC, were analyzed in order to know the effects of the treatment diets on them and the data obtained in the experiment were subjected to analysis of variance as described by (Steel and Torrie, 1980), while the treatment means were compared using least significance differences.

RESULTS AND DISCUSSION

Hematological indices

Table 2 Hematological Characteristics of Rabbits Fed the Experimental Diet.

TREATMENT Parameter	T1	T2	T3	T4	SEM	LS
PVC%	30.60*	32.50*	33.20**	34.20****	0.511	*
HBg/dl	9.20*	10.10**	10.90***	11.20***	0.422	*
RBCx10^{6}MM^3	6.90	6.90	7.00	7.10	0.237	NS
WBCx10^3 mm^3	10.20	10.50	10.90	11.30	0.2357	NS
MCV (fl)	50.00*	53.10**	54.20***	56.30***	0.644	*
MCH (pg)	15.00*	16.20**	16.90 **	17.50**	0.370	*
MCHC (%)	28.10*	29.20**	30.50***	32.40****	0.578	*

PCV = packed cell volume. HB=Hemoglobin. RBC= red blood cells. WBC=white blood cells MCV=mean corpuscular volume MCH= mean corpuscular Hemoglobin. MCHC= mean corpuscular Hemoglobin

concentration. SEM=Standard Error Mean. NS=Not significant (p<0.0g). = Significant (p<0.5)
Mean in the same row bearing different subscript differ significantly (p<0.05). LS=Level of significance.

The results of hematological indices are shown in table 2. The PCV and HB values are 30.60, 32.50, 33.20, 34.20 % and 9.20, 10.10, 10.90, 11.20 gldl respectively. These values were significantly different among treatments. These values were similar to the work of Alade *et aI*, (2002) who reported 29.50 -36.50 % and 10.00-12.60gldl of PCV and HB. However all the values fall within the normal range of 31.00- 50.00% and 8.00-17.00gldl for PCV and HB respectively (Anon, 1980 and Hewit *et aI*, 1989).The similar values obtained for all the treatment group indicate nutritional adequacy of the treatment diet (Kabata *et al*, 1991; Laid *et al*, (1970) found that there is strong influence of diet on hematological traits with PCV and HB being very strong indicators of nutritional status of animals. This also indicated that inclusion of BPM meal was not detrimental to the rabbits hence its blood parameters were not affected in any way.

Red Blood Cells and White blood cells count

The values for RBC and WBC are 6.90 -7.10 x 106mm3 and 10.20-11.30 x 103mm3 respectively. There were no significant differences among treatments for RBC and WBC, This shows that the BPM inclusion did not have negative effects on RBC and WBC. These values were within the normal range of 3.00-7.73 x 103mm3 and 3.00-12.5 x 106mm3 for RBC and WBC respectively. Fox and Laid, (1970) while Wiersma and Kastelin,(1986) reported that any form of anemia or subclinical infection can lead to low RBC and WBC respectively.

Mean Corpuscular Volume (MCV) Mean Corpuscular Hemoglobin (MCH) Mean corpuscular Hemoglobin Concentration (MCHC).

The results for MCV, MCH and MCHC as shown in table 2 indicates that there were significant differences (P<0.05) between treatments. This might be as a result of the effects of the BPM meals on them. All values for erythrocytes indices (MCV, MCH, and MCHC) were within the normal range of 60-73L, 16-73pg and 24.8-35.1% for MCV, MCH, and MCHC respectively as reported by (Fox and Laird, 1970)

Conclusion

The study result indicated that since the inclusion of banana peels had no effects on the blood parameters as indicated in the analysis, it is then recommended that banana peels be fed to rabbit as an alternative feed resource. Other advantages are reduced feed cost. The use of such materials that are discarded as waste in compounding feed could help in sanitizing the environment and reduce competition between man and animals for conventional ingredients such as grains and their offal's.

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