

PERFORMANCE EVALUATION OF PHYTOBIOTICS ON WEANED RABBITS

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ABSTRACT

This study was carried out to determine the performance evaluation of weaned rabbits fed aqueous extract of ginger (*Zingiber officinale*) and almond fruits (*Terminalia catappa*) extract as drinking water. A total of 12 weaned mixed breed rabbits were randomly assigned to four treatments (T1 – T4). Each treatment contain three rabbits one per replicate. Treatment (T1) received water as the control, T2 received ginger extract while T3 received almond fruits extract and T4 received the mixture of ginger and almond fruits extract. The experiment lasted five weeks. The rabbits were individually weighed on a weekly basis until the end of the experiment. Water and feed were supplied ad libitum and daily voluntary feed and water intake was monitored. Final weight was significantly influenced by the administration of aqueous extract of two different phytobiotics (ginger extract and almond fruit extract), with rabbits administered the combination of ginger and almond fruit extract having the significantly ($P<0.05$) highest final weight (2000g), while rabbits on the control group had the significantly ($P<0.05$) lowest final weight (1530g). Rabbits administered the combination of ginger and almond fruit extract had the best feed conversion ratio (3.11), while rabbits on the control group had the poorest feed conversion ratio (7.50).

Keywords: Feed conversion ratio; phytobiotics; rabbits; weight gain.

INTRODUCTION

Rabbits (*Oryctolagus cuniculus*) play a vital role as a source of animal protein in human meal (Amaefule et al., 2005). Animal protein consumption is very essential for covering the protein requirement of the organism. Rabbit meat appears as a great alternative to reduce the shortage of animal protein in developing countries (Iribeck, 2001 and Hassan, 2012). The average daily protein intake is still far less than the value of 35 g per adult per day recommended by FAO (FAO, 2007). They convert feed to meat efficiently and utilize up to 30% crude fibre as against 10% by most poultry species (Egbo et al., 2001). Rabbit production has proven to be a veritable means of alleviating animal protein deficiency (Ajala and Balogun, 2004). rabbits are believed to be

the most prolific, cost-saving, and economical due to their short generation interval, high litter size and require little start-pack capital. Rabbits can convert unconventional feedstuffs (Igwebuike et al., 2001) and different forage materials. Rabbits could utilize forages (Omole et al., 2007), a fact that minimizing the cost of feeding compared to poultry which competes with man for cereal and legume-based feed resources.

This characteristic being the reason why attention is concentrated on rabbit production to solve the problem of inadequate animal protein. Rabbits do not compete directly with humans or both cereal and legume grains and can subsist on a diet consisting primarily of grass as monogastric herbivores. In contrast to these

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characteristics of rabbits compared to the rest of livestock, the cost of production remains high due to the increasing cost of concentrate formulated feeds. Water intake is an important component of animal nutrition as it is a crucial constituent of body metabolism and temperature control (Pond *et al.*, 2005). Hence, this research was therefore designed to determine the effect of aqueous extract of ginger and almond fruit in drinking water on the performance evaluation of weaned rabbits.

MATERIALS AND METHOD

Experimental site

The study was conducted at the teaching and research farm, federal polytechnic ilaro, Ogun state Nigeria.

Experimental sample preparation

Fresh ginger were purchased from the market and fresh fruit of almond were collected on campus, washed and the fleshy parts were extracted then 5kg from each of the plant was weighed, blended and soaked inside different containers into 50 litres of clean water for 72 hours, after which the solution was sieved to remove the residue. The filtrate was further sieved with muslin cloth to get fine pure extract. The pure aqueous extracts were stored in the refrigerator till usage.

Experimental design

A total of 12 mixed breed weaned rabbits at 7 weeks old, weighing between 0.97 and 1.0 kg were purchased from the teaching and research farm, Federal Polytechnic Ilaro, Ogun state, Nigeria. They were randomly weighed and distributed into four (4) treatments with three replicate of one rabbit each. The treatment one received water as the control group, treatment two received ginger aqueous extract and treatment three

were given almond fruit aqueous extract while treatment four received mixture of both ginger and almond fruit extract at 50% ratio. The feed and drinking water were offered to the experimental animals *ad libitum*. The hutches, pens, water troughs and feed troughs were thoroughly cleaned, washed as well as disinfected at regular interval and the environment was often cleared to maintain good hygiene. The animals were housed in a cage system for 2weeks so as to adapt to the environment meanwhile experiment lasted for 35 days.

Data Collection and Statistical Analysis

To determine the feed and water intake, a known quantity of the feed offered and the leftover were weighed, the differences in values were considered as the feed intake and the values were recorded daily. The volume of water offered and the leftover were measured in 500 ml volumetric flask and the differences in values were recorded as water intake on daily basis. After initial weight, Weekly weight of each rabbit were taken and recorded. Data collected were subjected to analysis of variance (ANOVA) according to Steel and Torrie (1980) and mean separation were indicated using Duncan's Multiple Range test (Duncan, 1955).

RESULTS

Effect of Phytobiotics on Growth Performance of Weaned Rabbit

The effect of phytobiotics on the growth performance of weaned rabbit is shown in table 1. Final weight at day 35 of experiment was significantly influenced by the administration of aqueous extract of two different phytobiotics (ginger extract and almond fruit extract), with rabbits administered the combination of ginger and almond fruit extract having the significantly ($P < 0.05$) highest final weight (2000g), while

rabbits on the control group had the significantly ($P<0.05$) lowest final weight (1530g). Weight gain was also significantly ($P<0.05$) increased in rabbits administered aqueous extract of phytobiotics as compared to their counterpart on the control group. Rabbit administered the combination of ginger and almond fruit extract had the significantly ($P<0.05$) highest (1076.67g) weight gain, while rabbits on the control

group had the least weight gain value (460.00g). Feed conversion ratio of weaned rabbits was also influenced by administration of aqueous extract of phytobiotics. Rabbits administered the combination of ginger and almond fruit extract had the best feed conversion ratio (3.11), while rabbits on the control group had the poorest feed conversion ratio (7.50).

Table 1: Effect of phytobiotics on growth performance of weaned rabbits

Parameters	T1	T2	T3	T4	SEM
Initial Weight (g)	1070.00	1170.00	1090.00	923.33	41.44
Final Weight (g)	1530.00 ^b	1936.67 ^a	1886.67 ^a	2000.00 ^a	64.30
Weight Gain (g)	460.00 ^b	766.67 ^{ab}	796.67 ^{ab}	1076.67 ^a	71.56
Weekly Weight Gain (g)	92.00 ^b	153.33 ^{ab}	159.33 ^{ab}	215.33 ^a	14.31
Daily Weight Gain (g)	13.14 ^b	21.90 ^{ab}	22.76 ^{ab}	30.76 ^a	2.04
Total Feed Intake (g)	3438.33	3736.33	3561.67	3291.00	84.48
Weekly Feed Intake (g)	687.67	747.27	712.33	658.20	16.90
Daily Feed Intake (g)	98.24	106.75	101.76	94.03	2.41
Water Intake (ml)	8457.67	7433.33	10067.33	7549.33	451.54
Weekly Water Intake	1691.53	1486.67	2013.47	1509.87	90.31
Daily Water Intake	241.65	212.38	287.64	215.70	12.90
Feed Conversion Ratio	7.50 ^a	4.95 ^b	4.54 ^{bc}	3.11 ^c	0.50

^{abc} means in the same row with the different superscripts are significantly different ($p<0.05$)

T1: Control, T2: Ginger extract, T3: Almond fruit extract, T4: Combination of ginger and almond fruit extract. SEM: Standard error of mean

DISCUSSION

Results of this study revealed that administration of phytobiotics (ginger extract and almond fruit extract) had significant ($P<0.05$) influence on rabbit growth performance. Rabbits administered the combination of ginger extract and almond fruit extract had the significantly highest final weight and weight gain. There was a significant increasing trend in the final weight and weight gain as administration of phytobiotics increased without significant increase in the feed intake.

Feed conversion ratio was also significantly ($P<0.05$) improved with the administration of ginger extract and almond fruit extract. Rabbit administered the combination of ginger extract and almond fruit extract had the best feed conversion ratio (3.11). Ginger contain calories 8%, essential amino acids (methionine and lysine), saturated fatty acid 1%, polyunsaturated acid 1%, dietary fiber 6% (Omage *et al.*, 2007) and almond fruit contains vitamin E, vitamin K, fiber, riboflavin, saturated fat 10%, polyunsaturated acid 20%, monounsaturated fat 50% (Kubala. 2017). The presence of these nutrients in the diet of rabbit can improve the growth performance of rabbit. The result of the present study corroborates

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the study carried out by El-Speiy *et al.* (2017), who reported that administration of ginger significantly ($P < 0.05$) improved the growth performance of rabbits. Omer *et al.* (2012) also reported that inclusion of combinations of several medicinal plants positively influenced the growth performance of rabbits.

CONCLUSION

The following conclusions were made from this study; the inclusion of phytobiotics (ginger extract and almond fruit extract) improved the final weight and weight gain of rabbits. The inclusion of phytobiotics (ginger extract and almond fruit extract) improved the feed conversion ratio of rabbits. Combination of ginger extract and almond fruit extract greatly improved the weight and feed conversion of rabbits.

RECOMMENDATION

To achieve optimal growth traits, administration of ginger extract and almond fruit extract is recommended. Further studies should be carried out using other phytobiotics in rabbit feeding.

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