



Effect of Post Teat Dip Treatments for the Prevention of Mastitis in Dairy Cattle

Tejbeer Singh*, Manoj Sharma and Gurinder Singh

Krishi Vigyan Kendra, Langroya, Shaheed Bhagat Singh Nagar-144516 (Punjab)

ABSTRACT

The present study was undertaken to evaluate the effect of post teat dip treatment in dairy cattle for the prevention of clinical and sub-clinical mastitis. A total of 150 crossbred cows were selected randomly of different age groups, lactation stage, and herd size. The effect of a combination of povidone iodine and glycerin in the ratio of 3:1 and a commercially available product filmadine (vansun) were evaluated. Both the above mentioned treatments were found to be equally effective against prevention of clinical and subclinical mastitis as compared to non-treated group of animals. It can be concluded that the post teat dip treatment improved quality and composition of milk along with reduction in chances of clinical and subclinical mastitis.

Key Words: Sub-clinical mastitis, Post teat dip, Povidone iodine, Filmadine, California Mastitis Test.

INTRODUCTION

In India, the economic losses due to mastitis have increased about 115 folds in last five decades (Anon, 2011). Mastitis is an inflammation of the udder caused by bacterial infections (Sudhan and Sharma, 2010). Apart from different species of bacteria, several other groups of micro-organisms such as virus and fungi can also cause mastitis in cattle and buffaloes. Moisture, mud and manure present surrounding the cows are the primary sources of exposure for environmental mastitis pathogens. The occurrence of mastitis varied from season to season, because growth and multiplication of organisms occur at high temperature and humid conditions (summer season) which enhance the chances of mastitis. In India, the prevalence of mastitis is high in summer and rainy months and less in winter months.

The dairy farmers experience huge losses due to high prevalence of clinical and subclinical mastitis in dairy animals (Oliver *et al*, 2003). Mastitis results in reduced to even total loss of milk from animals depending upon the degree of mastitis. The losses are not only in terms of financial loss to the dairy farmers due to reduced milk yield but also the milk

from animals suffering from clinical and subclinical mastitis is not fit for human consumption which is also a serious cause of concern (Zadoks *et al*, 2011).

To control mastitis various control measures have been developed and adopted over the past few years. Despite development of various techniques for control of mastitis, the disease is still prevalent and posing a major threat to the milk production (Bhutto *et al*, 2012). Among these control measures, post teat dip has gathered a great importance as an essential preventive tool in mastitis (Hassan *et al*, 2009). Post teat dip has been demonstrated to be highly effective in preventing new intra-mammary infections against different pathogens causing mastitis. Lack of awareness, delay in detection of sub-clinical mastitis, unhygienic milking practices, inadequate treatment etc. are some of the important contributing factors in higher incidence of mastitis (Radistitis *et al*, 2000).

Hence, the present study was undertaken to note down the effect of post teat dip treatment with povidone iodine + glycerin combination in the ratio of 3:1, respectively and filmadine (vansun) solution on prevention of sub-clinical mastitis and evaluate quality and quantity of milk produced.

*Corresponding author, Email: drbirgi87@gmail.com

MATERIALS AND METHODS

In order to carry out this study, eight dairy farmers were selected from the district Shaheed Bhagat Singh Nagar. The selected farmers were trained in respect of cleanliness of shed, milking techniques, cleaning and disinfection of teats and udder. The farmers were trained to carry out post teat dip technique. The milking was performed after washing udder and teat with ordinary water, udder dried with cloth in control group and teat dip was applied after milking. California Mastitis Test (CMT) method was used for detection of mastitis in dairy animals. Material required to carrying out experiment like CMT Kits, mixture of povidone iodine and glycerin in 3:1 ratio (T1) (Osteras *et al*, 2008), filmadine (T2) were provided to the farmers. One hundred and fifty animals were divided into three groups with 50 cows in each group i.e. Control (T0), teat dip in povidone iodine: glycerin @ 3:1 (T1) and teat dip in filmadine (T2). At the start of the experiment, all the animals selected for this study were tested with CMT (Table1). Post teat dip with T1 and T2 were applied after milking, various parameters were recorded at 30 d interval like milk yield, fat, slid not fat (SNF) and CMT conducted. The control group was given teat wash with simple water as told to the farmers earlier.

First few strips of milk were discarded, teat and udder were washed and dried with cloth. The milk samples were dispatched to Punjab dairy development board for analysis under controlled temperature. The samples were tested for milk fat and SNF and the milk production data were recorded. The CMT test was conducted after 30 d interval. 2ml of milk sample from each quarter was added to CMT cups with equal amount of SLS (sodium lauryl sulphate) reagent and swirled gently. Sample was noticed for gel formation, clotting etc. Milk samples were collected from all the groups of animals at start of experiment and after monthly interval till the end of experiment. The standard error and least significance difference (5% level) were calculated.

RESULTS AND DISCUSSION

Effect of post teat dip

The data (Table 1) showed the milk production, fat percentage, SNF percentage and number of mastitis positive without any treatment at interval of 0 day, 30 days and 60 days. However, the changes in various parameters were non-significant but a small decrease was observed in each parameter during the period of study in the control group. On the other hand, the post teat dip had significant effect on milk production in T1 group from 0 to 60 d and was found to be increased from 17.6 to 19.3 l. Similarly, cases of sub clinical mastitis reduced from 18 to 10 by following this treatment. However, the fat percentage increased slightly by 0.5 point i.e. 3.8 from 3.3. In the T2 group of animals, there was a significant increase in milk production with the post teat dip with filmadine (18.2 l) on day 60 as compared to day 0 (16.2 l) and likewise CMT positive cases were reduced from 21 (day 0) to 18 (day 30) and to 13 (day 60). It was found that there was no significant effect on fat percentage and SNF and these results were in accordance to Yasothai (2017).

Therefore, the study clearly revealed that use of post teat dip technology enhanced the milk production significantly and helped in prevention of the sub clinical mastitis to a great extent. Therefore, farmers must be advised to use this low cost technology at their dairy farms in order to increase their margin of profit vis –a vis- improve public health.

Various hygienic practices during milking including washing of udder, use of separate towel for cleaning of udders and teat dipping effectively control mastitis and bacterial infection increases when post teat dip was not continued. In cows, post teat dip had no any adverse effect on milk composition and udder health in this study the results were in favour of post teat dip technology to prevent occurrence of mastitis. Post teat dip by povidone iodine + glycerin combination in ratio of 3:1 and filmadine (Vansun) were equally effective

Effect of Post Teat Dip Treatments

Table 1: Effect of Post Teat Dip on milk quality and quantity in dairy cattle.

Parameters Day	T0			LSD	T1			LSD	T2			LSD
	0	30	60		0	30	60		0	30	60	
Milk Production (l)	15.4 ± 0.8	15.0 ± 0.7	14.8 ± 0.8	NS	17.6 ± 0.7c	18.2 ± 0.8b	19.3 ± 0.8a	0.8	16.2 ± 0.7c	17.0 ± 0.8b	18.2 ± 0.6a	0.6
Fat (%)	3.8 ± 0.3	3.7 ± 0.2	3.6 ± 0.3	NS	3.3 ± 0.4	3.6 ± 0.3	3.8 ± 0.3	NS	3.6 ± 0.2	3.7 ± 0.4	3.8 ± 0.3	NS
SNF (%)	8.4	8.3	8.3	NS	8.5	8.6	8.6	NS	8.5	8.5	8.6	NS
CMT Positive	22	23	24	NS	18	14	10	4.0	21	18	13	3.0

No. of animals = 50; T0: Control; T1: Povidone iodine: glycerin (3:1); T2: Filmadine LSD: least significant difference at 5% level ($P < 0.05$); NS: non-significant, a,b,c: indicating means within column differed significantly with decreasing order, \pm values indicate percent standard error for 50 animals; L: litres; %: percentage

in the prevention of sub-clinical mastitis, quality and quantity of milk.

CONCLUSION

The findings revealed that post teat dip was significantly effective in the prevention of clinical and sub-clinical mastitis in dairy animals as well as against the control of pathogens which poses serious health hazards in human beings. Hence, farmer should be encouraged to adopt post teat dip to reduce losses due to clinical and sub-clinical mastitis and avoid health issues in human beings due to consumption of contaminated milk.

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