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SHORT COMMUNICATION

Anionic Mishran Supplementation to Check Incidence of Milk Fever

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ABSTRACT

In the present study, effect of *Anionic Mishran* supplementation to advance pregnant pleuriparous animals in District Mandi, Himachal Pradesh was assessed. A total of 80 advance pregnant pleuriparous animal were selected. Forty animals were supplemented with *Anionic Mishran* 100 g/day while 40 animals were kept as control. Information was collected through personnel interview technique about the previous lactation yield of the selected animals and awareness to farmer about *Anionic Mishran*. After calving, information was also collected about parturition related complications and milk yield. Results indicated that parturition related complications are fairly common in milch animals in the area and none of the farmers was aware about *Anionic Mishran*. Upon supplementation no issue of palatability was faced either in cattle or buffaloes. Only one incidence of retained placenta and one milk fever was observed in supplemented group while the number was 3 and 4 respectively in control group. Improvement in milk yield was reported by 24 and 18 farmers in supplemented and control group respectively. Thus it may be concluded that *Anionic Mishran* supplementation reduce the incidence of milk fever in high yielding pleuriparous animals and more demonstration of the technology may be conducted for it's up scaling and optimal utilization by the farming community.

Keywords: *Anionic mishran*, milk fever, pleuriparous animals

Milk fever, also known as periparturient paresis, is the clinical manifestation of parturient hypocalcaemia, a disease of considerable importance for milch animals' welfare and dairy economy (Thilsing *et al*., 2002). It affects high yielding pleuriparous milch cattle and buffaloes, usually within one or two days after calving, resulting in considerable reduction in milk production and thus of great economical significance (Mandali *et al*., 2004). If the affected animal is not properly attended in time, the condition may progress to downer's syndrome and may also lead to mortality. In hilly areas like Himachal Pradesh, it is difficult for the farmer to take sick animal to nearby veterinary institution and also for veterinary staff to reach the recumbent animal in remote places on time, making the things even more difficult. Moreover in hilly areas like District Mandi of Himachal Pradesh, tree foliage is an important source of fodder for livestock. Such fodder is rich in calcium content often meeting the calcium requirement of dry and low yielding animals (Kannan and Bhar, 2016). When calcium intake extensively exceeds the requirements, the calcium demand can be met almost entirely by passive diffusion from the intestinal tract, rendering the calcium homeostatic mechanisms relatively inactive (Horst *et al.,* 1994) predisposing the animal to a greater risk of milk fever in such areas.

To overcome this metabolic disorder and its possible impact on animal health and production a new technology in the form of a feed supplement named *Anionic Mishran* has been developed by National Dairy Research Institute (NDRI), Karnal a leading institution of ICAR, Govt. of India. Similarly as farmers are driven by the perception that '*seeing is believing'* Front line demonstrations (FLDs) has emerged as one of the most powerful tools of agricultural extension. In the present study, effect of *Anionic Mishran* supplementation to advance pregnant pleuriparous cattle/ buffalo on incidence of milk fever in District Mandi, Himachal Pradesh was assessed through FLDs.

A total of 80 progressive dairy farmers, each possessing a minimum of one advance pregnant pleuriparous cattle or buffalo were selected randomly. Forty farmers were provided sufficient *Anionic Mishran* (Kamdhenu Feeds, Technology transfer from NDRI, Karnal) and were advised to start feeding 50 g *Anionic Mishran* per day and gradually increase upto 100 g per day to the animals who's calving was due in next few weeks. The net anionic value of Anionic Mishran was 11380 meq (Anionic value of Sulphur and Chloride was 7640 and 5080 meq respectively and cationic value of Potassium was 1340 meq) and it also contained Vitamin-E @ of 10,000 IU/kg. The *Anionic Mishran* feeding was ensured till the day of calving and all the supplemented animals consumed *Anionic Mishran* for at least 10 days immediately before calving. Similarly another forty advance pregnant pleuriparous animals were kept as control. Information regarding the previous lactation yield of the selected animals, length of dry period, awareness about *Anionic Mishran* or its substitute (Metabolite, Hyperphos *etc.*) and palatability of *Anionic Mishran* was collected through personnel interview technique from the owner. After calving of animal, information was also collected about parturition related complications like incidence of dystocia, retained placenta, milk fever and milk yield upto one month. The information so collected was analyzed to draw inferences.

A total of 35 farmers among the 80 selected farmers had observed parturition related complications like dystocia, milk fever, downer, retained placenta, metritis *etc.* in their animals at one or other time; suggesting that these complications are fairly common in milch animals in the area. All the selected farmers readily accepted the offer to feed *Anionic Mishran* supplied under FLDs to their advance pregnant animals to overcome such complications. It indicated that the parturition related complications in dairy animals has a huge bearing on overall production of animal and economics of dairy farming and farmers are willing to feed any new supplement to overcome such complications. *Anionic Mishran* is not available in the private medical/ veterinary chemist shops in the region. Most of the selected farmers (n = 80) were unaware about *Anionic Mishran* and they (n = 39) used it for the first time during the FLDs. However, one dairy farmer (Saahnu Ram from village Jugahan) was aware about similar supplements and was actually feeding his cattle a product Metabolite from Virbac Animal Health, a private company. It indicated that the product *Anionic Mishran* is new to the farming community in the region and more demonstrations need to be conducted to show its utility and effectiveness among dairy farmers for its optimal utilization.

All the selected animals had completed two or more lactations. The lactation yield ranged from 1600 to 2400 litres for graded buffaloes and 2000 to 3400 litres for Jersey and crossbred cattle. The lactation yield indicated that all the animals were high yielders and were highly susceptible to metabolic disorders including milk fever.

The duration of dry period ranged from 25 to 45 days in cattle and 90 to 140 days in buffaloes. It was short in high yielding cattle but longer in buffaloes. Animals with long non-lactating periods are predisposed to becoming excessively fat, since they do not regulate intake according to their physiological requirements. Besides obesity, a long dry period may result in a more quiescent calcium homeostasis (Thilsing *et al*., 2002). In the present study total five case of milk fever were recorded, one in *Anionic mishran* supplemented group and four in control group. All these were high yielding cattle which had a dry period of over one month. So duration of dry period has no bearing on incidence of milk fever and *Anionic Mishran* was effective to check milk fever notwithstanding the length of dry period.

The *Anionic Mishran* was fed mixed with concentrate feed so no issue of palatability was observed either in cattle or buffaloes. It may be added that the unnatural acidosis induced by the *Anionic Mishran* could possibly result in reduced feed intake but apparently no reduction in dry matter intake was observed. Some studies (Moore *et al.,* 2000) have shown a negative effect on the dry matter intake upon adding anionic salts to the ration, but in the present study no apparent reduction in feed and fodder intake was observed.

No incidence of dystocia or difficult calving was observed in any of the *Anionic Mishran* supplemented animals while one dystocia was observed in the control group.

Among all the *Anionic Mishran* supplemented animals only one incidence of retained placenta was recorded. While in control group 3 animals suffered from retained placenta. Anionic diet sometimes reduce the overall dry matter intake and Vande Haar *et al.* (1999) have shown

Table 1: Effect of *Anionic Mishran* supplementation on milk fever incidence and other attributes in high yielding pleuriparous animals

Particular		*Anionic Mishran*	Control
Animals		40	40
Cattle - Jersey & Crossbred		34	30
Buffalo - Graded Murrah		6	10
Parturition related complications observed by farmers in herd		35/80	
Awareness about Anionic Mishran		1/40	0/40
Anionic Mishran feeding acceptability among selected farmers		40/40	N.A.
Milk yield	Cattle	2000-3400 L	2000-3400 L
	Graded Murrah	1600-2400 L	1600-2400 L
Ensuing Lactation	3rd	21	24
	4th	14	12
	5th or above	5	4
Duration of dry period	Cattle	25 to 50 days	
	Buffalo	90 to 140 days	
Anionic Mishran palatability		No issue	N.A.
Incidence of dystocia		Nil	1/40
Incidence of retained placenta		1/40	3/40
Incidence of milk fever		1/40	4/40
Parturition related complications (total of above)		2/40	8/40
Milk yield upto 1 month	Improvement	24/40	18/40
	No change	16/40	22/40

that decreased feed intake and a negative energy balance before calving increase the risk of displaced abomasum, mastitis and retained placenta in post-partum cases. As feed intake of the above animal was not affected upon *Anionic Mishran* supplementation so the possibility of negative energy balance and consequent retained placenta due to *Anionic Mishran* do not hold good in the present case.

One incidence of milk fever was observed in the *Anionic Mishran* supplemented group while in the control group four animals displayed clinical signs of milk fever. The affected animals recovered after intravenous infusion of Calcium borogluconate and adjunct therapy. Thirunavukkarasu *et al*. (2010) reported that in Tamil Nadu about 14 percent cow and 12 percent buffaloes suffer from milk fever. Horst *et al.* (1997) has also reported occurrence of milk fever at the rate of 5 to 10 percent in USA. In the present study, incidence of milk fever in control group was about 10 percent while in the supplemented group it was only 2.5 percent. It indicated that supplementation of *Anionic Mishran* is an effective method to check the incidence of milk fever in high yielding pleuriparous cattle and buffaloes. Anionic salts prevent milk fever by acidifying the blood to restore tissue responsiveness to the parathyroid hormone (Patel *et al*., 2011). But the technique is not 100 percent effective as one case of milk fever was still reported among the forty test animals involved in the study. Although the time period of feeding the anionic salts has been suggested to be 3-4 weeks, it may be possible to reduce the time period without loosing the effect. Oetzel (1996) suggested that a feeding period of 10 days prepartum is sufficient. In the affected animal *Anionic Mishran* supplementation took place for only 10 days and may be the feeding period was not adequate to show its full impact. Further Radostits *et al*. (2006) reported that hypocalcaemia occur in spite of apparently adequate function of the parathyroid and vitamin D endocrine system.

At calving the production of 10 liters of colostrum results in a loss of 23 g of calcium in a single milking (Horst *et al.,* 1997). This sudden and extensive draw on blood calcium must be replaced via increased intestinal calcium absorption and increased resorption of calcium from the bones. The reactivation of the calcium homeostatic

mechanisms is, however, time-consuming. By feeding low calcium (<20 g/d) diets in the dry period, the calcium homeostatic mechanisms are activated before calving, and the cow is thus capable of absorbing calcium more efficiently from the intestinal tract as well as drawing calcium from the bone around the time of calving (Kichura *et al.,* 1982). In hilly areas where calcium rich tree foliage is available in plenty for livestock feeding, such strategy will not be effective unless calcium binder is added in the ration to reduce calcium availability (Wilson, 2001). Therefore to check incidence of milk fever dairy farmers may opt for prepartum supplementation of *Anionic Mishran* in high yielding pleuriparous animals.

After calving milk yield of the animals was recorded up to one month**.** Majority of the farmers (24/40) in *Anionic Mishran* supplemented and nearly 50 % farmers in control group reported an improvement (5-10%) in milk yield while no appreciable change was also observed by others. Reduction in milk yield was not reported by any of the 80 farmers involved in the study. Earlier Senthil and Kaur (2006) observed that feeding anionic diets for 45 days in prepartum period did not affect the apparent milk yield but 4% fat corrected milk yield increased significantly during 90 days of lactation study. No such evidence could be found in the present study as milk composition was not analyzed. The increase in milk yield of animals which entered in third or fourth lactation may be due to improvement in milking capacity with growing age of animals which was not the case with animals which have already calved four or five times.

CONCLUSION

Prepartum *Anionic Mishran* supplementation is an effective strategy to reduce the incidence of milk fever in high yielding pleuriparous animals and more demonstration of the technology need to be conducted under actual field conditions for it's up scaling and optimal utilization by the farming community.

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