



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2018; 7(7): 322-324

© 2018 TPI

www.thepharmajournal.com

Received: 27-05-2018

Accepted: 29-06-2018

## Kamalahasan K

M.V.Sc Scholar, College of Veterinary and Animal sciences, Mannuthy, Thrissur, Kerala, India

## Sasikala N

M.V. Sc Scholar, College of Veterinary and Animal sciences, Mannuthy, Thrissur, Kerala, India

## Sabin George

Assistant Professor, Department of Livestock Production Management, College of Veterinary and Animal sciences, Mannuthy, Thrissur, Kerala, India

## G Prakash

M.V. Sc Scholar, Department of Animal Genetics and Breeding, College of Veterinary and Animal sciences, Mannuthy, Thrissur, Kerala, India

## Chaitanya kumar B

Department of Veterinary Public Health, College of Veterinary and Animal sciences, Mannuthy, Thrissur, Kerala, India

## Economics of feeding milk replacers in crossbred calves

**Kamalahasan K, Sasikala N, Sabin George, G Prakash and Chaitanya kumar B**

### Abstract

The present study was conducted to evaluate the economics of feeding different milk replacers in crossbred calves. Eighteen healthy crossbred calves both male and female around one week of age were selected and randomly divided into three groups of six each (T1, T2, and T3), as uniformly as possible with regard to age, sex, and body weight. The calves of T1 received whole milk as per routine farm practice, T2 group was offered whole milk plus commercial milk replacer as per manufacturers recommendation and T3 group was offered a formulated milk replacer @ 12.5 per cent of body weight. The results showed that the total recurring feed cost was significantly lower in T2 followed by T3 in comparison to whole milk. The decrease in total recurring feed cost in comparison to whole milk group was 47.15 and 53.82, respectively for the group T2 and T3. The result showed similar trends in the recurring feed cost per kg of body weight gain. It was concluded that rising of crossbred calves on formulated milk replacer was a better option for the farmer to reduce the cost of rearing.

**Keywords:** crossbred calves, milk replacer, economics, feed cost

### Introduction

The calves should be given colostrum upto 3 to 5 days of neonatal life. In the early stage of calves growth mainly depends upon liquid milk feeding. The first 90 days of calves was always neglected by dairy farmers in terms of feeding milk which resulted in mortality and delayed puberty. So initial milk feeding and impact on farmers economy has to be addressed. For this an alternatives was milk replacers which were developed in many countries to cut down rearing cost and to spare milk for human consumption (Mete *et al.*, 2000) [5]. Milk replacer is a good liquid feed alternative to raise calves. It is having many advantages like being cheaper than whole milk, storage flexibility, and day to day constancy of product and conducive to the control of diseases in the calves (Heinrichs, 1995) [3]. The present study aims at studying the feasibility of milk replacers as an alternative to whole milk in calf feeding.

### Materials and Methods

The study was conducted for a period of three months in University Livestock Farm and Fodder Research and Development Scheme (ULF and FRDS), College of Veterinary and Animal Sciences, Mannuthy. Eighteen healthy crossbred calves both male and female around one week of age were selected and randomly divided into three groups of six each (T1, T2, and T3), as uniformly as possible with regard to age, sex and body weight. The calves were dewormed as per routine farm practice (at 15<sup>th</sup> and 45<sup>th</sup> day of age) during the experimental period. All the experimental calves were maintained under identical conditions of feeding and management throughout the experimental period, except for milk feeding as followed.

T1: Feeding whole milk (Farm practice)

T2: Feeding commercially available milk replacer (CMR)

T3: Feeding formulated milk replacer (FMR) (consisting of Milk, skimmed milk powder, Soya meal, Maize, Palm oil mineral and salt) with 25 per cent crude protein.

All the calves were weaned in the first week of age and fed colostrum @ 10% body weight. From the first week to 90 days T1 was fed with whole milk as per standard routine farm practice. The group T2 was fed with a combination of Commercial milk replacer (Jeevan-Amul®) and whole milk as per manufacturer recommendations and the group T3 was fed with a formulated milk replacer given @ 12.5 per cent body weight. The formulated milk replacer consists of Table -1 proportion (Shukla *et al.*, 2016) [7]. All calves were fed liquid milk and milk replacer with an upper limit of 4 kg/day.

### Correspondence

#### Kamalahasan K

M.V.Sc Scholar, College of Veterinary and Animal sciences, Mannuthy, Thrissur, Kerala, India

The liquid milk replacer of T2 and T3 was prepared by dissolving 100 g powder in one liter of boiled water and fed at 38 °C to 40 °C temperature in two equal parts. All the groups were fed throughout the experiment period as per the schedule Table-2, Table-3 and Table-4.

**Table 1:** Composition formulated of milk replacer

Ingredients	Parts (%)
Milk	20
Skimmed milk powder	10
Soya meal	25
Maize	30
Palm Oil	12
Minerals	2
Salt	1
Nicomix	0.020
Total	100

**Table 2:** Feeding schedule of treatment 1 group of calves

Age in weeks	Whole milk (Body weight)	Calf starter (g)
1 wk	Colostrum 1/10 B.wt	Nil
2 wk	1/10	Nil
3-4 wks	1/10	150g
5-6 wks	1/10	400g
7-8 wks	1/15	
9-12 wks	1/20	600g

**Table 3:** Feeding schedule of treatment 2 group of calves

Age in weeks	Whole milk(kg)	Commercial milk replacer(g)	Calf starter (g)
1 week	Colostrum 1/10 B.wt	Nil	Nil
2 week	3.0	50	Nil
3week	1.0	150	150g
4 week	1.0	250	
5 week	Nil	350	400g
6 week		450	
7 week		500	
8 week		400	
9-12 weeks		400	600g

(\*As recommended by manufacturer)

**Table 5:** Cost of rearing of calves maintained on three dietary treatments

Parameter	Dietary Treatments		
	T1	T2	T3
Total milk consumed on a liquid basis (kg/calf)*	296.28	56.5	35
Total commercial milk replacer consumed on a dry basis (kg/calf)*	-	28.1	-
Total formulated milk replacer consumed on a dry basis (kg/calf)*	-	-	28.6
Total calf starter intake on a fresh basis (kg/calf)*	14	10.81	10.75
Total grass intake on a fresh basis (kg/calf)*	60.89	59.43	54.25
Total cost of feed (Rs./calf)	13627.44 <sup>a</sup>	7201.05 <sup>b</sup>	6292.65 <sup>b</sup>
Reduction in total recurring feed cost (Rs) in comparison to T1 group	-	6425.39	7334.39
Reduction in total recurring feed cost in per cent comparison to T1 group	-	47.15	53.82
Total weight gain (kg/calf)	28.11±2.50	19.26±1.88	23.73±2.44
Cost per kg gain (Rs.)	484.78±46.4 <sup>a</sup>	373.87±43.8 <sup>b</sup>	265.02±22.4 <sup>b</sup>
Reduction in recurring feed cost (Rs) per kg body weight gain in comparison to T1 group	-	110.91	219.76
Reduction in total recurring feed cost per kg body weight gain in per cent comparison to T1 group	-	22.87	45.33

<sup>ab</sup>Mean value with different superscripts in a row differ significantly (p<0.01)

**Discussion**

The total recurring feed cost differed significantly (p>0.01) between feeding groups. The lowest cost in T3 group may due to inclusion of plant protein in milk replacer. The result of

**Table 4:** Feeding schedule of treatment 3 group of calves

Age in weeks	Whole milk	Formulated milk replacer	Calf starter (g)
1 week	Colostrum 1/10 B.wt	Nil	Nil
2 wk	1/10	Nil	Nil
3-4 wks	Nil	Milk @ 12.5 % of body weight upper limit 4 kg	150g
5-8 wks	Nil		400g
9-12 wks	Nil		600g

\* Green fodder will be fed ad libitum in all three experiment groups.

The price of fresh milk was fixed at Rs.44/liter. The cost of commercial milk replacer was Rs.150/ kg and the cost of formulating milk replacer was Rs.149/kg. The price of calf starter and green fodder were 27 Rs/kg, 3.5 Rs/kg respectively. Throughout the experiment body weights of the calves were collected at fortnights and cost per kg body weight gain was calculated. Total cost includes feeding and treatment costs, other expenses like labour and electricity were not been included. Later the results were analysed statistically using Senedecor and Cochran (1994) [8].

**Results**

The average body weight gains (kg) in T1, T2 and T3 were 28.11, 19.26, and 23.73 respectively. The total recurring feed cost (Rs/calf) during the experiment period was 13627.44, 7201.05 and 6292.65 respectively for T1, T2 and T3 groups. The recurring feed cost (Rs/ kg weight gain) was calculated as 505.29, 365.72 and 276.32 in T1, T2 and T3 respectively. A total reduction of Rs 6425.39 and Rs 7334.39 in total recurring feed cost expenditure was observed in T2 and T3 groups respectively when compared to the whole milk-fed group. A Reduction in total recurring expenditure per kg body weight gain per each calf of about Rs 110.91 and Rs 219.76 in T2 and T3 groups respectively was observed when compared to the whole milk-fed group. The total reduction in feed cost per kg body weight gain in comparison to whole milk group was 22.87 and 45.33 per cent in T2 and T3groups, respectively (Table-5). The feed cost was least in T3 followed by T2 and T1.

present study are in agreement with Bharti *et al.*, (2011) [1], Bhatti *et al.*, (2012) [2] and Shakya *et al.*, (2016) [6]. The cost per kg body weight gain (Rs/kg) significantly differed between treatments. This is in agreement with the findings of

Lunagariya *et al.*, (2017) <sup>[4]</sup>. Simple feed formulations with available cheaper plant proteins proved to be more efficient in body weight gain of the calves in the study.

### Conclusion

Results of the present study suggested that formulated milk replacer is better economic option for raising calves and saving precious milk for human consumption.

### Acknowledgement

The authors are grateful to the Hon'ble Vice Chancellor, Registrar, Director (Academics & Research) and Director (Entrepreneurship), Kerala Veterinary and Animal Sciences University, Pookode and Dean, College of Veterinary and Animal Sciences, Mannuthy, for providing necessary facilities for successful conduct of the work.

### References

1. Bharti PK, Kamboj ML, Tyagi A, Basumatary R, Kumar S, Khan MH. Economics of feeding milk replacer and whole milk in crossbred calves. *Indian Vet. J.* 2011; 88:43-44.
2. Bharti PK, Kamboj ML, Tyagi A. Comparative effect of feeding commercial milk replacer and whole milk on growth performance and feed conversion efficiency for Indian dairy calves. *Indian J. Anim. Sci.* 2012; 82:1221-1224.
3. Heinrichs AJ, Wells SJ, Losinger WC. A study of the use of milk replacers for dairy calves in the United States. *J. Dairy Sci.* 1995; 78:2831-2837.
4. Lunagariya PM, Shukla R, Shah SV, Pandya PR, Pandya SS, Divekar BS. Effect of Feeding Milk Replacer on Dry Matter Intake and Feed Efficiency in Holstein x Kankrej Crossbred Calves. *Indian J Vet. Sci. Biotech.* 2017; 12:105-111.
5. Mete Y, Sadrettin Y, Ugur Z, Yanar M, Yuksel S, Zulkadir U. Replacement of whole milk by milk replacer in the ration of Holstein-Friesian calves raised in Eastern Turkey. *Ind. J Anim. Sci.* 2000; 70: 977.
6. Shakya A, Roy B, Patil AK, Shehar R, Ghosh S, Jain A. Economic analysis of soymilk as a partial milk replacer for buffalo calf rearing. *J Anim. Res.* 2016; 69:327-330.
7. Shukla R, Shah SV, Pandya PR, Lunagariya PM, Parmar M, Divekar BS. Impact of feeding milk replacer on growth rate and blood parameters in Holstein x kankrej crossbred calves. *Int. J. Sci. Environ. Technol.* 2016; 5:3847-3855.
8. Snedecor GW, Cochran WG. *Statistical Methods.* (8<sup>th</sup> Ed). The Iowa State University Press, Ames, Iowa, USA, 1994.