Effect of feed supplement on Milk Production, Fat % Total Serum Protein and Minerals in Lactating Buffalo

R.K. Verma, Praveen Kumar, A. Adil and Dr. G.K. Arya

Department of Physiology
Veterinary College, Birsa Agricultural University, Ranchi - 834 006

Abstract

A study was carried out to see the effect of feed supplement "Khurak" on milk yielding buffalo. The buffaloes were divided in two group. One group was offered "Khurak" as feed supplement for 7 days. Significant increase was observed in milk production, Total serum protein and calcium in khurak supplemented group (Treatment group).

Keywords: Milk production, serum protein and minerals.

Introduction

Khurak supplement was given to treatment group of animal @ 300 gram per day for 7 days, both the groups were kept in same managemental condition. In present investigation has been done to see the effect of khurak on treatment group. The experiment was conducted in Instructional Bovine Farm at Ranchi College of Veterinary Science and Animal Husbandry, Ranchi (Jharkhand).

Materials and Methods

Six newly parturient milking buffalo was selected for feeding trial. The maximum yield in initial without supplementation was around 7 (seven) Liters each. The feed supplement was given to treatment group (Gr.I) for 7 days without aiding extra ration.

All milking buffalo were kept on ad-lib feeding chaffed, green maize; green grasses and one Kg concentration mixture daily.

The milk production was recorded daily morning and evening at 6 am/pm at interval of 12 hrs. Fat % was estimated by butyrometer method. 10.75 ml freshly collected milk aid 10 ml Garber's acid and 1 ml of alcohol was taken in butyrometer mixed properly and centrifuged at 1200 rpm for 5-7 minutes.

Estimation of total serum protein: Total serum protein was estimated by the method of Lowry *et al.* (1951). The serum was diluted so that, sample contains approximately, 50-300ìg (Mirco gram) in 0.05 ml. It was mixed with 5 ml of alkaline copper reagent*. After 10 minutes 0.5 ml of phenol reagent** was added and mixed, simultaneously 0.5 ml distilled water as blank and 0.5 ml of standard solution containing various concentration (50-300 ìg protein) of bovine serum albumin (BSA) was similarly treated and colour was developed. The absorbance was recorded at 660 nm in photoelectric colorimeter model -AE-11, Japan. The protein concentrations of sample were calculated from the standard curve. Similarly protein content of haemolysate sample was estimated.

Estimation of serum calcium: Serum calcium was estimated by flame photometer. Take 3 ml of ammonium oxalate-oxalic solution in round bottom centrifuge tube. A 2 ml serum, mix and allow standing for 30 minutes. In the mean time prepare standard. Take 2 ml of calcium chloride solution contained 10 mg calcium per 100 ml. Centrifuge the tube at 1500 rpm for 10 minutes. Decant the supernatant fluid and drain the inverted tubes on filter paper. Add 4 ml 0.05 N percloric acid, insert a rubber stopper and shake vigorously for 10 seconds. Transfer the content to a small beaker for flame photometry. In a third beaker take 5 mg per cent calcium standard solution.

Set up the flame photometer with calcium filter in place. Adjust the zero with distilled water and deflections are recorded at different known concentration, prepare a standard curve and with help of curve the concentration of samples were determined.

Estimation of serum Iron: Iron was estimated by method using bathophenanthroline. Take three centrifuge tube, label them unknown, standard and blank, pipette 2 ml of serum into the tube add 3 ml water, 1 drop concentrated hydrochloric acid and 1 drop of thioglycollic acid. Mix and left it for 30 minutes. Working standard, prepare as dipyridyl method containing 10 mg iron, take 2 ml of stock standard and dilute it to 100 ml, this contain 2 micrograms of iron per ml. Add 0.4 ml 50% sodium acetate and 2 ml bathophenanthrrolin. Mix it, take absorbance (Optical Density) after 5 minutes at 540 nm yellow.

Results and Discussion

The chemical composition of feed supplement (Khurak) as given in table-I. The effect of milk production, Total serum protein and serum calcium level was observed significantly in khurak supplemented group of the buffalo, ($p<0.01$) given in table-II. But the effect of feed supplement (Khurak) was not found to be significant in Iron. However the level of Iron in serum was observed slight increased value than control, in control group, there is no effect on total serum protein, milk production serum calcium and Iron, but Fat % was observed significant effect ($p<0.01$). There is negative co-relation between Fat % and milk production was observed. Increase in milk production decrease in Fat % was observed.

Table-1. Chemical composition of substract in Khurak.

Components	Composition
Protein	93 gm
Iodine	117.5 mg
Calcium	42 gm
Sulphur	4.5 mg
Phosphorus	15 gm
Vit. A	42, 500 IU
Zinc	270 mg
Vit. D3	42, 500 IU
Iron	212 mg
Bacillus Lechevi forms	5 billion CFu
Copper	50 mg
Manganese	250 mg
Anti oxidants	q.s.
Cobalt	5.14 mg
Stablizers	None

Table-2. Effect of Khurak on milk production (Mean±SE), Fat %, serum protein, calcium and iron.

Parameters	Control group	Treatment group
Milk production in liter	7.52 ± 0.102 [a]	9.016 ± 0.34[a]
Fat % in group	5.4 ± 0.385 [a]	4.22 ± 0.370 [a]
Total serum protein g/dl	6.7 ± 0.483 [a]	7.12 ± 0.473 [a]
Iron mg %	141 ± 3.26[b]	142 ± 3.14[b]
Calcium mg%	8.97 ± 0.28 [a]	10.70 ± 0.17 [a]

** Date having superscript (a) has significantly different.

N.A. Kumar *et. al.* observed significant increase in serum calcium and iron (2003). Lall *et. al.* did not found significant effect on blood minerals on supplementation of mineral mixture. (1994). P.P. Rohilla *et. al*. (2001) and Saha and Kumar (2002). Padekar and Bhoite (2002) observed significant effect of feed additives on milk production and fat %. My finding is in full agreement with P.P. Rohilla *et. al.* (2001). Saha and Kumar (2002), Padekar and Bhoite (2002). In case of milk production and fat %, but in case of mineral our finding full agreement with N.A. Kumar *et. al*. 2003. In total serum protein our finding partial agreement with Devraj *et. al*. (1985).

Result obtained of the experiment on Khurak supplemented is presented in table-II. The result in milk production, fat %, total serum protein, serum calcium and iron, (Khurak) feed supplement increases the absorption of mineral as well as digestion and metabolism of protein, fat and minerals due to which milk production increased significantly ($p<0.01$). These finding suggest that, (Khurak) is a good supplement for the milch buffaloes.

References

1. Babu Suresh and Reddy Kotilunga (2002): Lactational performance of artificial induced lactating crossbreds. *Indian Vet. J.* 78 : 228-230.
2. Devaraj, M. Pathak, M.M., Patel, A.V. and Java Kiraman, K. (1985): Serum cholesterol in buffalo calves from birth to sexual maturity. *Indian J. Anim. Sci.,* 55 (5) : 322-326.
3. Gosh, S.H. and Chatterjee, P. (2001): Increasing milk production through first line transfer technology. *Indian Vet. J.* 79 : 181-182.
4. Kumar, N.A., Kapoor, V., Lall, D. and Paliwal, V.K. (2003): Effect of supplement mineral mixture (with and with out zinc) in diet on retention and blood mineral status in kids. *Indian J. Anim. Nutr.*, 20 (3) 262-268.
5. Lall, D. Gupta Rajan, Sethi, R.K. and Chopra, S.C. (1994): Effect of mineral supplementation on growth nutrient utilization, mineral balance and there levels in blood of buffalo calves fed a straw based ration. *Int. J. Anim. Sci.*, 9 : 343-345.
6. Rohilla, P.P. and Bohra, H.C. (2007): Effect of nutrimix feeding on milk yield of ewes and growth of lambs. *Indian Vet. J.* 84 : 1273-1275.
7. Saha, S.K. and Kumar, C.K. (2002): Effect of antibiotics on in vitro dry matter and neutral detergent fibre digestibility and NH_3-N concentration in buffalo. *Indian Vet. J.* 79 : 579 – 582.
8. Snedecor, G.W. and Cochran, W.G. (1994): Statistical methods 8th edn. Oxford and IBH Publishing Corporation, Calcutta.

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