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Effect of vitamin-mineral-amino acid premix on growth performance of young rabbit

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ABSTRACT

A total of 18 crossbred New Zealand White rabbit aged about 1 to 1.5 months were reared to investigate the effect of vitamin-mineral-amino acid premix on their growth performance. Complete randomized design (CRD) was used for this study. Rabbit were weighed initially and blocked into three diet groups of 6 rabbit per treatment according to live weight. The animals in each block were then assigned The treatment groups were given 0 (T_1), 1 (T_2) and 2 (T_3) gm of Vitamin-Mineral-Amino acid Premix (VMAP) along with green grass and concentrate mixture. Rabbits were fed with concentrate mixture having 1gm VMAP/kg concentrate (T_1) achieved highest average final body weight (1315.00gm), highest total body weight gain (734.0 gm), highest average DMI (66.95 gm), and the best FCR than other treatment groups with non significant ($p>0.05$) variations. On the other hand, the average growth velocity of T group was insignificantly ($p>0.05$) lower than the other two groups. From the experiment conducted it can be concluded that optimum growth performance of young rabbit might be achieved without external supplementation of Vitamin-Mineral-Amino acid Premix.

INTRODUCTION

Animal protein produced in Bangladesh by different conventional sources like cattle sheep, goat and poultry, is far below the requirement to meet up the growing demand. The rabbit farming has significant potential to improve food security and nutrition in developing countries. Rabbit meat is acknowledged as of high quality being high in protein and low in fat and cholesterol (Jones, 1990 and Handa et al., 1995). On the other hand rabbit skin can be used in the production of toys craft work and also in cottage industries. Profitable rabbit farming to some extent largely depends on nutritional status of diet they fed. Like energy and protein vitamin, mineral and amino acids are also important in rabbit diet. These components of nutrients have direct or indirect effect in growth performances of rabbit. Klisurov et al. (l998) reported that rabbit feed containing 0.5 % vitamin premixes significantly decreased growth period and increase forage utilization significantly from 1.1 Kg to 2.3 Kg live weight. Lebas (2000) recommended Vitamin C in rabbit diet to reduce heat stress.

Many scientists worked in scattered way either with vitamins or minerals or specific amino acids supplements on growth performance of rabbit. Very little information is available about complete vitamin-mineral and amino acid premix supplement on growth performance of rabbit in Bangladesh. Moreover, inclusion level of Vitamin mineral amino acid premix in rabbit diet is not definitely known. Therefore, the current study was undertaken to investigate the effect of dietary

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supplementation of Vitamin mineral amino acid premix at different levels on growth performance of young rabbits and to determine the inclusion level of vitamin -mineral and amino acid premix in growing rabbit diet.

MATERIALS AND METHODS

The experiment was carried out with a total of 18 crossbred New Zealand White rabbit aged about 1 to 1.5 months for a period of 10 weeks at the Animal Nutrition Field Laboratory in Bangladesh Agricultural University, Mymensingh. It was conducted in a Randomized Block Design (RBD). Rabbits were weighed initially and blocked into three diet groups of 6 rabbit per treatment according to live weight. The animals in each block were then assigned The treatment groups were given 0, 1 and 2 gm of Vitamin-Mineral-Amino acid Premix (VMAP) along with green grass and concentrate mixture.

Locally available feed ingredients (Table 1) were used to formulate concentrate mixture for the rabbits. The mixture was prepared by hand mixing. Major ingredients were first thoroughly mixed and then the micro-ingredients were added. Megavit-DB (Table 2) of Novartis Bangladesh Limited, was used as VMAP in the diet. The diets were prepared with 2 different levels of VMAP (T_1 = 1.0 gm T_2 = 2.0 gm) and at the same time a control diet (T_0 = 0 gm) was also prepared. The rabbits were fed on three (3) concentrate diet along with green grass (mixed grass). Concentrate mixtures were supplied average 70 g/d/h and green grass were supplied average 100 g/d/h during the experimental period. The nutrient requirement of the rabbit was satisfied according to NRC.1977 standard.

Two animals were housed in each cage in a well ventilated room. All cages and floor of the room were cleaned with phenol in every week. The floor was cleaned every day. The daily feed intake (Concentrate mixture and green grass) was calculated by subtracting the refusal of the subsequent days from supplied diet and recorded throughout the experimental period. Records were kept of feed consumption, daily weight gain which were further used for calculating Feed Conversion Ratio (FCR), Average daily gain (ADG) and Growth Velocity (GV). Data were analyzed by statistical computer program MSTAT-C to compare the means of all parameter.

Table 1
Ingredients and nutrient composition of concentrate mixture.

Composition of concentrate mixture	Amount (%)
Maize	26.5
Wheat	27.0
Wheat bran	27.0
Til-oil cake	11.0
Soybean meal	8.0
Common salt	0.5
Nutritive value	
Crude protein (%)	16.04
ME (kcal/kg) *	2507
Ca (%) **	0.30
P (%) **	0.17

* According to NRC, 1994, ** Calculated value.

Table 2
Composition of vitamin-mineral amino acid premix -Megavit-^{DB}.

Name of the ingredients	Amount/kg
Calcium	237.00 g
Phosphorus	54.00 g
Lysine	1.17 g
Methionine	2.25 g
Tryptophane	0.11 g
Sodium	11.00 g
Magnesium	5.00 g
Anti-oxidant	0.10 g
Vitamin A	0.60 IU
Vitamin D_3	0.03 IU
Vitamin E	0.30 g
Vitamin K_3	0.04 g
Vitamin B_2	0.30 g
Vitamin B_6	0.06 g
Vitamin B_{12}	0.40 g
Niacin	0.44 g
Foline	0.01 g
Calcium pantothenate	1.32 g
Cholin Chloride	0.15 g
Copper	6.00 g
Manganese	1.00 g

Iron	2.00 g
Cobalt	0.80 g
Iodine	0.18 g
Mono sodium Glutamate	7.50 g

Source: Novartis (Bangladesh) Limited.

RESULTS AND DISCUSSION

Live Weight Gain

Daily average live weight gain and total average live weight gain are presented in Table 3. Average initial live weight were almost similar in T_o, T_1 and T_2 treatment group but in case of final live weight (FLW) , 1 gm VMAP supplemented group showed higher (1315.00 gm) weight than control and T_2 group. The variations of FLW among the treatment groups were insignificant ($p>0.05$). Total live weight gain of T1 group was higher (734.00 gm) among others although the variation was insignificant ($p>0.05$). The same trend was found in case of average daily weight gain of young rabbits where T_1 group gained slightly higher than T_o and T_2 and the difference was statistically insignificant ($p>0.05$). Similar non significant effect of supplementation of vitamin, mineral or amino acid were reported by Tawfeek (1993) from mineral (0, 1 and 2g per Kg diet), Coan et al. (1988) from CP and methionine and Hossain (2003) from CP (14% and 16%) methionine supplementation. It might be due to supply of fresh green grass which contains enough of vitamins, minerals and amino acids (NRC, 1991).

Growth Velocity (GV)

Lowest value of GV observed in case of 2 g VMAP supplemented groups of rabbit followed by 1 and 0 g supplemented groups, respectively. The little bit differences observed among T_0, T_1 and T_2 with respect to GV were not statistically significant ($P>0.05$). Hossain (2003) found similar effect of CP (14% and 16%) and methionine supplementation on GV of rabbit.

This might be due to non-significant differences in final live weight and that of live weight gain for supplementation of 0, 1 and 2 g VMAP/Kg concentrate mixture.

Table 3
Growth performance and dry matter intake of growing rabbit for different treatment groups.

Parameter	Dietary treatments			Level of significance
	T_0	T_1	T_2	
Initial live weight (g)	590.00±183.57	589.33 ±175.97	588.33±173.02	NS
Final live weight (g)	1258.33±85.11	1315.00±228.66	1185.00±188.03	NS
Total live weight gain (g)	668.33±101.05	734.00±52.57	596.66±19.22	NS
Daily live weight gain (g)	9.27±1.40	10.19±0.73	8.28±0.26	NS
Growth velocity	1.52±0.67	1.43±0.36	1.25±0.41	NS
Daily dry matter intake (g)				
a) Concentrate (g/day)	49.07±1.00	52.04±3.33	50.13±2.99	NS
b) Green grass (g/day)	14.06±0.829	14.92±0.68	14.06±1.16	NS
Total dry matter intake (g/day)	63.10±1.83	66.95±3.99	64.20±1.89	NS
Feed conversion ratio	7.18±1.32	6.58±0.10	7.75±0.06	NS

NS= Not significant at 5% level of significance.T_0 = 0 g supplementation of vitamin-mineral and amino acid premix., T_1 = 1 g supplementation of vitamin-mineral and amino acid premix. T_2= 2 g supplementation of vitamin-mineral and amino acid premix

Dry Matter Intake (DMI)

The DMI was to some extent higher (66.95±3.93 g/d) in case of 1 g supplementation of VMAP which was followed by 2 and 0 g/kg supplementation groups of rabbits. It is evident from the present study that supplementation of VMAP in rabbits diet were not important with respect to uplifting the DMI in young growing rabbits. Raharjo et al. (1988) reported the same about DMI from forage.

Feed Conversion Ratio (FCR)

Rabbit supplemented with 1.0 g VMAP per kg concentrate mixture showed better feed conversion ratio than control and 2.0 gm supplemented group. Control group i.e. 0 g supplemented group shown slightly lower FCR than 2 gm supplemented group. But the differences in FCR for different levels of supplementation found in the present study was non-significant ($p>0.05$). Parigi et al. (1988) for methonine and lysine supplementation on growing rabbits, Coan et al. (1988) for metheonine supplementation on New Zealand × California rabbit found non-significant increase of FCR where as Sonbol et al. (1992) for metheonine supplementation on New Zeeland rabbits found significant ($P<0.05$) effect in FCR increase.

CONCLUSION

The results of the present study revealed that supplementation of VMAP with concentrate mixture in rabbit diet were not so important with respect to enhance growth performances. The VMAP required for optimum growth performance may be satisfied from conventional feeding practices (green forage + concentrate)

REFERENCES

Coan MA, Kellogg DW, Nelson TS and Daniels LB. (1988). Effect of dietary level of protein and methionine supplementation on growing rabbits. Journal of Applied Rabbit Research, 11(2): 84-85.

Handa MCKL, Sapra KL and Shinguri BK. (1995). Rabbits for meat production. Asian Livestock. 20(9): 99-100.

Hossain T (2003). Growth and Reproductive performance of meat rabbit with diet containing moderately high and low protein diet with or without methionine. MS Thesis, Department of Animal Nutrition, Bangladesh Agricultural University, Mymensingh

Jones ND (1990). The developing market for farm-bred meat rabbits in Britain. Animal Production, 50: 66A.

Klisurov H, Ganev G, Tanaka Kov D (1998). Comparative study of premixes for rabbits. Nutr. Abstract Review, 35 : 1, 34-38.

Lebas F (1983). Small-scale rabbit production. Feeding and management systems. World Animal Review, 46: 11-17.

NRC (1977). Nutrient Requirements of Domestic Animals, No.9 Nutrient Requirement of Rabbits. Second Revised Ed. National Reseach Council, National Academy of Science, Washington D.C, U.S.A.

NRC (1991). Microlivestock. National Research Council. National Academy, Press, Washington, D.C, U.S.A.

NRC (1994). Nutrient Requirements of Poultry, 9th rev.ed., National Academy of Science, Washington D.C, U.S.A.

Parigi BR, Xiccato G and Cinetto M (1988). Methionine and lysine supplementation of a complete diet for growing' rabbits. Rivista-di-Coniglicoltura, 25(8): 33 -38.

Raharjo YC, Cheeke RR and Patton M (1988). Evaluation of tropical forages and rice by-products as rabbit feeds. Journal of Applied Rabbit Research, 11: 3, 201-211.

Tawfeek MI (1993). Reproduction and growth performances of NWZ rabbit as affected by mineral supplementation in pelleted diet. Egyptian Journal of Rabbit Science, 3:2, 179-190.