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47th Annual Conference
(JOS 2022)

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PERFORMANCE CHARACTERISTICS OF WEANED RABBITS FED DIETS CONTAINING GRADED LEVELS OF WATER MELON (*Citrullus lanatus*) RIND MEAL

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ABSTRACT

Livestock production is often plagued with high cost of production due to cost of conventional feed ingredients which many farmers cannot afford; therefore, the use of non-conventional feed ingredients has been an alternative way to foster livestock production and improve productive capacity of the animal genetic resources. This study was conducted to determine the performance characteristics of weaned rabbits fed diets containing graded levels of watermelon rind in the diet. An 8-week study was carried out to evaluate the performance of weaned rabbits fed graded levels of water melon rind (WMR). Twelve (12) weaned rabbits of mixed breed with initial weight of 760.00g -843.33g were used in a Completely Randomized Design (CRD) with three animals per treatment each animal served as replicate. The animals were fed water melon rind at 0%, 4%, 8% and 12%. The control diet was formulated to meet the nutritional needs of growing rabbits. Results obtained revealed that there were significant ($p < 0.05$) differences for performance parameters assessed among the treatments. It was concluded that water melon rind could be included in the diet of weaned rabbits up to 12% without any negative effect on the growth performance of the rabbits. Rather it has the potentials to boost productive performance of the rabbits.

Keywords: Water melon rind; performance; weaned rabbits.

INTRODUCTION

Rabbits (*Oryctolagus cuniculus*) are small mammals in the family *Leporidae* of the order *Lagomorpha*, along with the hare and the pika. Rabbits are monogastric herbivores and are wild prey animal as well as domesticated form of livestock and pet (Rommer *et al.*, 2001). Rabbits have the ability to convert forages and other farm by-products that are not consumed directly by humans into highly nutritious meat. The utilization of water melon rind (succulent, green outer layer known as epicarp) as feed ingredient in rabbit production is important in reducing feed cost and enhancing alternative use of feed resources for sustainable, optimum performance and better rabbit production. Conventional feeds are expensive and being competed for as food for man and industrial raw materials. Therefore, there is a need to search for available agricultural by-products and that are not competed for, to be used as alternative livestock feed materials. The study sought to determine the performance characteristics of weaned rabbits fed graded levels of watermelon rind in the diet.

MATERIALS AND METHODS

This experimental study was carried out at the Rabbitary Unit of the Teaching and Research Farm of the Department of Animal Production, Kogi State University Anyigba in Kogi State, Nigeria. Twelve (12) weaned rabbits of mixed breed were used for the study. They were confirmed healthy and were housed individually in rabbit hutches for ease of management and identification. The hutches were washed and disinfected for at least 2 weeks before the arrival of the rabbits. Four diets were formulated to meet the nutritional requirements of growing rabbits. Control diet (T1) contained zero (0%) level of watermelon rind, while diets T2, T3 and T4 contained watermelon rind at 4.0%, 8.0% and 12.0% respectively. The rabbits were weighed before being randomly assigned to the dietary treatments in a Completely Randomized Design arrangement. Each treatment had three rabbits, each served as replicate. The performance characteristics evaluated were average initial weight, daily feed intake, final body weight, total weight gain and average daily weight gain. Samples of



experimental diets were analyzed for proximate composition according to procedures of AOAC (2000). All data on performance and haematological parameters were subjected to analysis of variance (ANOVA) using SPSS version 20 (SPSS, 2020). The differences between means were obtained using Least Square Difference (LSD).

Table1: Percentage Composition of Experimental Diets (%)

Ingredients	Inclusion Levels of Watermelon Rind			
	0% WMR	4%WMR	8%WMR	12%WMR
Watermelon rind	0.00	4.00	8.00	12.00
Maize	30.00	26.00	22.00	18.00
Maize offal	16.00	16.00	16.00	16.00
Palm kernel cake	15.00	15.00	15.00	15.00
Full Fat soybean	20.00	20.00	20.00	20.00
Brewer Dried Grain	15.00	15.00	15.00	15.00
Bone meal	3.00	3.00	3.00	3.00
Salt	0.25	0.25	0.25	0.25
Lysine	0.25	0.25	0.25	0.25
Methionine	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				
Crude Protein (%)	18.76	18.71	18.67	18.62
Energy (kcal/kg)	2719.00	2671.04	2623.08	2575.12

WMR= Watermelon rind

RESULTS AND DISCUSSION

Proximate composition of experimental diet is shown in Table 2. The dry matter ranged from 86.63% to 89.15%. Diet with 8% inclusion level of watermelon rind had the highest dry matter value while the lowest dry matter value was observed in 12% inclusion level. Crude protein values ranged between 18.62- 18.76% while crude fibre values ranged between 8.67%-10.64% were recorded. Proximate values of the diets are comparable to those reported by Olatunji (2016).

Table 2: Proximate Composition of Experimental Diets

Parameters	0% WMR	4%WMR	8%WMR	12%WMR
Dry matter content (%)	88.83	88.99	89.15	86.63
Crude protein (%)	18.76	18.71	18.67	18.62
Ether extract (%)	6.28	6.65	6.89	6.60
Crude fibre (%)	8.67	9.33	10.00	10.64
Ash content (%)	5.75	9.05	10.28	5.00
Nitrogen free extract (%)	49.37	45.25	43.31	45.77

WMR= Watermelon rind

Result of the growth performance of rabbits fed the experimental diets is shown on Table 3. The final weights were significantly ($P<0.05$) influenced by dietary treatments. Dietary treatments containing 12% WMR and 0%WMR inclusion levels were significantly similar but higher than 4% WMR and 8%WMR. These values were higher than 825.0g-1137.0g reported by Dahouda *et al.* (2019) for rabbits fed concentrate diets in mash form. Values of daily weight gain obtained were significantly ($P<0.05$) influenced by dietary treatments with 0% WMR(5.71g), 4%WMR (6.11g) and 12%WMR (5.59g) having similar values but higher than 8% WMR (3.30g) inclusion level. Values obtained for daily weight gains were lower than 14.41g/day reported by Ikyume *et al.* (2019) for rabbits fed concentrate feed. These values were also lower than 15.66g reported by



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Obinne *et al.* (2013). Contrastingly, values obtained for weight gain for rabbits in this trial level were lower than 6.70g obtained by Iyeghe-Erakpotobor *et al.* (2006), who fed graded levels of soya bean cheese waste and *brachiaria* grass hay to weaned rabbits. Observed values for daily feed intake ranged from 42.68-47.14g and indicated significant ($P<0.05$) influence with 4% having higher value of 47.14g. These values were lower than the values reported by Ikyume *et al.* (2019) who recorded 50.54g for their experimental rabbits fed concentrate diets. Observed values for feed intake were significantly ($P<0.05$) influenced by graded levels of water melon rind fed. Significant ($P<0.05$) higher values for feed intake were observed for 4%WMR than other treatments. The values obtained for feed intake were less than 106.10g for rabbit fed concentrate feed in pellet form and 63.60g for rabbit fed concentrate in mash form as reported by Dahouda *et al.* (2019). Variations in the values might be attributed to dietary differentials and feed processing methods adopted in different studies. Feed conversion ratio was significantly ($P<0.05$) influenced by dietary treatments, observed values indicated better value for 4% apart from the control (0%). The observed values for feed conversion ratio (7.46-13.18) were in contrast to 3.0-3.4 reported by Adrian and Cicero (2014) and 6.22-6.59 reported by Alagbe (2018). Values of feed conversion ratio observed in this trial was similar to 7.48 reported by Abo-Eid (2016). Results of performance indicators obtained in this study showed that water melon rind is a valuable non-conventional feed ingredient which can be included in the diets of rabbits to replace maize without negative effects on the productive performance indicators of the animals.

Table 3: Growth Performances of Weaner Rabbits Fed the Experimental Diets

Parameters	0% WMR	4% WMR	8% WMR	12% WMR	LOS	SEM
Initial weight (g)	840.00	760.00	843.33	843.33	NS	32.17
Final weight (g)	1160.00 ^a	1086.50 ^b	1028.33 ^b	1156.67 ^a	*	47.67
Daily weight gain (g)	5.71 ^a	6.11 ^a	3.30 ^b	5.59 ^a	*	0.78
Daily feed intake (g)	44.40 ^b	47.14 ^a	42.68 ^d	43.57 ^c	*	2.28
Feed conversion ratio	7.46 ^a	8.06 ^a	13.18 ^b	8.91 ^a	*	0.92
Mortality (%)	0 ^b	0.50 ^a	0 ^b	0 ^b	*	0.09

WMR= Watermelon rind, abc = Means with different superscripts on the same row differ significantly NS = Not Significant ($p>0.05$), LOS = Level of significance * = significant at ($p<0.05$).

CONCLUSION AND RECOMMENDATION

Water melon rind could be included in the diet of weaned rabbits up to 12% without any negative effect on performance indicators of the animals. Observed results therefore indicated that rabbits can be fed up to 12% WMR in the diet for better performance.

REFERENCES

- Abo-Eid H.A., Abousekken M.S., and El-Folly I.A.M. (2016). Rabbit growth performance as affected by dietary levels of date waste meal. *Egyptian Journal Nutrition and Feeds. Sustainable development department, environmental studies and research institute (ESRI), University of Sadat city, Egypt.* 19 (2):349-362
- Adrian, P. and Cicero, H.O.L. (2014). The performance of growing rabbits fed a commercial concentrate with different forages under humid tropical conditions. *Open Tropical Forage and Animal Production Laboratory.*
- Alagbe, O. J. (2018). Performance and haemato-biochemical parameters of weaned rabbits fed diets supplemented with dried water melon peel (rind) meal. *Journal of Dairy and Veterinary Sciences* 2573-2196.
- AOAC (Association of Official Analytical Chemists). (2000). "Official Methods of Analysis" Arlington, VA, USA 18th Edition.
- Dahouda M., Dossa, L.H., Houessou S. Y., Amoussa S., Vidjannagni D.S., Abou M., Senou M., Youssao I.A.K., and Hornick J.L. (2019). Voluntary feed intakes, feed preferences and growth performance of growing and fattening rabbits under tropical coastal climate of Benin. *Veterinary science research article.* 04.00184.
- Ikyume, T.T., Ogu, I.E., Okwori, I.A., Shaahu, D.T. (2019). Growth performance and apparent nutrient digestibility of grower rabbits fed combinations of concentrate with grass and/or legume forage. *Journal of Multidisciplinary Research and Reviews* 1 (1), 41-45
- Iyeghe-Erakpotobor, G.T. (2006). Performance of growing rabbits fed concentrate and *Stylosanthes*(berano) combinations under tropical conditions. *Annual Science Journal* 77(1), 71-78.



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- Obinne J.I., Mmereoleb, F.U.C., Okonkwoc, J.C. (2013). Growth response and haematological parameters of juvenile rabbits fed concentrate diets supplemented with varying levels of *Tridaxprocumbens*. *Scientific Journal of Animal Science* 2(11) 310-315
- Rommer, J.M., Kemp, B., Meijerhof, R. and Noordhuizen, J.P. (2001). The effects of litter size before weaning and subsequent body development, feed intake, and reproductive performance of young rabbit does. *Journal of Animal Science*. 79, 1973-1982
- Olatunji, A.K., Alagbe, J.O., Hammed, M.A. (2016). Effects of varying level of *Moringaolifera* on the performance of weaned rabbits. *International Journal of Science and Research*. 5:6.
- SPSS (2020). Statistical Package for Social Science Chicago, III, USA: SPSS, Inc. Copyright for Windows, version 20.0.