

EVALUATION OF INTESTINAL ORGANS OF RABBIT FED WITH DISCARDED SPOILT ORANGE AS A PARTIAL REPLACEMENT FOR MAIZE

D. Y. IDRIS, M. N. UMUNAGBU, H. M. ALIM, M. O. AIGBAVBOA, R. M. KAMAL,
O. O. ONI, A. E. OWOYEMI AND A. F. ABEGUNDE

Federal College of Agricultural Produce Technology, Kano, Nigeria
idrisyusufdanladi@yahoo.com 08036841225

ABSTRACT

The experiment was conducted to study the pathological lesion and abnormality observed in weaned rabbits fed discarded spoilt orange as a replacement for maize. Weaned rabbit were randomly grouped into five treatments with three replicate per treatment. The treatment group consisted of 0%, 25%, 50%, 75% and 100% of discarded spoilt oranges included in the rabbit diet. The heart, kidney, pancreas, intestine, spleen, lungs and liver were observed for pathological lesion and abnormality and found to be normal except for the intestines which show some percentage of abnormality such as swelling, so it can be concluded that at all level of inclusion of discarded spoilt orange, it will enhance optimum performance of carcass and organs weight without any deleterious effect to the organs.

Keywords: discarded, spoilt orange, rabbit, intestinal organs

INTRODUCTION

The relevance of animal protein in human and animal nutrition in Nigeria cannot be overemphasized. In recent times, there has been a significant short fall between the production and supply of animal protein to feed the ever increasing population (Akpan *et al.*, 2009).

Rabbits have been recognized to have a very important role to play in the supply of animal protein to Nigerians especially in the rural and peri-urban areas. They are efficient converters of feed to meat and can utilize up to 30% crude fibre as against 10% by most poultry species (Egbo *et al.*, 2001). To make rabbit rearing more viable as a small-scale business, Alawa *et al.* (1990) have advocated the development of alternative feeding materials that will be relatively cheap when compared with commercial feeds or conventional feedstuffs. Rabbits have the potential of utilizing such unconventional feedstuffs as pigeon pea seeds and other diverse plant materials (Igwebuike *et al.*, 2001).

The shortage of good quality feeds needed to sustain livestock production has been a major challenge to the Livestock industry in most developing countries (Nsa and Ukachukwu, 2009), that put the blame on the rising needs of human for the same feedstuffs for food and industry (Duruna *et al.*, 2006). This has led to the use of alternative feed sources which may not be suitable for human consumption in

feeding animals (Oguike and Etim, 2010). According to Etim and Oguike (2011), the new global search for forage that is suitable for feeding livestock has led to the recent investigation of many more Nigerian plants and other sources than before.

Consequent of this, this study propose to describe some internal organs for the rabbit comprising the liver, kidney, spleen, and intestine organs to specify their colour and they look normal or abnormal. topography of intestine organs of rabbit is scarcely describe in availability literature and there are no detailed information about anatomical relationship to the age related, the study of internal organs of the rabbits in the diagnosis of many disease as well as investigation of extend of damage organs (Onyeyili, 1991). The objective of this study is to evaluate the internal organs of weaned rabbit fed with discarded spoilt orange in partial replacement for maize.

MATERIAL AND METHOD

Experimental Site

The experiment was carried out at the Science Laboratory Technology botanical garden at the Federal College of Agricultural Produce Technology, Kano. Discarded spoilt orange was obtained from Yan lemo fruit market in Kumbotso Local Government Area of Kano State.

Experimental animals and Diets

The discarded spoilt orange was sundried, grinded and then included in the experimental diets. Five experimental diets was formulated with diet 1 (control) containing 0% of discarded spoilt oranges, diet 2, diet 3, diet 4 and diet 5 contained 25%, 50%, 75% and 100% discarded spoilt oranges as replacement for maize content of the diets (weight for weight) respectively 45 weaned rabbit were raised in a cage system for 90 days, they were randomly allocated in to five treatments of 3 rabbits in three replicate of nine rabbits per replicates in a completely randomized designed (CRD). Two months feeding trial was carried out on the rabbit during which feed and water was supplied *ad libitum*.

Carcass and Organ Evaluation

One rabbit from each replicate was selected, weighed, starved overnight to clear the gut and stunned. The rabbit was sacrificed by cutting the jugular vein with a sharp knife. The tail close to the base was first removed, and then the head, feet and pelt. During evisceration, the internal organs and other gut contents were removed. The intestinal organs were observed physically for pathological lesion and abnormality. What is observed were recorded in percentages?

Chemical and Data Analyses

Experimental diets were analyzed for proximate composition using the methods of AOAC (1990). All data collected were subjected to physical observations and presented in percentages.

RESULTS AND DISCUSSION

The result of proximate composition (Table 1) shows that the moisture content of the sample was (10.50±0.20). This is expected since the sample has been subjected to drying to reduce the moisture content. High moisture content is an index of spoilage however the value is the same with that of the work of Adewole *et al.* 2014. the protein content was (12.70±0.24), also the crude fiber was (11.80±0.20), the fat content was (13.56±0.00) which showed that the discarded spoilt orange contained much oil and the carbohydrate content by difference was (46.40±1.50). Table 2 present the proportion of the ingredients used in the formulation of the experimental diets. Table 3 present the result on the Summary of the observation on the GIT of

the rabbit fed discarded spoilt orange as replacement for maize. Result for the partial replacement of maize with discarded spoilt orange on the intestinal oranges show that all the organs observed were normal at 66.67%, and above except for the intestine which were abnormal for the various inclusion levels. The physical observation obtained for the internal offal such as the liver, kidney, heart, intestine and pancreas indicating that there were no abnormalities or pathological lesions in these organs, thus confirming no toxicity in the treatment diets. The values reported for the various organs in this study conforms with those reported by Adeyemi *et al.* (2010) on rabbits placed graded levels of pineapple waste meal, and Amaefule *et al.* (2005) in their works on rabbits fed boiled pigeon pea seed meal.

CONCLUSION

The result obtained from the study indicates that discarded spoilt orange could be used to replace maize at all levels without any effect on their internal organs and performance of production of the weaned rabbits. However with increase population of livestock production in Nigeria, research work should be encouraged by the government and non-governmental organization in order to reduce pressure on the availability of energy which lead to competition to both man and animals and at a higher cost.

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Table 2: feed formulation of the rabbit (ingredient % of diet)

Ingredients	0%	25%	50%	75%	100%
Maize	48	33	24	12	0
Millet	18	18	25	30	40
Gnc	20	18	18	20	18
Dso	0	12	24	36	48
Wheat offal	22	20	19	20	19
Bone meal	3.0	3.0	3.0	3.0	3.0
Salt	0.25	0.25	0.25	0.25	0.25
Vit.premix	0.25	0.25	0.25	0.25	0.25
Total	100.00	100.00	100.00	100.00	100.00
Energy value	2,872	2,412	2,136	1,6917	1,636
Crude protein	17.06	17.8	17.07	17.4	17.9
Lysine	0.6	0.6	0.6	0.6	0.6
Methoinine	0.6	0.6	0.6	0.6	0.6

Table 3: Summary of the observation on the GIT of the rabbit fed discarded spoilt orange as replacement of maize.

PARAMETERS	0%	25%	50%	75%	100%
Heart	66.67% of normal. 33.3% of white dot on the heart	66.67% normal. 33.3% pale red heart.	66.67% normal. 33.33% pale red heart.	100% normal	100% normal
Lung	66.67% blood congestion. 33.33% blood congestion and paleness	66.67% blood congestion. 33.33% normal	66.67% blood congestion. 33.33% pale	66.67% blood congestion. 33.33% pale	100% pale
Liver	100% normal	100% normal	100% normal	66.66% normal. 33.33% pale	100% normal
Kidney	100% normal	66.67% normal. 33.3% rashes	66.67% normal. 33.33% pale	66.67% normal. 33.33% shrinking and pale	33.33% reddish and rashes. 33.33% normal. 33.33% shrinking
Spleen	100% normal	100% normal	66.67% normal. 33.33% brownish	66.67% normal. 33.33% blackish	100% normal
Intestine	66.67% normal. 33.33% swollen	66.67% normal and 33.33% swollen	66.67% swollen. 33.33% brownish. 33.33% ballooning	66.67% swollen. 33.33% normal	33.33% darkish. 33.33% yellowish. 33.33% yellowish
Pancreases	100% normal	100% normal	100% normal	100% normal	100% normal

Table 1: the proximate composition of discarded spoilt orange (DSO)

Nutrient	Concentration (mean±SD)
Crude fibre	11.80 ± 0.20
Crude Protein content	12.70 ± 0.25
Ash content	4.95 ± 0.35
Total Moisture content	10.50 ± 0.20
Carbohydrate	46.4 ± 1.50
Crude Fat	13.56 ± 0.00
Calcium (cmol/kg)	4.05 ± 0.20
Phosphorus (mg/kg)	13.89 ± 0.5