

EFFECT OF DIFFERENT REGIME OF WATERING ON MILK YIELD AND MILK CONSTITUENTS IN LACTATING MURRAH BUFFALOES

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Received: 8 March, 2016; Accepted: 10 June, 2016

ABSTRACT

Seventy to ninety percent of the total water consumed by the lactating cow is drinking water. Approximately 26 to 34 percent of total water intake is used in milk secretion. In India, generally watering of the animal is done after milking in the morning and before milking in the evening and rest of the time animal remains without drinking water which adversely affect in milk production. Therefore, present study was undertaken to find out the effect of different regime, of watering were studied on milk yield and milk constituents in lactating Murrah buffalos. The animals were subjected to four regime of watering, *adlib* (Group I), before milking (Group II), after milking (Group III) and before and after milking (Group IV). Results revealed that, the average daily milk yield was highest in group II (8.96 liter) and differed significantly ($P < 0.01$) from group I, III and IV. The maximum and minimum milk fat percent was found in group III (8.48 ± 0.12) and group I (7.44 ± 0.14) respectively. Milk fat percent of group III was significantly differed from group I and group II. The solid not fat percent in the group III differed significantly ($P < 0.01$) from I and II and group IV. The protein and lactose percent of milk among all the treatment group did not differed significantly, where as the mineral percent of the milk in group I significantly differed ($P < 0.05$) from group II, III and IV. Therefore, it can be concluded that, watering of buffalo one hour after milking yielded more milk. The fat and SNF percent of the milk was higher when watering is done after the milking.

Key words: Buffalo, Milk composition, Milk yield, Water intake.

Water requirement of dairy animal is met mainly from that ingested drinking (free) water and from feed consumed and a small amount from metabolic oxidation (metabolic water). Almost 70-90% of the total water consumed by the lactating cow is from drinking water. Daily water loss through milk secretion is between 26 to 34 percent of the total water intake ².

In India, generally the animals are milked in the morning and then allowed to drink the water. Similarly, in the evening time after grazing, watering is done before milking and animal is tied for over night. This restriction of water for 12 hours adversely affects the milk yield of the animals. Therefore in the present trails, the effect of different regimes of

watering on milk yield and milk constituents were studied in lactating Murrah buffaloes.

MATERIAL AND METHODS

Present study was undertaken at Livestock Farm, Adhartal, College of Veterinary Science and A.H., N.D.V.S.U., Jabalpur (M.P.). Twenty four recently calved (15- 45 days) lactating Murrah buffaloes of similar body weight and size were selected and distributed randomly in four different groups each containing six animals on the basis of milk yield and parity to maintain homogeneity among experimental animals in each group and these animals were subjected to four regime of watering, viz., *adlib* of water (Group I), watering before milking (Group II), watering after milking (Group III) and watering before and after milking (Group IV).

These Murrah buffaloes were fed with measured quantity of chaffed green berseem and wheat straws

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as per the ICAR norms in the morning daily and the leftover was measured and recorded after 24 hours of feeding. Concentrate mixture was given on the basis of milk production of individual buffaloes. The watering of animals was done as per the design of the experiment.

The milk yield of each animal was recorded daily in both morning and evening time. The milk analysis for fat, SNF, protein, lactose and minerals was done at weekly intervals with the help of the lactoscan as per the standard procedure. Data were analyzed using standard statistical methods⁸.

RESULTS AND DISCUSSION

Daily milk yield

The daily milk yield of animal is directly related with water intake. When the water intake of animal is reduced, it directly affects total milk yield and fat

percent of the milk. The effect of different regime of watering on milk constituents in lactating Murraha buffalo are presented in Table 1.

The average daily milk yields in different groups were 7.69±0.08, 8.96±0.09, 7.93±0.07 and 7.87±0.05 in group I, II, III and IV respectively. The average daily milk yield was highest in group II followed by III, IV and I group. Statistical analysis revealed that group II was significantly different from (P<0.01) group I, III and IV (Table 1).

The present trails are in agreement with the findings of Kannan *et al.*⁴ and Muli *et al.*⁶. However Thokal *et al.*⁹ reported non-significant effect of watering frequency on SNF and total solids content of milk. Sharma⁷ reported non-significant difference in daily milk yield, fat, lactose and protein percent when given 10 and 20 percent higher DCP as compared to ICAR norms.

Table 1. Effect of different regime of watering on milk constituents in lactating Murrah buffalo

Parameter	Group I (<i>Adlib</i> of water)	Group II (Watering before milking)	Group III (Watering after milking)	Group IV (Watering before and after milking)
Milk yield (kg)	7.69 ^a ±0.08	8.96 ^b ±0.09	7.93 ^a ±0.07	7.87 ^a ±0.05
Fat (%)	7.44 ^a ±0.14	7.81 ^{ac} ±0.19	8.48 ^b ±0.12	8.22 ^{bc} ±0.10
SNF (%)	10.40 ^a ±0.14	10.43 ^{ac} ±0.14	10.96 ^b ±0.09	10.80 ^{bc} ±0.10
Protein (%)	2.59±0.05	2.42±0.06	3.00±0.50	2.59±0.05
Lactose (%)	3.95 ^a ±0.07	3.67 ^b ±0.07	3.67 ^b ±0.05	3.83 ^{ab} ±0.04
Mineral (%)	0.62 ^a ±0.01	0.58 ^b ±0.01	0.57 ^b ±0.01	0.57 ^b ±0.01

Different superscripts bearing in each row differ significantly.

Milk constituents

Effect of different regimes of watering on milk constituents in lactating Murraha buffaloes are shown in Table 1. The results revealed that the maximum fat percent in milk was found in group III (8.48 ± 0.12) and minimum in group I (7.44 ± 0.14). The fat percent of group III is significantly (P<0.01) different from group I and II.

The solid not fat percent was higher in group III (10.96± 0.09) followed by 10.80 ± 0.06, 10.43± 0.14 and 10.40 ± 0.14 in group IV, II and I respectively. Statistical analysis revealed that the group III differed significantly from I and II. Group III also differ with group IV significantly (P<0.01).

The protein percent was higher in group III (3.00 ± 0.50), followed by group I (2.59 ± 0.05), IV (2.59± 0.05) and II (2.42± 0.06) respectively. The protein percent of milk did not differ significantly among the treatment group.

The lactose content was highest in group I (3.95± 0.07) followed by IV group (3.83 ± 0.04) and similar pattern in both II and IV group. Mineral percent of the milk differ (P<0.05) of Group I from group II, III and IV. Various authors reported^{3,5,1} similar findings with regards the fat, lactose and ash content in buffalo milk. However, higher protein percent were reported than the present investigation in lactating murrah buffalo^{3,5,1}.

CONCLUSIONS

From this study it can be concluded that the watering of milking buffalo one hour after milking yielded more milk. However, the fat and SNF percent of the milk was higher when watering is done after the milking. Watering of milking buffaloes one hour after milking might be helpful for enhancement of overall improvement of milk production.

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