RESEARCH ARTICLE

Effect of Herbal Galactogogue (Sanjivani biokseera) on Milk Yield and Milk Constituents in Lactating Kankrej Cattle at Organised Farm

HH Panchasara[1]*, AB Chaudhari[2], DA Patel[3], YM Gami[4], MP Patel[5]

Abstract

The study was conducted to evaluate the effect of feeding herbal galactogogue preparation (Sanjivani biokseera) on the milk yield and milk constituents in lactating Kankrej cows. Thirty-two lactating Kankrej cows in their 1st to 6th lactation were taken for the experiment from 3 days after calving up to 52 days postpartum. All the animals were fed as per the standard seasonally available roughages and concentrates to meet their nutritional requirements. The cows were randomly divided into two uniform groups of 16 cows in each according to initial milk yield and milk composition. The animals in group-I were not given any supplement and served as control. The animals in group-II were given Sanjivani biokseera (Naturewell Industries) @ 60 g per day for 1-month, commencing 3 days after calving, in addition to the usual feeds/fodders. A clear difference was observed in milk yield from day 8 onward of experiment between groups with significant ($p < 0.05$) higher values from day 16–52 in cows fed herbal galactogogue as compared to control, but no such distinct effect on milk constituents was observed on day 52 when analyzed. The use of herbal galactogogue significantly ($p < 0.05$) increased the overall average of 52 days milk production, which was 9.34 ± 0.21 lit/day in supplemented as compared to 7.75 ± 0.26 lit/day in control animals. It was concluded that herbal galactogogue (Sanjivani biokseera) could increase milk yield in lactating dairy cows through its galactopoetic property and improved rumen environment.

Keywords: Herbal galactogogues, Kankrej cows, Milk yield, Milk constituents

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Introduction

Kankrej is a well known dual-purpose cattle breed spread over North Gujarat and its adjoining part of Rajasthan. The average standard (305 days) lactation yield of Kankrej cattle is 2501.00 liters with an average calving interval of 435 days at Livestock Research Station of S.D. Agricultural University, Gujarat (Anonymous, 2019), while in field condition average milk yield of Kankrej cattle is around 1738 kg, average calving interval around 450 days and fat content varies from 2.9 to 4.2 % (NBAGR, 2017). Sanjivani biokseera (herbal galactogogue, Naturewell Industries) is a herbal supplement that contains minerals, vitamins, and other nutrients that maintain better production performances and sustain better animal immunity, health status. Galactagogues are believed to assist in the initiation, maintenance, or augmentation of milk production (Gabay, 2002; Abascal and Yarnell, 2008; Saini *et al*., 2018).

The galactogogues stimulate the activity of alveolar tissue and raise the secretory activity and thereby restore and regulate milk yield (Ravikumar and Bhagwat, 2008; Mirzaei, 2012). Continuous use of herbal galactogogue (Sanjivani biokseera) is claimed to enhance milk production 1 to 2 liters per day and 0.5–1.0 % fat. The increase in milk production starts from 5th day and reaches the highest production potential on the 16th day after its feeding (Mirzaei, 2012). The present study aimed to investigate the effect of herbal galactogogue (Sanjivani biokseera) on milk yield and milk constituents in lactating Kankrej cattle.

[1-5]Livestock Research Station, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar–385 506, Gujarat, India

Corresponding Author: H.H. Panchasara, Livestock Research Station, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar–385 506, Gujarat, India, e-mail: rslrs@sdau.edu.in

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Materials and Methods

Thirty-two lactating Kankrej cows, weighing between 320 to 480 kg and in their 1st to 6th lactation, were selected from the Kankrej herd of Livestock Research Station, SDAU, Sardarkrushinagar, Gujarat. The animals were kept in an open enclosure having routine feeding and watering facilities. The

animals were fed fodder twice daily at around 09:45 a.m., and 2:30 p.m. A readymade concentrate mixture (Banas Dan) was fed @ 400 g/L of milk yield along with 2 kg/animal maintenance ration half at the morning and a half at the evening milking. The animals were divided into two uniform groups of 16 animals in each group having equal average milk production and milk composition initially. The cows in group one were not given any herbal preparation and served as control. The cows in group two were given, in addition to normal routine feeds and fodders, herbal galactogogue (Sanjivani biokseera, Naturewell Industries) @ 60 g per day at evening milking for a month commencing three days after calving. Daily milk yield of each animal was however recorded for the period of 52 days postpartum. At the beginning and end of the experiment (day 52), milk constituents of each cow were analyzed. The overall average milk production of the entire experimental period of 52 days was also worked out for both the groups. The milk yield and milk constituent's data at the beginning and end of the experiment were statistically analyzed using one-way analysis of variance (ANOVA) as described by Snedecor and Cochran (1989).

Results and Discussion

The findings presented in Table 1 indicated that supplementation of herbal galactogogue (Sanjivani biokseera) significantly increased milk yield, but not the milk composition, after the 52nd day of lactation as compared to the control group. At the beginning of experiment, average milk yield (litre per day) in control and treatment group (9.02 ± 0.73 and 9.14 ± 0.85) was isometric, and so also the milk composition such as fat (4.07 ± 0.18 and 4.03 ± 0.20 %), SNF (8.32 ± 0.07 and 8.33 ± 0.09 %), lactose (4.54 ± 0.04 and 4.57 ± 0.05 %) and protein (3.02 ± 0.04 and 3.02 ± 0.03 %, respectively). At the end of experiment, *i.e.*, on day 52, the average milk yield in the control and treatment group was 5.98 ± 0.79 and 8.75 ± 0.57 liter per day, respectively, which differed significantly ($p < 0.05$). The levels of milk constituents, *viz.*, fat, SNF and lactose increased, while protein content decreased in both control and treatment groups over initial values, but did not differ significantly between groups at this stage (Table 1).

There was a distinct difference in milk production (liters/day) between control and treatment groups from 8th to 52nd day of experiment with a significant difference from 16-52 days period (Fig. 1). The overall average milk yield of entire experimental period of 52 days for control and treatment group was 7.75 ± 0.26 and 9.34 ± 0.021 lit/day ($p < 0.05$), respectively. The higher milk yield in herbal galactogogue supplemented group might be due to estrogenic effect of herbal galactogogue used on mammary glands, which stimulates secretory alveolar epithelial cell division and proliferation which helps in sustenance of increased milk

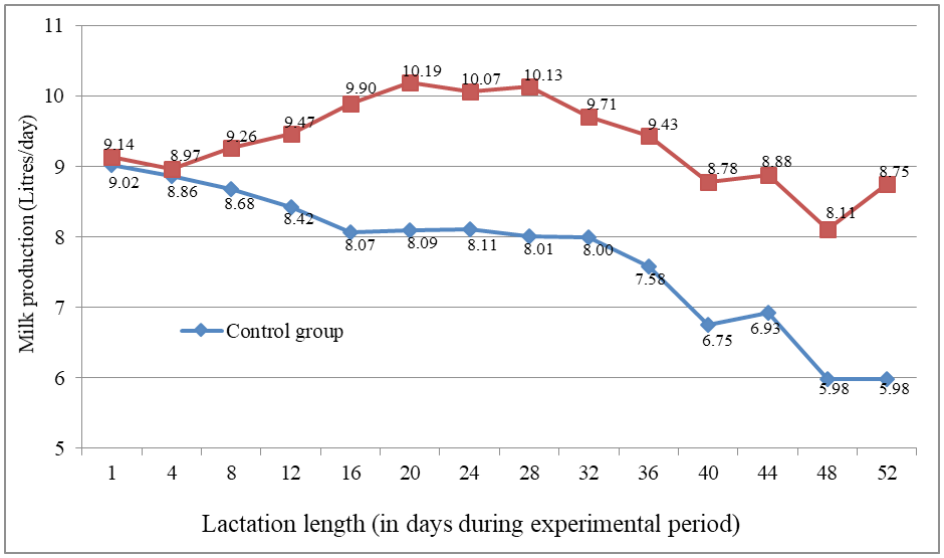

Figure 1: Average milk production in control and galactogogue supplemented Kankrej cows during first 50 days of lactation

Table 1: Milk yield and milk composition (Mean ± SE) in lactating Kankrej cows at 52nd day of experiment

Milk yield/Milk composition	*Control group (n=16)*	*Treatment group (n=16)*
Milk yield (ltr./d)	5.98 ± 0.79	8.75 ± 0.57*
Milk fat	4.29 ± 0.11	4.34 ± 0.17 ^{NS}
Milk SNF	8.35 ± 0.05	8.46 ± 0.07 ^{NS}
Milk protein	4.18 ± 0.03	4.20 ± 0.03 ^{NS}
Milk lactose	3.42 ± 0.03	3.47 ± 0.03 ^{NS}

*Significant at $p < 0.05$; NS = Non-significant.

production in lactating Kankrej cows. Moreover, these herbs might have helped in optimizing the ruminal fermentation that ultimately increased the nutrient availability for milk production (Bhatt *et al*., 2009). Dadkhah and Yeganehzad (2011) also reported that supplementation of galactogogue herbal mixture in dairy cows had higher levels of hormone prolactin and insulin, which lead to increase in milk production. No significant differences were observed in percentages of milk fat, SNF, protein, and lactose on day 52 of lactation among the different groups (Table 1). These results were in agreement with the results of earlier studies (Tanwar *et al*., 2008; Baig and Bhagwat, 2009; Patel *et al*., 2013), wherein there was no significant effect on milk composition in dairy animals fed herbal galactogogue. In the present study, though we did not calculate the actual economics, there was a persistent increase in milk production by nearly 1.5 liters per day in 60 g galactogogue supplemented group over control even after discontinuing the supplement, which is economically advantageous to the farmer.

Conclusion

The results of the present study indicated that supplementary feeding of herbal galactogogue (Sanjivani biokseera, Naturewell Industries) to lactating Kankrej cows for a month after calving had a beneficial effect on milk yield without significant effect on milk composition. Therefore, the inclusion of this herbal galactogogue (Sanjivani biokseera) in a dairy cow's diet may be encouraged to improve the efficiency of feed utilization and to enhance the overall animal performance and health.

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