Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2320-7051.6710

ISSN: 2320 – 7051

Int. J. Pure App. Biosci. **6 (4):** 257-260 (2018)

Research Article

International Journal of Pure & Applied Bioscience

OPEN ACCESS

Effect of Composite Feed Additive on Weekly Milk Yield, Fat Corrected Milk and Fat Protein Corrected Milk Yield in Buffaloes

Kiran[1,2*] and Avijit Dey[2]

[1]Animal Nutrition Division, ICAR-National Dairy Research Institute, Karnal, Haryana, India

[2]ANFT Division, ICAR-Central Research Institute for Research on Buffaloes, Hisar, Haryana, India

*Corresponding Author E-mail: 611kiranattri@gmail.com

Received: 9.07.2018 | Revised: 13.08.2018 | Accepted: 20.08.2018

ABSTRACT

The study was conducted to examine the effect of composite feed additive on fluctuation in weekly milk yield, fat corrected milk (FCM) and fat protein corrected milk (FPCM) in lactating Murrah buffaloes. Study was conducted in ICAR-CIRB, Hisar buffalo farm. A total of 18 Murrah lactating buffaloes (Bubalus bubalis) (avg. milk yield 10.83± 1.56 kg) and (avg. live weight, 507.24 ± 44.18 kg; parity, 2-5) at early stage (30 days) of lactation were selected and divided into two groups of 8 animals each using a completely randomized block design. They were allocated into two dietary groups, control and treatment containing basal feed without or with composite feed additives, respectively. Composite feed additive (CFA) was fed @ 2.5% of total dry matter intake in the CFA fed group along with concentrate mixture. Fresh drinking water was offered ad libitum. Initial milk yield (kg d^{-1}) of both the groups were similar ($p>0.05$). Although there are differences in milk yield (kg d^{-1}) throughout the study, it was comparable ($p>0.05$) statistically between control and treatment groups. The values for weekly averages of 6% fat corrected milk (FCM) yield and fat protein corrected milk yield (FPCM) were also remained comparable between the groups.

Key words: *Milk yield, Fat corrected milk (FCM), Fat protein corrected milk (FPCM), Composite feed additive, Buffaloes*

INTRODUCTION

India is in the top of the leading countries in milk production. Total milk production of India in 2016-17 was 165.4 million tonns and the per capita availability of milk is 355 (gms/day)[4]., Large increases in per capita and total demand for meat, milk and eggs are forecast for most developing countries for the next few decades[5]. Therefore, the increase in animal production and productivity is urgently needed to reduce the gap between demand and supply. Livestock is reared by farmers mainly for milk production and for gaining additional income for house hold. Milk production in lactating animals is an important parameter to be studied by different workers around the globe and have variable effects depending on type of basal diet fed along with feed additives and also varies with age, physiological status and parity of the animal hence great care is to be taken to study these important parameters.

Cite this article: Kiran and Dey, A., Effect of composite feed additive on weekly milk yield, fat corrected milk and fat protein corrected milk yield in buffaloes, *Int. J. Pure App. Biosci.* **6(4):** 257-260 (2018). doi: http://dx.doi.org/10.18782/2320-7051.6710

From many decades scientists and researchers are trying to develop new products and technologies to optimize livestock production and achieve maximum profitability from the livestock. In the series of this kind of innovations a composite feed additive was developed by ICAR-CIRB, Hisar and the study was conducted to study its effect on weekly milk yield, weekly FCM fluctuations and FPCM variations in lactating Murrah buffalos.

MATERIAL AND METHODS

Animals and management

The study was conducted on Lactating Murrah buffaloes maintained at Institute dairy farm, ICAR-Central Research Institute for Research on Buffaloes, Hisar, Haryana, India. Only healthy animals) (avg. milk yield 10.83± 1.56 kg) and (avg. live weight, 507.24 ± 44.18 kg; parity, 2-5) at early stage (30 days) of lactation were selected for the experiment and divided into two groups (CFA and CON). Farm grown green sorghum (about 25 kg) was offered at 11:00 am every day, after ensuring complete consumption of concentrates. Wheat straw was offered *ad libitum.* Water was freely available to the buffaloes. The animals were housed in roofed, cement-floored stalls with individual feeding provision and adapted to their respective diets for a period of 15 days.

Collection of samples

Animals were milked twice a day by full hand milking technique and milk samples (100 ml each) were collected on the test days. During the study of three months feeding 220 individual milk samples were collected from 18 lactating buffaloes and analysed weekly. Total Milk yield of morning and evening from each animal was recorded using automatic weighing balance of capacity of 100 kg. Samples were collected from milk weighing bucket after complete milking and through mixing and stored at 4°C until processed and analysed on same day. 6% Fat corrected milk (FCM) was calculated by using equation given by Rice *et al*.[8] and Fat Protein corrected milk (FPCM) was calculated by using equation given by Sachu and Fet[9].

Statistical analysis

Data obtained were subjected to analysis of variance (ANOVA) using SPSS 17.0 software and treatment means were ranked using Duncan's multiple range tests according to Snedecor and Cochran.The data are expressed as mean ± SD with significance level $p<0.05$.

RESULTS and DISCUSSIONS

The effect of composite feed additive (CFA) supplementation on weekly averages of daily yield (kg d^{-1}) of milk is presented in Table 1. Initial milk yield in control and treatment group were 10.78 ± 1.86 and 10.87 ± 1.31 respectively. Initial milk yield (kg d^{-1}) of both the groups were similar ($p>0.05$). Broderick[2] also observed similarities in milk production in dairy cows supplemented with monensin.

Table 1: Effect of dietary supplementation of composite feed additive on weekly averages of daily milk yield (kg) in buffaloes

Week	Treatments		SEM	P value
	CON	CFA		
Initial	10.78 ± 1.86	10.87 ± 1.31	1.10	0.91
1	10.29 ± 1.76	11.48 ± 1.59	1.23	0.15
2	10.85 ± 2.29	11.68 ± 1.31	1.32	0.36
3	11.02 ± 2.09	11.83 ± 1.46	1.27	0.36
4	10.61 ± 1.96	11.69 ± 1.44	1.24	0.20
5	10.41 ± 2.23	11.27 ± 1.35	1.30	0.34
6	11.42 ± 2.29	11.84 ± 1.44	1.32	0.64
7	11.21 ± 2.86	11.37 ± 1.82	1.64	0.89
8	10.94 ± 2.14	11.03 ± 1.70	1.33	0.92
9	10.12 ± 2.35	10.79 ± 1.51	1.37	0.49
10	10.26 ± 2.26	10.83 ± 1.57	1.35	0.54
11	10.12 ± 2.64	11.21 ± 1.71	1.58	0.31
12	9.42 ± 3.13	11.31 ± 1.83	1.89	0.14

However, observed that feeding of EO mixture containing eugenol, geranyl acetate and coriander oil in dairy cows increased the total yield of milk fat or fat percentage in milk but has no effect on total milk production. Kholif *et al*.[6] reported increased (p<0.05) milk yield in lactating Damascus goats supplemented with different plant essential oils (garlic, cinnamon and ginger oils). The supplementation of commercial product, Next Enhance®300 (NE300; cinnamaldehyde and garlic oil encapsulated product) was reported to improve milk production in multiparous cows[3]. 6% FCM in the starting of the trial was 12.39±3.72 and 12.80±3.19 in control and treatment group respectively. Throughout the study it remain variable and differences were comparable (p> 0.05) statistically between CON and CFA group. Table 2. Depicts changes in 6% FCM during 12 week of study.

Table 2: Effect of supplementing composite feed additive on weekly fat corrected milk (6% FCM) production (kg^{-1}d) in buffaloes

Week	Treatments		SEM	P value
	CON	CFA		
Initial	12.39±3.72	12.80±3.19	2.38	0.90
1	11.28±3.05	13.99±3.83	2.57	0.11
2	12.84±4.98	14.67±3.21	2.95	0.37
3	13.05±4.58	15.21±2.85	2.73	0.25
4	12.48±3.85	14.39±2.69	2.38	0.24
5	12.50±4.73	14.09±2.66	2.69	0.39
6	13.99±4.99	15.64±3.26	2.95	0.42
7	14.35±5.56	14.62±4.48	3.47	0.91
8	13.91±4.09	14.32±3.80	2.72	0.83
9	11.98±4.40	13.31±3.20	2.69	0.47
10	11.98±4.03	13.72±3.50	2.67	0.34
11	13.54±5.41	13.90±3.44	3.11	0.87
12	12.36±4.95	12.56±4.39	3.21	0.93

FPCM was also calculated to study the effect of composite feed additive. Initial values for FPCM in control and treatment groups were comparable viz.14.73±2.73 and 14.94±2.44 respectively and in the end of the study in week 12 the values were 13.93±1.53 and 17.01±2.83 respectively. There was a 9.2% increase in mean FPCM of the CFA group then the control group. Fig 1 depicts fluctuations in FPCM during the study. Rennó *et al*.[3] reported an increase in total milk yield in lactating Holstein cows supplemented with, a commercial blend of functional oils (CNSL and CO) and monensin. Matloup *et al*. [7] concluded that coriander and salinomycin supplementation in lactating Friesian cows resulted in greater daily outputs of milk, energy corrected milk, fat% compared to control.

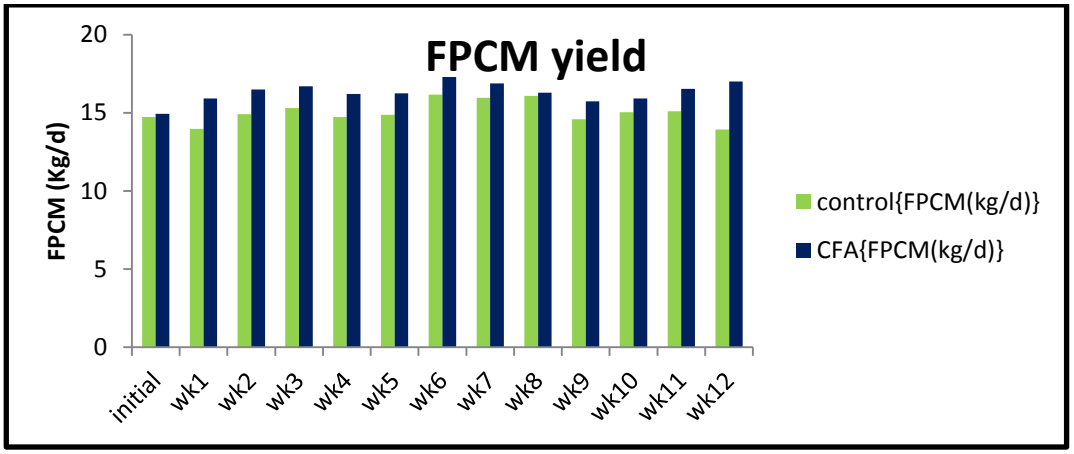

Fig. 1: Effect of composite feed additive on FPCM yield in CFA and Control group of lactating buffaloes

CONCLUSIONS

Composite feed additive have a positive effect on milk production in lactating buffaloes. Differences in weekly milk yield (kg d^{-1}), 6% FCM (kg d^{-1}) and FPCM (kg d^{-1}) throughout the study, were comparable ($p>0.05$) statistically between control and treatment groups. Further long term studies can be done to study the effect of composite feed additive on fatty acid profile of milk in lactating animals.

REFRENCES

1. AOAC, Official Methods of Analysis, 18th edittion. Association of Official Analytical Chemists, Washington, DC (2005).
2. Broderick, G.A., Effect of low level monensin supplementation on the production of dairy cows fed alfa alfa silage. *Journal of Dairy Science*, **87:** 359-368 (2004).
3. Blanch, M., Carro, M.D., Ranilla, M.J., Viso, A., Vázquez-A˜nón, M. and Bach, A., Influence of a mixture of cinnamaldehyde and garlic oil on rumen fermentation, feeding behavior and performance of lactating dairy cows. *Animal, Feed Science and Technology*, **219:** 313-323 (2016).
4. DAHDF GOI., 17th total milk production of India. Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, GOI (2017).
5. FAO, Food and Agriculture Organization of the United Nations. The State of Food and Agriculture. Livestock in the balance, *Roma: FAO*: 166 (2009).
6. Kholif, S.M., Morsy, T.A., Abdo, M.M., Matloup, O.H. and Abu El-Ella, A.A., Effect of Supplementing Lactating Goats Rations with Garlic, Cinnamon or Ginger Oils on Milk Yield, Milk Composition and Milk Fatty Acids Profile. *Journal of Life Sciences*, **4(1):** 27-34 (2012).
7. Matloup, O.H., Abd El Tawab, A.M., Hassan, A.A., Hadhouda, F.I., Khattab, M.S.A., Khalel, M.S., Sallam, S.M.A. and Kholif, A.E., Performance of lactating Friesian cows fed a diet supplemented with coriander oil: Feed intake, nutrient digestibility, ruminal fermentation, blood chemistry, and milk production.*Animal Feed Science and Tech*nology, **226:** 88-97(2017)..
8. Rice, V. A., Andrews, F.N., Warnick, E.J. and Legates, J.E., Breeding and improvement of farm animals, 6th ed. *Tata Mc Graw Hill Publishinh Co. Bombay, India* (1970).
9. Schau, E.M. and Fet, A.M., LCA studies of food products as background for environmental product declarations. *International Journal of Life Cycle Assessment*, **13:** 255-265 (2008).
10. SPSS, Statistical Packages for Social Sciences", Version 16.0, SPSS Inc., SPSS. Statistical Package for the Social Sciences *[Sotfware]* Version 22.0. SPSS Inc (2009).