

EFFECT OF CALF MILK REPLACER SUPPLEMENTATION ON BODY WEIGHT GAIN OF CROSSBRED CALVES UNDER FIELD CONDITION

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ABSTRACT

To assess the effect of Calf Milk Replacer supplementation on newly born crossbred calves, total ten crossbred calves were divided into two groups of five calves in each with completely randomized design (CRD) according to their body weight. One group was the control supplemented with mother milk while the other group was supplemented with Milk Replacer at 10 per cent of the body weight for a period of two months under field condition. Fortnightly growth rate of calves represents that body weight gain in treatment group is significantly higher as compared to control group under field condition. The milk replacer used in the present study was more economical than feeding whole milk and skim milk. Therefore, raising crossbred calves on milk replacer could be better option for commercial dairy farms to save the saleable whole milk for human consumption.

Keywords: milk replacer, crossbred calf, body weight gain, whole milk

INTRODUCTION

Calves contribute in establishing a future herd by replacing culled cows and bulls. The calf feeding programme is a most critical factor in the management of young calves. Although the milk production of our native cows are low but due to acute shortage of animal feeds they even cannot show their full genetical potentiality what they have. As a result, calves cannot get required amount of milk. Raising young calves is one of the most often neglected jobs on the dairy farm. The future of herd's milk production begins before the calves are born. The first three or four months of calf's life are a critical period and the feeding programme at this time is important for rapid growth and development of baby calves and reducing death losses. Feeding of whole milk to calves is very expensive in a country like ours where demand of milk for human consumption is very high. Regardless of species, infant pre-ruminants are unable to digest solid food and hence liquid milk or milk replacers are indispensable for nourishment. However, the demand for milk for human consumption restricts availability of milk for pre-ruminant feeding, resulting in underfeeding or starvation with a consequence of stunted growth and mortality (Ranjhan and Pathak, 1979).

In India, feeding whole milk for raising calves is the most common practice at small as well as large dairy

farms, which not only accounts for high cost of rearing but also reduces the availability of marketable whole milk for public consumption. If suitable substitutes for milk are made available, the nutrition of infant pre-ruminants can be improved and survivability can be increased. Usage of milk replacer for feeding young dairy calves saving more milk for human consumption and sell to secure economic considerations.

In Gujarat, the dairy farmers didn't provide the milk to the calves as per requirement which resulted in poor body growth. Keeping in view these problems a research trial was conducted on field to study the effect of milk replacer on performance parameters of crossbred calves and economic suitability of natural milk or milk replacer.

OBJECTIVE

To know the effect of calf milk replacer supplementation on body weight gain of crossbred calves under field condition.

METHODOLOGY

This experiment was conducted on growing pre-ruminant (0-2 month's age) crossbred calves in different villages of Kheda district. A total of ten crossbred calves were used and divided into two groups of five calves each

with completely randomized design (CRD) according to their body weight. One group was the control supplemented with mother milk while the other group was supplemented with Milk Replacer at 10 per cent of the body weight for a period of two months under field condition. The body weight of the calves was recorded with standard method using the formula of measuring the heart girth and length at the start of experimental feeding and thereafter regularly at fortnightly intervals. Colostrum feeding was started to the calves just 30 minutes after birth. Colostrum was given up to four days to the calves. After four days milk replacer feeding was started to the calves of the treatment group.

Commercially available milk replacer (AMUL) was used for calves feeding in this experiment. The composition of milk replacer was CP 22 per cent, Fat 18 per cent, CF 1 per cent, Minerals 1 per cent with Vit A and D3 0.01 per cent. To prepare 1 liter of milk replacer 100 gms of milk replacer powder was mixed with 900 ml water. Temperature of solution was regularly checked when temperature reached up to 50°C the heating was stopped and temperature was down to 39°C. The prepared milk replacer was offered to

the calves according to their requirements twice in a day. Apart from these utmost hygienic conditions with regards to cleanliness of pens, feeding utensils, water containers and the surroundings were maintained throughout the experimental period to check the incidence of diseases. All calves were dewormed with Piperazine @ 100 mg / kg body weight on day 15 of age.

RESULTS AND DISCUSSION

As the result described in table the initial body weight (birth weight) of calves in control and treatment were non-significant from each other. The final body weight in treatment group showed higher body weight over control group under field condition. The present study revealed that the overall daily weight gain in treatment group from birth to two month of age was significantly higher ($P < 0.05$) as compared to control group. The lower daily weight gain in control group may be due to dairy farmers didn't provided the milk as per the requirement (10 per cent of body weight) to the calves after one month of the birth.

Table1 : Effect of calf milk replacer on average body weight gain (g) of crossbred calves in field condition

Group	Birth wt	1st fortnight	2 nd fortnight	ADG at 1 month	3 rd fortnight	4 th fortnight	Overall ADG at 2 month
Control	30.20	34.40	38.40	273 g/d	42.70	46.50	272 g/d
Milk Replacer	30.70	34.30	39.40	290 ^{NS} g/d	45.30	53.60	381 ^S g/d

NS = Non Significant, S= Significant

Similar finding observed by Stamy *et al.* (2005) they achieved higher body weight gain after feeding of calf milk replacer having 20 per cent CP and 20 per cent Fat in crossbred calves. Khan *et al.* (2012) also found significant body weight gain in buffalo calves using calf milk replacer. In contrast to above findings Hill *et al.* (2007), Bharti *et al.* (2012), Evazi *et al.* (2013) and Bharti *et al.* (2014) observed that the whole milk feeding to crossbred calves helps in obtaining higher body weight gain as compared to milk replacer feeding. Whereas Mahdy *et al.* (1987) and Yanar *et al.* (1999) didn't find any significant difference in weight gain between whole milk feeding and milk replacer feeding to calves.

Due to lower cost of milk replacer feeding use in present study, it is more economical as compared to whole milk feeding. Similar finding were also observed by Bharti *et al.* (2011).

CONCLUSION

On the basis of the literature available and findings of the present experiment, it may be concluded that milk replacer feeding helps in improving the body weight gain of

crossbred calves as compared to whole milk feeding under field condition. Practice of milk replacer based feeding can save the milk for human consumption and could economize the cost of feeding of calf rearing, where the market price of whole milk is very high. Therefore it is more economical as compared to whole milk feeding.

REFERENCES

- Bharti P. K., Kamboj M. L., Tyagi A., Basumatary R., Kumar S. and Khan M. H. (2011) Economics of feeding milk replacer and whole milk in crossbred calves. *Indian Veterinary Journal*. 88 (10):43-44.
- Bharti P. K., Kamboj M. L. and Tyagi A. (2012) A Comparative effect of feeding commercial milk replacer and whole milk on growth performance and feed conversion efficiency for Indian dairy calves. *Indian Journal of Animal Science*. 82 (10): 1221-1224.
- Bharti P. K., Kamboj M. L. and Kumar P. (2014) Health performance of crossbred Indian dairy calves reared on whey-based commercial milk replacer. *Indian Journal of Animal Science*. 84 (5): 580-583.

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- Hill T. M., Bateman H. G., Aldrich J. M., and Schlotterbeck R. L. (2007) Effects of the feeding rate of high protein calf milk replacers. *The Professional Animal Scientist* 23:649–655.
- Khan R., Ghufanullah, Ahmad S., Khan B. D., Iqbal M., Pervez, Farid K. and Hayazuddin (2012) Effect of Milk Replacer on Performance Parameters of Different Bovine Breeds. *Pakistan Journal of Nutrition*. 11 (12): 1190-1193.
- Mahdy A. E., Ahmed I. A. and Sharaby M. A. (1987). Effect of weaning system on the performance of buffalo and cow calves up to four months of age. *World Review of Animal Production* 23: 46-49.
- Ranjhan S. K. and Pathak. N. N. (1979). Management and feeding of buffaloes. Vikas Publ. House, New Delhi.
- Stamey J. A., Wallace R. L., Grinstead K. R., Bremmer D. R., and Drackley J. K. (2006). Influence of plane of nutrition on growth of dairy calves. *Journal of Dairy Science*. 89:1871.
- Vahora, S.G., Thorat, G.N. and Ramjiyani, D.B. (2016) Participation of Tribal Dairy Women Special Reference to Feeding and Breeding Practices in Animal Husbandry and Dairy. *Guj. J. Ext. Edu.* 27(1):98-101
- Yanar M., Tozemenz N. and Yuksel S. (1999). Replacement of whole milk by milk substitute in diet of Brown Swiss calves. *Indian Journal of Animal Science*. 69 (8): 637-640.