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Effect of composite feed additive on dry matter intake and fluctuations in body weight in lactating buffaloes

Kiran and Avijit Dey

Abstract
The study was conducted to examine the effect of composite feed additive on daily feed intake and body weight gain in Murrah buffaloes. The experiment was carried out in buffalo farm ICAR-CIRB Hisar. Murrah lactating buffaloes (n=18) (*Bubalus bubalis*) 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. Feed intake in treatment group was 12.88 kg and in control group was 13.31 kg which was comparable (p>0.05) in both the groups. In the end of the trial the feed intake was found to be 13.73 and 13.70kg in treatment and control group respectively. The initial live body weight of the animals were 515.92±35.98 and 498.56±43.17kg in CFA fed buffaloes and the control group animals respectively and the average daily weight gain in the animals was 166.85±74.44 and 207.62±94.36 in control and treatment group and final body weight was 513.57±42.43 and an in control and CFA fed buffaloes.

Keywords: composite feed, dry matter, fluctuations, body weight

Introduction
Body weight changes and feed intake are important parameters to be studied while monitoring the production level in lactating animals. Young heifers of 1-3 parity also gains weight after parturition because of full body growth and maturity. Many feed additives have been studied foe effect on feed intake and body weight gain to enhance the efficiency of production of animals. Response to the feed additives depends on many factors like palatability of the additive, dose, time interval of feeding etc. and varies with animal to animal. A study was conducted to examine the effect of a composite feed additive developed by CIRB, Hisar on daily feed intake and body weight gain in Murrah buffaloes.

Material and Methods
Animals and management
Murrah buffaloes (n= 18) were selected (avg. live weight, 507.24 ± 44.18 kg; parity, 2-5) at early stage (30 days) of lactation for the experiment and divided into two groups (CFA and CON). The experiment was conducted for three months. Farm grown green sorghum (about 25 kg) was offered at 11:00 am every day, after ensuring complete consumption of concentrates after that wheat straw was offered. 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. Animals were milked twice a day by full hand milking technique.

Collection of Samples
On feeding trial days animals were offered fixed amount of green (25 kg), wheat straw (5 kg) and concentrate mixture along with composite feed additive in the treatment group and without additive in control group. Water was provided to individual animal in the shed itself three times a day. Representative samples of green, wheat straw and concentrate were taken at the time of feeding for dry matter analysis to calculate feed intake by individual animal. On the next day feed residue for every animal was weighted by automatic weighing machine and samples were taken for dry matter analysis.

Analysis of the samples
A known quantity of representative samples of feed offered, left over feed were kept in hot air oven at 100^0C for 24 hours or until a constant weight was obtained.

The loss in moisture content after drying was estimated as per standard procedures of Association of Official Analytical Chemists (AOAC, 2005) [1].

Body weight measurement

All the animals were weighed before feeding and watering early in the morning (at 8:00 AM) on two consecutive days at fortnightly intervals during the experimental period of 3 months. Body weight changes were recorded and analyzed.

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 (1994). The data are expressed as mean ± SD with significance level $p<0.05$.

Results & Discussions

Initial body weight of the control and CFA fed buffaloes was 498.56±43.17kg and 515.92±35.98. Body weight changes in both the experimental groups are presented in Table1. The initial live weight of all the buffaloes recorded immediately before the initiation of experimental feeding was comparable ($p>0.05$) irrespective of dietary treatments. The fortnightly averages of body weight throughout the experimental feeding was also comparable ($p>0.05$) between the treatments. Although, final body weight, total body weight gain (kg) for the period of 90 days and average daily gain (ADG, g) for buffaloes, irrespective of dietary treatments did not differ significantly ($p>0.05$), the ADG was increased by 24.44 per cent in CFA fed animals than the control (CON). Singh (2016) [6] also reported ADG was significantly higher in growing buffaloes calves supplemented with different levels of eucalyptus oil, ground reetha and grounded bargad leaves comparison to control group.

Table 1: Effect of supplementation of composite feed additive on body weight (kg) changes in lactating buffaloes

Week	Treatments		SEM	P value
	CON	CFA		
Initial	498.56±43.17	515.92±35.98	31.24	0.42
1	494.05±46.02	514.14±46.36	32.52	0.37
2	486.86±49.68	491.66±38.44	31.52	0.82
3	503.12±42.06	520.06±45.43	30.62	0.44
4	506.98±38.51	522.93±41.20	27.97	0.41
5	504.53±39.96	532.82±39.44	29.12	0.15
6	513.57±42.43	534.60±44.24	30.71	0.32

Different feed additives have different effects depending on dose of feed additive, physiological status of animal, feeding schedule etc. As the existing feeding practice of farm was followed, the overall intake of either green fodder, concentrate mixture or wheat straw (kg d^{-1}) by buffaloes during feeding trial (90 days) was comparable ($p>0.05$) for both the treatments which is depicted in Fig1. The results were similar with Inamdar *et al.* (2014) [2] who observed no difference in feed intake on supplementation of harad seed pulp to male buffaloes. Thao *et al*. (2015) [8] evaluated the effects of *Eucalyptus camaldulensis* leaf meal at different dose levels in swamp buffalo and reported no significant effect on voluntary feed intake among all the treatment groups when compared to control. Ram Kumar singh (2016) [6] also observed no effect on feed intake of buffalo calves fed a composite feed additive containing reetha (*Sapindus mukorossi*) fruit, bargad (*Ficus bengalensis*) leaves and eucalyptus oils (*Eucalyptus globus*). Reed and Whishant (2001) [5] studied the effect of supplementation of monensin (200mg /day) to beef heifers and reported that there was no effect on feed intake. In case of EO mixed observations on feed intake have been reported depending upon the type of EO and doses.

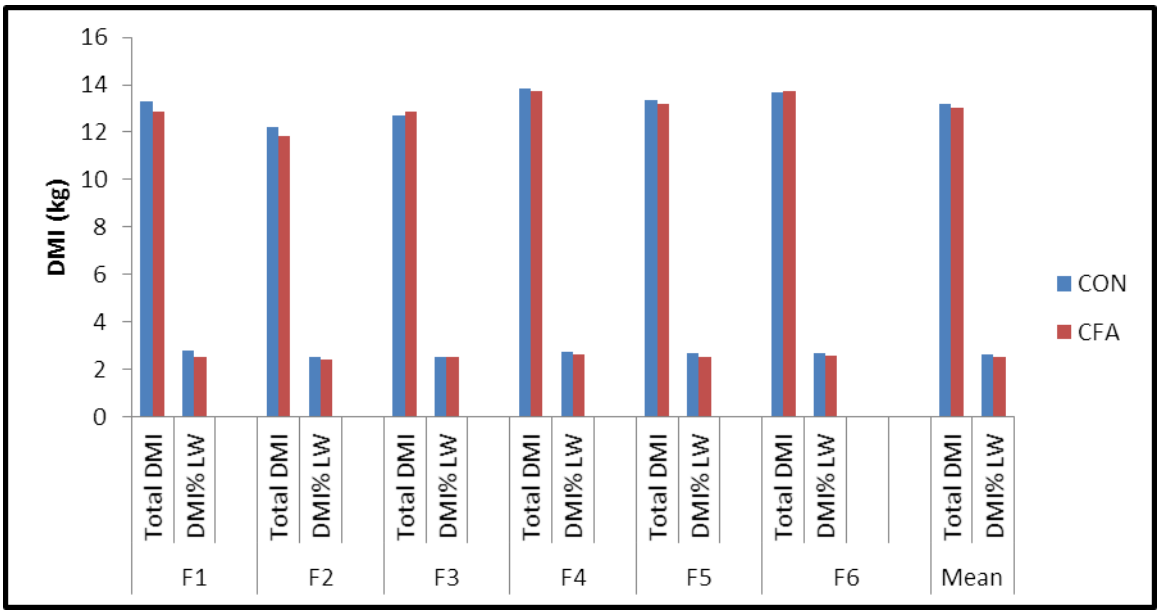

Fig 1: Effect of composite feed additive on daily feed intake in lactating buffaloes

Matloup *et al*. (2017) [4] studied the effect of supplementation of monensin with coriander oil in early lactation Friesian cows. Cows in the salinomycin and coriander groups had greater feed intake ($P<0.001$) and nutrient digestibility ($P<0.01$) than control cow group. Singh *et al*. (2016) [6] reported no effect on DMI in buffaloes fed with some plant bio-active compounds when compared to unsupplemented group. Same results were reported by Krishan Kumar (2017) [3] on supplementation of feed additive rich in rich in essential oils in growing buffaloes. DMI remain comparable among in all the treatments groups.

Conclusions

It is clearly indicated that the experimental diets were palatable and supplementation of CFA exerted no adverse impact on DMI of animals. The increase in body weight in CFA fed buffaloes could be due to better feed utilization.

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