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INFLUENCE OF DIFFERENT ENERGY LEVELS ON KIT MORTALITY IN THREE SUCCESSIVE KINDLINGS

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Abstract: The present study was undertaken to study the effect of feeding different energy level feeds on kit mortality during three kindlings at the Small Animal House, Department of Livestock Production and Management, Veterinary College, Bangalore. Twelve adult females at second kindling stage and three male rabbits aged between 8 and 9 months with average weight of 2500–2650 g were randomly allotted to three different treatment groups of four animals in each group, namely, Control, T1 and T2 in a completely randomized design (CRD). Rabbits in control group were fed *ad lib* quantity with the diet containing 2500 Kcal of digestible energy/Kg and the second treatment (T1) group was fed with 2250 Kcal of digestible energy/Kg of diet by restricting 10% of feed offered than control and the treatment (T2) group was fed with 2000 Kcal of digestible energy/Kg of diet restricting 20% of feed offered than control. The study concluded that high energy diet has an influence on kindling. By feeding high energy diet, weaning of bunnies can be reduced from 42 to 30 days. Bunnies attained body weight 400g at weaning. Hence 5-6 kindlings can be achieved in a year. High energy diet reduces the mortality of young ones by ensuring greater milk production by the doe and thus increasing the survivability.
Keywords: Rabbits, Energy feeds, Kit mortality, Kindlings.

INTRODUCTION

Rabbit have smaller body size that comparatively requires lesser amount of feed which has less competition with human food. Rabbits have shorter gestation period and can be rebred within 24 hours of kindling, 4-6 kindlings per doe in a year can be obtained under routine managemental practices. High reproduction rate of rabbit helps to obtain 6-8 litters per kindling and it has a rapid growth rate (2-2.5 Kg in 12-15 weeks) and early maturity (12 weeks) when compared to other animals. Its meat is high in protein and low in fat, cholesterol and sodium, which is boon for heart and hypertension patients desirous of eating meat and there are no religious inhibitions/taboos for the consumption of rabbit meat among non-vegetarian population. The skin of rabbit is a valuable by-product used to manufacture fur garments, toys and decoration pieces (Gulyani and Karim, 2008).

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According to FAO (1982) the meat requirements of one-third of the human population will be satisfied by the supply of pork, poultry and rabbit meat. The global rabbit production is estimated at more than 1.12 million MT per year. According to FAO (2004) the major producers are China (440,000 MT), Italy (222,000 MT), Spain (115,000 MT), France (85,200 MT) and Egypt (69,840 MT). Italy leads the world rabbit consumption at 5.8 Kg per capita annually as against leading producer China with just 0.07 Kg per person per year. A female rabbit can produce up to 80 Kg of meat per year i.e. 2900 to 3000 % of her live weight into meat through progenies. Energy is most required for growing and lactating does. A deficiency of energy during growth will result in stunted growth, low live weight gain and poor feed conversion efficiency. Deficiency of energy in lactating does leads to ketosis, where the mobilization of body energy reserves to milk results in loss of body weight and less milk production (Anil Kumar, 2007). Not much research work has been done in tropical countries like India, to determine the energy requirement for pregnancy, lactation and kindling performance of rabbits and effect on kit mortality. Therefore, keeping above points in view, the present study was undertaken to study the effect of feeding different energy level feeds on kit mortality during three kindlings.

MATERIALS AND METHODS

An investigation was carried out to evaluate the effect of feeding different energy levels on kindling performance in rabbits at the Small Animal House, Department of Livestock Production and Management, Veterinary College, Bangalore

Twelve adult females at second kindling stage and three male rabbits aged between 8 and 9 months with average weight of 2500–2650 g were randomly allotted to three different treatment groups of four animals in each group, namely, Control, T1 and T2 in a completely randomized design (CRD). The bucks from same line were selected for breeding to avoid genetic contamination. The total duration of the experiment was seven months. The animals were kept for acclimatization to mash feed for two weeks. Rabbits were housed in individual cages of 15 × 18 × 11 inch size. Each rabbit had free access to clean water provided in water.

The diets for the experimental rabbits comprised three different energy levels. Rabbits in control group were fed *ad lib* quantity with the diet containing 2500 Kcal of digestible energy/Kg of diet and this group served as the control. The second treatment (T1) group was fed with 2250 Kcal of digestible energy/Kg of diet by restricting 10% of feed offered than control and the treatment (T2) group was fed with 2000 Kcal of digestible energy/Kg of diet restricting 20% of feed offered than control. All the experimental

rabbits were provided with clean water made available along with dietary treatment every day throughout the experimental period

Treatment Diet Energy level (Kcal/Kg diet fed *ad lib)*

Control diet : 2500 (NRC 1977)

T1 : Low energy diet 2250 (10% feed restriction)

T2 : Low energy diet 2000 (20% feed restriction)

A known weighed quantity of feed was fed *ad lib* to treatment 1 rabbits, and the feed left over was collected separately daily and calculated at the end of the week. According to feed intake of rabbits during previous week, feed to be offered during next week was adjusted by restricting 10 and 20% of feed to the treatment groups T1 and T2 than control respectively. Mortality of bunnies was recorded till weaning.

Mortality = Number of bunnies born – Number of bunnies alive at weaning

$$\text{Mortality (\%)} = \frac{\text{Number of bunnies died}}{\text{Total number of bunnies born}} \times 100$$

RESULTS AND DISCUSSION

The percentage mortality of bunnies at weaning in different treatment groups in three kindlings is presented in Table 1. The per cent of mortality of bunnies was 15, 26 and 44 for control, T1 and T2 respectively. Mortality rate was lower in rabbit group receiving the control diet. Graphical representation of mortality of bunnies is presented in Figure 1. The data was analyzed by employing Chi-Square test, revealed no significant difference ($P<0.05$) for mortality compared to all kindlings, however the results were found significant ($P<0.05$) in different groups for all kindlings. Therefore, it was observed that mortality rate was not same in all treatments. In the present study, lowest mortality was observed in the Control group which received 2500 Kcal DE/Kg of energy diet.

Table 1. Mortality percentage of bunnies at weaning in three kindlings.

Parameters	Control	T1	T2
Number of bunnies at birth	60	47	43
Number of bunnies at weaning	51	35	24
percentage of survivability	85	74	56
Percentage of mortality	**15^{a}**	**26^{b}**	**44^{c}**

Note: n=12. Mean values bearing different superscripts differ significantly ($P< 0.05$)

Similarly Alla *et al.* (2002) had reported that mortality was higher with low energy diet. Further, Roy *et al*. (2002) fed higher energy levels of 2600 Kcal/Kg DE and reported reduced mortality, and De Blas *et al.*(1981) fed lower energy levels of 2350 Kcal/Kg DE and reported increased mortality. Hence energy level of 2500 Kcal/Kg DE in the diets appears optimal for reducing the mortality. Sanchez *et al.* (1985) reported litter mortality was highest in rabbits fed with 13.17% CP whereas no bunny mortality was observed in 20% CP diet.

CONCLUSION

It can be concluded from the present study that high energy diet has an influence on kindling. By feeding high energy diet, weaning of bunnies can be reduced from 42 to 30 days. Bunnies attained body weight 400g at weaning. Hence 5-6 kindlings can be achieved in a year. High energy diet reduces the mortality of young ones by ensuring greater milk production by the doe and thus increasing the survivability. High energy feed influences the growth, kindling, lactation and survivability. Hence, high energy diet containing 2500 Kcal of DE/Kg is recommended to obtain good kindling performance in rabbits, which in turn, which will increase economic returns by producing more number of young ones and making rabbitary a highly profitable enterprise.

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