

Effect of urea molasses mineral block (UMMB) supplementation on milk production in buffaloes under rural management practices

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Abstract

Study was conducted on 60 lactating buffaloes selected from four villages (15 from each) to assess the effect of UMMB under field conditions in Jaipur district. Overall milk yield was increased 1.02 lit (13.21%) per day as compared to pretreatment. Average consumption of urea molasses mineral block per buffalo was 375 gram per day and net profit from sale of extra milk was Rs. 13.75 per day and BC ratio was found cost of licked UMMB was 1:3.67. Thus licking of UMMB to lactating buffaloes increased the milk production and income from buffalo keeping.

Key words: Milk production, Rural management, UMMB

Introduction

Low milk yield, poor reproductive performance (Seasonal breeding, behavior, anoestrus and longer calving interval) and low growth rate have been reported in buffaloes (Singh *et al.* 1990; Qureshi *et al.* 2002; Sahoo *et al.* 2004; Wynn *et al.* 2009). In our country the buffaloes are mainly fed cereal straws that are highly lignified and contain low content of both fermentable protein and carbohydrates. Poor performance of buffaloes mainly due to irregular and inadequate availability of quality feedstuff and imbalance feeding. To increase the productivity of buffaloes, supplementation of nutrients, which can improve the utilization of poor quality roughages and fulfill the deficiency of nutrients, are essential as the feed utilization can be increased by supplementation of critical nutrient in ration (Sampath *et al.* 1995). The supplementation of urea molasses block (UMB) to buffaloes fed straw based diet has increased the growth and supported moderate milk production (Singh and Mehar 1990; Sahoo *et al.* 2004) Feeding of urea molasses mineral block (UMMB) has shown promising results in improving the nutrients utilization and also the productivity of animals in laboratory trials (Prasad *et al.* 2001) and a number of on station trials have been conducted in India on the animal response and economic benefits of using UMMB (Srinivas and Gupta 1997; Garg *et al.* 1998; Patel 2002; Misra and

Reddy 2004) results revealed that 30 to 40% concentrate allowances could be reduced by feeding UMMB without any loss of milk production (Leng *et al.* 1991; Singh and Singh 2003; Misra and Reddy 2004). However, most of the studies were conducted in research station under controlled conditions and very few attempts have been made to evaluate the impact of UMMB supplementation under rural management practices especially in semi-arid Rajasthan. Therefore this study was undertaken to find out the effect of urea molasses mineral block supplementation on productivity of buffaloes in Jaipur.

Materials and Methods

Experiment was conducted on sixty lactating buffaloes identified from four villages namely Shripura, Khannipura, Berna and Sandarshar (15 from each village) of two block of Jaipur district. Trial was conducted for a period of three month from April to June 2009. The urea molasses mineral block used for the purpose was prepared by Krishi Vigyan Kendra by using urea (10%), molasses (38%), wheat bran(40%), mineral mixture (5.0%), common salt (1.0%) and cement (6%). The UMMB was kept in front of the animals in a wooden dispenser to allow free licking and to prevent biting of the blocks UMMB was fed in ad libitum to the buffaloes. Feed and fodder supplied to the buffaloes and management practices was same before treatment and during the treatment. Wheat straw was fed as dry fodder and green fodder availability was limited. Daily milk yield of individual animal was recorded through milk recording index card by farmers and also by investigator at weekly interval

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for fair degree of precision. Each block weighed about 3 kg. The consumption of UMMB was monitored weekly by weighing the blocks regularly. Data were subjected to analyze mean, percentage and standard error.

Results and Discussion

Daily milk yield per buffalo per day in different villages were recorded and depicted in table 1. It revealed that overall average milk production of buffaloes was 7.72 ± 0.35 lit. / day before treatment and it reached up to 8.74 ± 0.34 lit. per day after the treatment. It clearly indicated that average per day milk yield was increased 1.02 lit. (13.21 percent). These findings are comparable with that of Makkar (2001) who reported that potential of milk increment is 14% per lactation with UMMB feeding, Upreti *et al.* (2010) observed that average total daily milk production per animal increased by 17.7% (i.e. 1.1 lit./day). However Mandal *et al.* (2001) reported higher increase (49.76%) in milk yield in UMMB supplementation group, Singh and Singh (2003) reported that UMMB supplementation improved milk yield in buffaloes 35.97%, Avila (2006) found 21.0%

that UMMB licking to the lactating buffaloes has significant effect on milk yield. Similar findings were also reported by Wanapat *et al.* (1999).

Economic analysis of supplementation of UMMB depicted in Table 2. It revealed that overall intake of urea molasses mineral block was 375 gm per day per buffalo. In different villages it was ranged from 300 to 450 gm per day per buffalo. It was observed that as intake of UMMB increased milk yield also increased accordingly. These findings are similar to that of Mandal *et al.* (2001) who reported that there was positive correlation between gradually increase UMMB intake and level of milk yield. Overall cost of licking UMMB was Rs.4.88 per day and extra income from sale of extra milk was Rs.18.36 (ranged Rs. 16.74 to 21.60) per day per buffalo. Overall benefit cost ratio (BC) was found 3.67 under study. However Sudhakar *et al.* (2002) reported higher BC ratio (6.44) than present study.

References

Avila, H.F. (2006). Production and utilization of urea molasses mineral block (UMMB). FAO/Ag/AGP/doc./Publicat./VIET95, pp.199-204.

Table 1: Average milk production per buffaloes per day in different villages.

Parameters	Name of villages				Overall
	Khannipura	Berna	Shripura	Sandarshar	
Average milk yield pre treatment (lit./ day)	6.67±0.44	6.47±0.46	9.27±0.65	8.37±0.87	7.72±0.35
Average milk yield post treatment (lit./ day)	7.60±0.42	7.67±0.45	10.23±0.64	9.47±0.85	8.74±0.34
Average milk yield increased lit./day within 3 months	0.93	1.20	0.96	1.10	1.02
Percentage milk increased over pre-treatment	13.94	18.55	10.36	13.14	13.21

Mean±SE

Table 2: Economic evaluation of UMMB supplemented in buffaloes.

Parameters	Name of villages				Overall
	Khannipura	Berna	Shripura	Sandarshar	
Extra milk yield (lit./day)	0.93	1.20	0.96	1.10	1.02
Extra income from the sale of milk/day/buffalo @Rs.18/lit.	16.74	21.60	17.28	19.80	18.36
UMMB intake /day / buffalo (gm.)	300	450	350	400	375
Cost of UMMB intake	4.0	6.0	4.67	5.33	5.0
Net profit by UMMB supplementation	12.74	15.60	12.61	14.47	13.48
BC ratio	1:4.18	1:3.60	1:3.70	1:3.71	1:3.67

increased in milk yield, Misra *et al.* (2006) reported that cows supplemented with UMMB produced 30% more milk. In different villages milk yield was increased 1.20, 1.10, 0.96 and 0.93 lit. per day in Berna, Sandarsar, shripura and Khannipura, respectively. The increase in milk yield may be attributed to higher supply of crude protein, energy and minerals. These results similar to Rafiq *et al.* (2000). It is clear from the study

Garg, M. R., Mehta, A.K. and Singh, D.K. (1998). Advances in the production and use of urea molasses mineral blocks in India. World Animal review 90(1):22-27 <http://www.Fao.org/ag/againfo/resources/documents/WAR/war/U1200B/u1200b07.hmt>
Leng, R.A., Preston, T.R., Sansoucy, R. and Kunju, P. J.G (1991). Multi-nutrient block as a strategic supplements for ruminants. World Animal review 67(1):11-

- 19<http://www.Fao.org/ag/againfo/resources/documents/WAR/war/U1200B/u1200b07.hmt>
- Makkar, H. (2001). Frequently asked questions on urea molasses multi-nutrient technology (UMMB). Report on review meeting. International Atomic Energy Agency (IAEA) Vienna, Austria, pp-1-6.
- Mandal, P., Kunwar, B.S., Shrestha, H.R. and Thapa, M.S. (2001). Technology from bovine research programme. Bovine Research programme, Khumattar, Lalitpur, Nepal, pp 41-46.
- Misra, A. K., Reddy, G S. and Ramakrishna, Y.S. (2006). Participatory on-farm evaluation of urea molasses mineral block as a supplement to crossbred cows for dry season feeding in rain fed agro-ecosystem of India. *Livestock Research for Rural Development* 18:1-8.
- Mishra, A. K., and Reddy, G S (2004). Effect of urea molasses mineral block supplementation on milk production in crossbred cows. *Proceedings of Vth Biennial Conference, held at NIAP, Bangalore, India, pp 263.*
- Patel, I. (2002). A case study on adoption of urea molasses mineral blocks. *Proceeding of a south- South workshop held at NDDB, Anand, India and ILRI, Nairobi, Kenya. Pp 538.*
- Prasad, C. S., Gowda, N. K. and Raman, J.V. (2001). Feeding strategies for enhance animal productivity. In *proceeding X Animal Nutrition Conference, Karnal, held at NDRI Karnal from November 9-11, pp. 23-45.*
- Qureshi, M.S., Habib, G., Abdus Samad, H., Siddiqui, M.M, Ahmad, N. and Syed, Mirajuddin. (2002). Reproduction-nutrition relationship in dairy buffaloes. Effect of intake of protein, energy and blood metabolites levels. *Asian-Aust. J. Anim. Sci.* 15:330.
- Rafiq, K., Mostafa, M., Awal, M.A. and Hossai, M.M. (2000). Effect of medicated bock licks on performance of indigenous dairy cow of Bangladesh. *Asian Australian J. Anim. Sci.* 13(6):774-780.
- Sahoo, A., Elangovan, A.V., Mehar, U.R and Singh, U.B. (2004). Catalytic supplementation of urea –molasses on nutritional performance of male buffalo (*Bubalus bubalis*) calves. *Asian-Aust. J. Anim.Sci.* 17:621.-628.
- Sampth, K.T., Saha, R. C., Prasad, C. S., Singh, G. P. and Walli, T.K. (1995). Supplementation of Straw. In *hand book of straw feeding system* Kiran Singh and J.B. Schiere (Eds.) pp.203.
- Singh, U.B., Mehar, U.R. and Usha, R. (1990). Utilization of ammoniated wheat straw given in feed block and supplemented with varying quantities of fish meal and oil extracted rice bran. *Anim. Feed Sci. Technol.* 29:129-134.
- Singh, Parasu Ram and Singh, Mahendra (2003). Effect of UMMB supplementation on milk production in buffaloes and cows. An on-farm trial. *Indian J. Anim. Nutr.* 20(1):1-5.
- Srinivas, B. and Gupta, B.N. (1997). Urea molasses mineral block licks supplementation for milk production in cross bred cows. *Australian Journal of Animal sciences* 10:47-53.
- Sudhakar, K., Krishna Reddy, G.V. and Krishna, N. (2002). Effect of urea molasses mineral block (UMMB) on quantity and quality of milk production in murrha buffaloes. *Indian J. Anim. Nutr.* 19:301.-305.
- Upreti, C.R., Shrestha, B. K. and Ghimire, B. (2010). Effect of UMMB supplementation during winter on milk production and its composition and infertility in dairy cattle In *Hill management production system. Nepal J. Sci. and Technology* 11:71.-78.
- Wanapat, M., Petlum, A. and Pimpa, O. (1999). Strategic supplementation with a high quality fed block on roughage intake, milk yield and composition and economic return in lactating dairy cows. *Asian- Australasian J. Anim, Sci.* 12: 901-903.
- Wynn, P.C., Warriach, H.M., Morgan, A., Mc Gill, D.M., Hanif, S., Sarwar, M., Iqbal, A., Sheehy, P.A. and Bush, R.D. (2009). Perinatal nutrition of the calf and its consequences for lifelong productivity. *Asian- Aust J. Anim, Sci.* 22: 756-764.