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Effect of Does Feeding with Different Levels of Protein on Post-weaned Litter Performance

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Abstract: An experiment was conducted over a 56 days period with 60 New Zealand white crossbred post weaned young rabbits aged about 4-5 weeks having an initial average live weight of 418-438 g whose mothers fed diets containing 13.17, 16.64 and 21.00% CP. The young rabbits were fed concentrate diets containing 16.64% CP along with *ad libitum* green grass (*Hymenachne pseudointerrupta*). According to their mother diets, they were assigned into 3 experimental groups (A, B & C). The average dry matter intake was significantly ($P < 0.01$) higher in the rabbits of group B than group A & C. Live weight gain was significantly ($P < 0.01$) higher in group C (16.6 g/day) than group A (8.7 g/day) and B (14.6 g/day). The young rabbits of group C converted feed to meat more efficiently than group A & B. So, it may be suggested that for better post weaned litter performance, concentrate mixtures containing 21.00% CP diet along with *ad libitum* green grass may be provided to rabbit does during their pregnancy and weaning period under tropical conditions

Key words: Performance, post-weaned litter, does feeding, pregnancy and weaning

Introduction

In Bangladesh, the availability of animal protein for human consumption is only 5.7 g per capita per day against the requirement of 25 g (Ali and Sukanta, 1993) which is quite inadequate for normal growth and development of the body. Animal protein is produced by different conventional sources as cattle, sheep, goat and poultry are far below the requirement to meet up the growing demand of animal protein. Therefore, it is necessary to explore some other unconventional sources of animal protein such as rabbit meat to mitigate the protein shortage, since rabbit meat may be a promising source of protein in Bangladesh. In recent years, small-scale rabbit projects have been gaining more international attention as a feasible measure for poverty alleviation and increasing of self-reliance in food production. The climatic conditions, commercial factors, legal environments, religious issues, social practices and technological aspects support the rabbit raising potential in Bangladesh (MIDAS., 1992). Crude protein requirement in relation to live weight can also vary greatly due to previous nutrition (Orskov *et al.*, 1976). They indicated that previous under nutrition had dramatic effects on live weight gain and feed conversion efficiency. Residual effect of protein intake by mother feeding at gestation and weaning period may enhance their post-weaned litter performance. Therefore, with this idea keeping in mind the present work has been conducted to study the effect of does nutrition during gestation and weaning period on performance of post-weaned litter.

Materials and Methods

The experiment was conducted at the Animal Nutrition Field Laboratory of Bangladesh Agricultural University, Mymensingh, Bangladesh over a 56 days period (April 30 to June 29, 2000) with 60 New Zealand white crossbred post weaned young rabbits. They were of 4 weeks age having an initial average live weight of 418-438g. Their mothers were fed diets containing different levels of crude protein (CP). The young rabbits were fed concentrate diet containing 16.64% CP along with *ad libitum* green grass (*Hymenachne pseudointerrupta*) from 36 to 91 days of age. According to their mother diets containing 13.17, 16.64 and 21.00% CP; they were assigned into 3 experimental groups with 4 replications of 5 rabbits each. The ingredients and nutrient composition (according to AOAC., 1984) of the diets are shown in Table 1. ME, Ca & P contents of the diets were calculated from the manual of Selected Topics in Animal Nutrition. Five young rabbits were housed individually in a steel cage and metal feeders and bottle waterers were provided at the front of this cage. To study the residual effect of mother feeding during gestation and weaning period on post-weaned litter performance, daily feed intake by rabbits was recorded, and live weight of them was taken

Table 1: Ingredient and nutrient composition of diets

Ingredient	Experimental diets		
	13.17% CP	16.64% CP	21.00% CP
Concentrate mixture (kg/100 kg):			
Maize	38.00	30.00	27.00
Wheat	28.00	18.00	10.00
Wheat bran	33.10	38.10	33.10
Til oil cake	--	9.00	9.00
Soybean meal	--	4.00	20.00
Vitamin and mineral mixture	0.25	0.25	0.25
Common salt	0.50	0.50	0.50
L- Methionine	0.15	0.15	0.15
Nutrient composition:			
Crude protein (%)	13.17	16.64	21.00
ME (kcal/kg)*	2621	2486.0	2525.0
Calcium (%)*	0.09	0.29	0.20
Phosphorus (%)*	0.23	0.34	0.40

* Calculated from the manual of Selected Topics in Animal Nutrition by Close and Menke (1976).

weekly and recorded. Then average feed intake, live weight gain, and feed conversion efficiency were calculated from the kept data. The data were analyzed by the method of completely randomized block design (RCBD) and least significant difference (LSD) was used to compare the group means for the parameters.

Results and Discussion

The average green grass intake (g/day) of young rabbits was not significantly influenced by their mother feeding their mothers different levels of protein (13.17, 16.64 and 21.00% CP), but concentrate intake (g/day) of the rabbits of group B was significantly ($P < 0.01$) higher than the rabbits of group A & C. The average dry matter intake of young rabbits was 73.0, 74.5 and 73.8 g/day whose mother received 13.17, 16.64 and 21.00% CP diet, respectively during pregnancy and weaning. Total dry matter intake of group A was significantly ($P < 0.01$) lower than groups B and C receiving same diet containing 16.64% CP (Table 2). Among the post weaned litters the group B consumed higher amount of total dry matter than the groups A and C. Average live weight gain (g/day) was significantly ($P < 0.01$) influenced among different experimental groups of the post-weaned litters due to previous nutrition intake by their mother during pregnancy and weaning. Highest live weight gain was observed in C group of young rabbits whose mother fed 21.00% CP diet (Table 2). On the other hand, the post weaned litters whose mother fed 21.00% CP diet, converted feed to meat more efficiently ($P < 0.01$) than those mothers fed 13.17 and 16.64% CP diets during pregnancy and weaning (Table 2).

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Table 2: Effect of does feeding 13.17, 16.64 and 21% CP containing diets on their post-weaned litter performance

Parameter	Experimental Groups			LSD	Level of significance
	A	B	C		
a) Green grass intake(g/day)	14.0± 1.0	14.4± 0.5	14.4± 0.2	1.1	NS
b) Concentrate intake (g/day)	59.0 ^a ± 0.38	60.1 ^b ± 0.32	59.4 ^a ± 0.45	0.4	**
Total dry matter intake (g/day)	73.0 ^a ± 0.26	74.5 ^b ± 0.34	73.8 ^b ± 0.67	0.7	**
Initial live weight at 36 days of age (g)	424± 4.9	430± 4.4	432± 5.3	8	NS
Final live weight at 91 days of age (g)	913 ^a ± 11	1247 ^b ± 17	1360 ^b ± 12	205	**
Live weight gain (g/day)	8.7 ^a ± 0.2	14.6 ^b ± 0.2	16.6 ^c ± 0.1	0.28	**
Feed conversion efficiency (FCE)	8.33 ^a ± 0.2	5.11 ^b ± 0.06	4.45 ^c ± 0.02	0.16	**

^{a,b,c} Mean values with different superscripts differ significantly

^{NS} Not significant, ** P< 0.01

^{LSD} Least significant differences

A = Group of young rabbits whose mother fed 13.17% CP containing diet

B = Group of young rabbits whose mother fed 16.64% CP containing diet

C = Group of young rabbits whose mother fed 21.007% CP containing diet

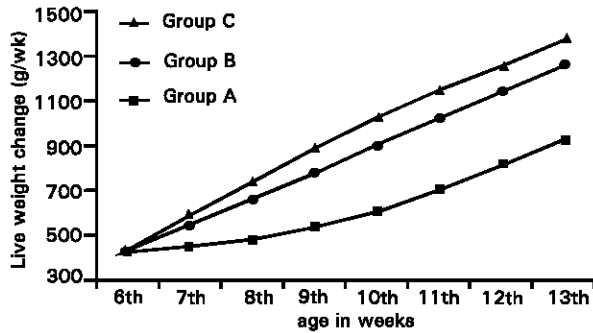


Fig. 1: Effect of does feeding with 13.17, 16.64 and 21.00% CP diet on their post-weaned litter performance.

During the experimental period (from 6th to 13th weeks of age) growth rate of the young rabbits was highly affected in first several weeks by their mother diets fed during pregnancy and weaning (Fig. 1). Growth rate of the rabbits of group A was lower in first several weeks, probably due to negative residual effect of their mother feeding 13.17% CP diet. But in group C growth rate was higher due to positive residual effect of their mother feeding 21.00% CP diet. On the other hand, growth rate of the rabbits of group B was almost similar during the experimental period (Fig. 1). Residual effect of mother feeding during pregnancy and weaning was continued up to 9th – 10th weeks of age. Sanchez *et al.* (1985) observed that live weight gain was higher in the litters (39 g/day)

whose mother fed 19.0% CP diet than mothers fed 17.5% CP diet (38.5 g/ day) and 20.5% CP diet (38.8 g/day). Feed conversion efficiency values were superior significantly (P< 0.05) for post weaned litters produced from mothers fed 20.5% CP diet during gestation and weaning.

From the above findings it may be suggested that for better post weaned litter performance, concentrate mixtures containing 21.00% CP diet along with *ad libitum* green grass may be provided to rabbit does during their pregnancy and weaning period under tropical conditions.

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