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The effect of milk replacer and whole milk on performance of holstein calves growth

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ABSTRACT

Calf milk replacers are cheaper than whole cow milk. milk replacers are an excellent source of nutrition for calves prior to weaning. Milk replacer don't have the risk of waste milk and hospital milk. 32 newborn Holestein calves were used. The animals were divided into four groups in wich the control group were fed cow milk. The average daily gain and daily height were measured throughout the trial which lasted for two months. The data were statistically analyzed using completely randomized design. The treatment with cow milk showed high daily gain and daily height ($p<0.05$). This experiment demonstrated that calves could be reared with milk replacer, without any problem on growth, feed intake and water consume.

Keywords: Milk replacer, Holestein calves and average daily gain

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INTRODUCTION

The potential for growth and high health status in the newborn calf is largely influenced by the health and metabolic status of their dam. Much of the focus of cow management has been on the perinatal period as the calf prepares for delivery into a totally foreign environment in which placentally derived nutrition is replaced by the initial lacteal secretion from the mammary gland, colostrum. The composition of this secretion is extremely important in establishing the growth potential and life-long productivity of the calf. Efficient growth of young dairy calves is important to profitability of the dairy enterprise. Before weaning, intake of nutrients from liquid feeds is usually limited to stimulate early dry feed intake and allow development of ruminal function and early weaning [3]. Effects of feeding additional liquid milk or milk replacer to calves have been evaluated. Generally, increased intake of nutrients consumed in liquid causes less starter and forage intake [6], increased BW gain [2], and greater deposition of fat and protein [4].

Amount, composition, and feeding method of milk replacer (MR) to neonatal calves have shown effects on their performance, behavior, health, and welfare traits [2,8]. During preweaning period, intake of nutrients from liquid feeds is usually limited to stimulate early dry feed intake and allow development of ruminal function and early weaning [3]. Restricted milk or MR feeding to calves generally depresses their growth [8], health and behavior [5] because of poor nutrients supply [8]. Whereas, *ad libitum* supply of liquid feed to calves delays the initiation of ruminal fermentation and development [1], due to depressed solid feed intake [7]. This study was conducted to compare the effects of feeding milk and commercial milk replacers on daily gain and daily height in Holstein calves.

MATERIALS AND METHODS

Holstein bull calves (n = 36) were shipped to the Calf Research Unit. Calves were received in 4 groups of 8 calves. Calves were approximately 3 to 8 d of age; however, age of calves on arrival was not determined. On arrival, calves were moved to individual fiberglass hutches, and assigned randomly to receive 1 of 4 experimental treatments (n = 8 per treatment). Treatments were control group were fed cow milk, *Eurolac Blue*, *Isilac* and *Speyfo Blue* milk replacers. Calves were fed CMR (cow milk replacer) twice daily at approximately 0700 and 1600 h using nipple bottles. The CMR were mixed in hot water (approximately 50°C) to disperse fat. Cool water was then added to bring temperature to approximately 39°C and appropriate DM prior to feeding. Data were analyzed as a completely randomized design using a general linear model (GLM) procedure of SAS (SAS, 1999), Average daily weight gains and height were analyzed employing a two-way analysis of variance with repeated measures.

RESULTS AND DISCUSSION

The effects of feeding full milk and formula milk replacer on calf performance in the first two months of infancy, showed in Table 1. Compare the effects of feeding milk replacer on the performance characteristics of calves in the first month of infancy showed that the treatments were not significantly different in male and female calves, but the overall weight and daily gain of female calves were better than mails, although this difference was not significant. The effects of treatments on average of daily gain showed significantly deference ($P < 0.05$). So that the treated whole milk and Speyfo Blue showed the highest rate of daily gain and height than on the average daily gain of calves are observed with the other treatments.

Optimal amount of protein in milk replacer for calves is a function of the amount of food consumed So that the increase in food intake and increase the amount of protein in milk substitute, efficiency will improve.

Table 1: Comparison of the feeding with milk replacer in first two months of infancy on performance traits in Holstein calves

		Daily gain (g/d)	Daily height (m/d)
Effect of sex			
	mail calves	509.603	0.218
	female calves	506.250	0.215
P- Value		0.768	0.636
SEM		6.6886	0.0046
Effect of treatments			
	full milk	563.63[a]	0.2275[a]
	Eurolac Blue	421.75[c]	0.2000[b]
	Isilac	490.88[b]	0.1925[b]
	Speyfo Blue	554.38[a]	0.2462[a]
P- Value		<0.0001	<0.0001
SEM		9.459	0.00625

[a,b]: Means within a column with different subscripts differ (p<0.05)..

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