
ORIGINAL ARTICLE

Effect of Rumen Protected Fat on Milk Yield and Fat Content of Lactating Cross Bred Cows

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ABSTRACT

An on farm trial was conducted at Shahdol district of Madhya Pradesh to assess the effect of feeding rumen protected fat on performance of dairy cows at farmer's fields. Ten Holstein Friesian crossbred lactating cows in early lactation average 30±6 days in milk and 395±39 kg live weight were divided in to two groups of five cows in each. All cows were fed approximately 9.5 kg balance ration and ad libitum green grass and drinking fresh water. During the first week the milk production ranged from 92±0.51 (control group) to 100±0.32 (test group) and fat percentage from 3.96±0.08 to 4.42±0.04 and in last week the production ranged from 93±0.25 to 108±0.51 and fat percentage from 4.06±0.02 to 4.60±0.03 respectively. It clearly showed that there is increase in milk production and fat percentage by offering bypass fat.

Keywords: Crossbred cows, protected fat, milk yield, Fat %.

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INTRODUCTION

High producing animals enters in to negative energy balance in early lactation, particularly during first hundred days of lactation because they have diminished capacity to consume enough feed to support that output leads to loss in body weight due to inadequate energy intake Goff and Horst [1]. Under field conditions, most of the animals receive imbalanced net energy. The energy deficiency in early lactation leads to shorter lactation length, longer intercalving period and late onset of estrous.

Fat has the highest energy density among all the nutrients. Many workers showed that feeding rumen protected fat (RPF) is an alternative to increase energy density of the diet and therefore energy intake in dairy animals. Mangesh [6] suggested that milk yield increased along with the improvement in post partum recovery in body weight if offered bypass fat to dairy animals. A study was conducted to know the efficacy of rumen protected fat supplied by Volac International, Malaysia on milk production and fat percentage of cross bred cows in early stages of lactation.

MATERIAL AND METHODS

The present study was conducted in dairy farm at farmer's fields at Shahdol – a tribal district of Madhya Pradesh where in crossbred cows were reared under semi-loose housing system. Ten lactating Holstein Friesian cross bred cows with similar yield and in early stage of lactation were selected and divided in to two groups of five cows in each. The feed ingredients and fodder offered to them was unchanged during the period of trial and test group was offered bypass fat supplement at 200 gram once in a day per cow.

The trial was conducted for 90 days and data on milk production and fat percentage were recorded on weekly basis. Farm prepared concentrate mixture (maize 40 parts, mustard cake 30 parts, arhar chuni 12 parts, wheat bran 15 parts, salt 2 parts and mineral mixture 1 parts) was fed at the rate of 1 kg. for every 3 kg. milk produced. Fat percentage was estimated by using Gurber's butyrometer. After adaptation of 21

days period, data were collected for Statistical analysis as per Snedecor and Cochran [9] at 5 percent level of significance.

RESULTS AND DISCUSSION

Data compiled from Table 2 and Table 3 show that in the first week the milk production ranged from 92 ± 0.51 (control group) to 100 ± 0.32 (test group) and fat percentage from 3.96 ± 0.08 to 4.42 ± 0.04 , in the second week the production ranged from 93 ± 0.40 to 103 ± 0.25 and fat percentage from 3.86 ± 0.06 to 4.40 ± 0.07 , in the third week the production ranged from 90 ± 0.63 to 102 ± 0.25 and fat percentage from 3.88 ± 0.04 to 4.38 ± 0.04 , in the fourth week the production ranged from 97 ± 0.40 to 106 ± 0.38 and fat percentage from 3.84 ± 0.04 to 4.54 ± 0.02 , in the fifth week the production ranged from 94 ± 0.38 to 105 ± 0.45 and fat percentage from 3.98 ± 0.06 to 4.62 ± 0.04 , in the sixth week the production ranged from 91 ± 0.73 to 101 ± 0.20 and fat percentage from 3.84 ± 0.02 to 4.48 ± 0.04 , in the seventh week the production ranged from 98 ± 0.51 to 107 ± 0.68 and fat percentage from 3.94 ± 0.05 to 4.58 ± 0.04 , in the eighth week the production ranged from 93 ± 0.25 to 108 ± 0.51 and fat percentage from 4.06 ± 0.02 to 4.60 ± 0.03 respectively. These results are supported by Parnerkar *et al.* [8], Wadhwa *et al.* [10] and Gowda *et al.* [2]. This clearly shows that the most important aspect in the early phase of lactation is energy balance. This was in accordance with the study conducted by Hammon *et al.* [4] where they showed the positive effect of rumen protected fat increases the milk yield during early lactation by correcting the negative energy balance of the animal. Similarly the milk fat percentage in test group was significantly ($P > 0.05$) higher than control group. Earlier findings Gulati *et al.* [3] and Palmquist and Jenkins [7] suggested that feeding rumen protected fat supplements increased fat, protein and yield of milk significantly. However it is contrary to Lounglawan *et al.* [5] said that there were no significant difference in milk yield and fat percentage.

Table 1: Chemical composition of feed ingredient on dry matter (DM) basis.

Ingredients	DM	CP	CF	EE	Ash	NFE
Maize	87.16	9.06	2.64	3.26	2.90	69.76
Mustard cake	91.05	36.20	7.10	8.23	9.78	40.24
Arhar chuni	88.90	16.12	14.82	1.63	4.97	54.61
Wheat bran	89.00	14.20	8.00	4.52	92.82	60.0

Table 2: Milk yield data on weekly basis

Week	Control group					Test group				
	1	2	3	4	5	1	2	3	4	5
I	18	19	18	17	20	20	20	19	21	20
II	19	20	18	18	18	21	21	20	20	21
III	17	17	17	20	19	20	20	21	20	21
IV	18	20	19	20	20	20	22	21	21	22
V	18	19	19	20	18	20	22	20	22	21
VI	17	19	16	19	20	20	20	20	20	21
VII	18	19	20	21	20	20	21	20	23	23
VIII	18	18	19	19	19	20	21	22	22	23

Table 3: Milk Fat % data on weekly basis

Week	Control group					Test group				
	1	2	3	4	5	1	2	3	4	5
I	3.8	4.1	3.8	3.9	4.2	4.4	4.4	4.5	4.5	4.3
II	3.7	3.8	3.8	4.0	4.0	4.3	4.4	4.2	4.5	4.6
III	3.8	3.8	3.9	3.9	4.0	4.4	4.4	4.3	4.3	4.5
IV	3.7	3.9	3.8	3.9	3.9	4.5	4.6	4.6	4.5	4.5
V	3.8	3.9	4.1	4.1	4.0	4.5	4.6	4.6	4.7	4.7
VI	3.9	3.8	3.8	3.8	3.9	4.4	4.4	4.6	4.5	4.5
VII	4.1	4.0	3.9	3.9	3.8	4.6	4.5	4.6	4.7	4.5
VIII	4.0	4.0	4.1	4.1	4.1	4.6	4.6	4.5	4.6	4.7

CONCLUSION

It was concluded that supplementation of rumen protected fat in cross bred cows during early lactation significantly increased milk yield and milk fat percentage by correcting negative energy balance.

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