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Short Communication

Effects of varying levels of dietary protein on the performance of rabbits

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Abstract

Sixteen Newzealand White rabbits aged 9.5 ± 0.5 weeks weighing 0.72-0.99kg were used to evaluate the experimental rations which allowed for good weight gain. They were divided into 4 groups and allotted four different diets for the treatment groups with 10, 13, 16 and 20% CP. Feed intake (FI) for the treatment groups were 58.52, 61.46, 57.35, and 61.06g while average daily gain (ADG) were 4.22, 4.35, 5.32 and 6.02g for the groups. There were significant increase (P<0.01) in the digestibility of CP, EE and NFE within the treatment groups. Diets containing 16-20% CP may provide adequate nutrients for optimum weight gain of Newzealand rabbits.

Keywords: *Dietary protein, level, rabbit, performance.*

Introduction

Dietary intake of most domestic animals contribute to the success of its maximum production. Also, the influence of various dietary nutrients on production capabilities in domestic animals depends largely on the quality and quantity of nutrients that must have been consumed.

Dietary utilization of different nutrients by rabbits has been reported since this domestic livestock has the potential for large scale production (Romney and Johnston, 1978; Omole, 1982; Partridge and Allan, 1982). Thus this study was designed to examine the response of rabbits to four different protein diets with the hope of obtaining that which will provide the best weight changes during the shortest possible period.

Materials and methods

Sixteen Newzealand White rabbits aged 9-10 weeks and weighing 0.72-0.99kg were used for this study. The animals made up of both males and females were obtained from the Directorate for Food, Road and Rural Infrastructure (DFFRI), Bosso, Minna Niger State. They were randomly allotted four dietary protein groups A-D (10, 13, 16, 20%) with four animals per group (Table 1). The rabbits were housed in individual hutches equipped with feeders and waterers.

After one week period, 110g of feed was provided in addition to ample amount of water. Daily feed intake and weekly weights of the animals were recorded throughout the 12-week duration of the study. Composition of feed and faeces were analysed according to AOAC (1980).

Table 1 *Composition of experimental diets fed to rabbits for a period of 12 weeks*

Ingredients	Dietary protein level (%)			
	10	13	16	20
Maize	69.53	60.84	52.37	41.01
Soyabean meal	8.47	17.16	25.63	36.99
Rice husk	20.00	20.00	20.00	20.00
Bone Meal	1.50	1.50	1.50	1.50
Salt	0.50	0.50	0.50	0.50
Total	100	100	100	100

Data obtained from the study were subjected to Analysis of Variance (Steel and Torrie, 1969) and differences in means were tested using the Duncans Multiple Range Test (Duncans, 1995).

Results and discussion

It was observed that diet C with 16% protein had the lowest value of EE (5.81%) and ash (8.0%) (Table 2). Average daily weight gains were highest in both diets C and D (Table 3). Though there appear not to be a significant difference in feed intake (P>0.05), NRC (1981) indicated that the feed intake in SBM-based is usually high because of the percentage protein (43-51%). The observation in this study agrees with earlier findings (Aduku, *et al.*, 1991) where feed intake in 15% CP diet was less than that in the 20% CP diet. Deshmuk and Pathak (1991) noted that feed intake increased with an increased level of dietary protein. Though in this study, there were no significant differences in FI values (Table 3), the corresponding weight changes showed that diets with 16 and 20% CP had the highest ADG.

The need to closely evaluate the inclusion of between 16-20% CP in the diet of rabbits should be examined since from this study it is suggestive that rabbits can perform better on weight gain basis when provided with diets containing between 16 and 20% CP.

Table 2 *Proximate analysis of diets fed to rabbits for 12 weeks*

Components	Dietary protein level (%)			
	10	13	16	20
Dry matter (%)	94.33	94.67	90.67	94.33
Crude protein (%)	10.17	12.75	15.67	11.83
Ether extract (%)	8.68	10.65	5.81	18.19
Crude Fibre (%)	9.08	9.28	10.16	10.84
Nitrogen free extract (%)	56.72	52.24	50.95	45.09
Ash (%)	9.68	9.75	8.00	10.33

Table 3 *Weight changes and feed intake in rabbits fed graded levels of dietary protein for 12 weeks*

Performance criteria	Dietary protein level (%)			
	10	13	16	20
No. of Animals	4	4	4	4
Av. Initial Weight (g)	982.50	733.75	721.67	734.00
Av. Final Weight (g)	1336.67	1099.00	1168.00	1239.25
ADG (g)	4.22	4.35	5.32	6.02
ADFI (g)	58.52	61.46	57.35	61.06
Av. Daily DM FI (g)	55.20	58.19	52.54	57.79
FE (g Feed/gain)	13.87	14.13	10.78	10.18

F.E. = Feed efficiency NS = Not significant
ADG = Average daily gain ADFI = Average daily feed intake DM = Dry matter

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