

Short Communication

Effects of varying levels of dietary protein on the carcass characteristics of growing rabbits

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Abstract

Sixteen New Zealand White rabbits aged 9-10 weeks and weighing 0.72-0.99 kg were used to examine the effects of varying levels of dietary protein on carcass characteristics of rabbits. They were divided into four groups and allotted to four dietary treatments A, B, C and D formulated with 10, 13, 16 and 20 % crude protein (CP) respectively. Average dressing percentage and average weights (on liveweight basis) of carcass, hind limbs, forelimbs, breast, lumbo-sacral, heart, liver, kidneys and lungs were not affected by the dietary treatments. The results indicated that different levels of dietary protein had no significant ($P > 0.05$) effect on carcass yield in rabbits.

Keywords: Dietary protein level, rabbit, carcass characteristics.

Introduction

The rabbit is a prolific animal with excellent ability to utilize a wide range of diets. Rabbit meat is an excellent source of animal protein which can be utilized to satisfy increasing demands for food in developing countries, where increased meat production is of great importance (Sankhyan *et al.* 1991). The proportion of dressed weight to live body weight is often used as a measure of meat production in farm animals. Since there is a relationship between weight and physical characteristics of animals, which is a reflection of feed efficiency and performance, this association has been used to examine relationship with economic characteristics such as meat yield and reproductive performance (Maciejowski and Zieba, 1982). This study was designed to evaluate the effect of varying levels of dietary protein on carcass characteristics in terms of

weight of different cut parts which are directly proportional to growth of growing rabbits. Therefore, these parameters were studied to determine growth patterns for meat.

Materials and methods

Sixteen New Zealand White rabbits aged 9-10 weeks and weighing 0.72-0.99 kg 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 and kept in the Teaching and Experimentation Unit of the Department of Animal Production, Federal University of Technology, Minna. They were randomly allotted to four dietary protein groups A-D (10, 13, 16, 20 %), analysed according to AOAC (1980) with four animals per group (Table 1.). The rabbits were housed in individual

hutches equipped with feeders, drinkers and feed and water were provided *ad libitum*.

Feed intake was determined daily as the difference between feed offered and refused. The live weight of each animal was taken weekly before the morning meal. Daily dry matter intake, nutrient utilization and performance of these rabbits on these diets have already been reported (Fasanya and Ijaiya, 2002). At the end of the experimental period (84 days), the rabbits were individually weighed, slaughtered and the different body parameters which include the slaughter weight, carcass weight, dressing percentage, hind limbs, fore limbs, cervical thorax (breast), lumbo-sacral,

heart, liver, kidneys and lungs were weighed. Data obtained were subjected to one-way analysis of variance and multiple range test using a computer software package "Statgraphics version 2.0" (1987).

Results and Discussion

Chemical compositions of the experimental diets are shown in Table 1. Average daily feed intakes in groups A, B, C and D were 58.52, 61.46, 57.35 and 61.06 g/day respectively and average daily weight gain increased with increasing level of dietary protein from 4.22 g to 6.02 g (Fasanya and Ijaiya, 2002).

Table 1: Composition of experimental diets (%)

Ingredients	Dietary protein level (%)			
	A (10)	B (13)	C (16)	D (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	100.00	100.00	100.00	100.00
Determined analysis (DM-Basis)				
Dry matter (%)	94.33	94.67	90.67	94.33
Crude protein (%)	10.17	12.75	15.67	19.88
Ether extract (%)	8.68	10.65	5.81	8.19
Crude fibre (%)	9.08	9.28	10.16	10.84
Ash (%)	9.68	9.75	8.00	10.33
Nitrogen free extract (%)	56.72	52.24	50.95	45.09

Average dressing percentage of slaughter and percentage weight of body cuts on live weight basis which include hind limbs, fore limbs, breast, lumbo-sacral, heart, liver, kidneys and lungs are shown in Table 2. The dressing percentage ranged from 62.00 % for C to 64.40 % for A, indicating no significant ($P>0.05$) difference among groups. Weight of fore limbs

did not differ significantly ($P>0.05$) among the treatment groups. This can be explained with the observations of Palson and Verges (1952a) that bones form the major portion of the weight of this region and may not have contributed much to total weight change in the region and by the fact that the fore limbs are late maturing parts of the body which mainly include scapular regions.

Varying protein level and carcass characteristics of rabbits

Table 2: Carcass characteristics of rabbits fed experimental diets (on liveweight basis)

Parameters	Dietary protein groups				
	A	B	C	D	SEM
Body weight at slaughter (kg)	1.58	1.43	1.68	1.65	
Dressing percentage	64.40	64.31	62.00	64.39	0.81
Hind limbs	7.32	7.91	6.70	7.49	0.54
Fore limbs	3.68	4.16	3.62	4.30	0.16
Breast	11.43	12.37	12.39	12.01	0.63
Lumbo-sacral	17.24	15.70	16.31	15.95	0.85
Heart	0.25	0.23	0.23	0.23	0.03
Kidneys	0.52	0.57	0.73	0.72	0.13
Lungs	0.59	0.57	0.79	0.87	0.09
Liver	3.15	2.82	3.51	3.20	0.17

SEM: Standard Error of Mean

Average weights of hind limbs ranged from 6.70 % for C to 7.91 % for B. There was no significant ($P>0.05$) difference among the dietary treatment groups, indicating that the experimental levels of protein had no effect on the growth of hind limbs. Similarly, average weights of breast and lumbo-sacral region were not affected significantly ($P>0.05$) by the varying levels of protein. The different levels of dietary protein had no significant ($P>0.05$) effect on the weights of the heart, liver, kidneys and lungs. This can be explained with the observations of Wallace (1949), Palson and Verges (1952a,b) and Hight and Barton (1965) in goats, that the heart, being a vital organ, attained most of its mature weight during development of the foetus. Therefore, varying levels of protein do not significantly change heart weight in the later stages of growth. These findings are similar to those by Aduku *et al.* (1986) and Sankyan *et al.* (1991), where the average dressing percentages and weights of body parts of rabbits fed different levels of protein and energy were not significantly ($P>0.05$) affected. It is therefore concluded that carcass yield and characteristics responded similarly to the different levels of dietary protein fed to the rabbits.

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