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Efficacy of TANUVAS MASTI GUARD for prophylactic control of subclinical mastitis in dairy cattle

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Abstract

Prophylactic control of subclinical mastitis is the most important and effective management tool to reduce the incidence of mastitis in dairy cattle. The present study was conducted to evaluate the efficacy of TANUVAS MASTI GUARD for prophylactic control of subclinical mastitis in dairy cattle. Out of 20 animals screened, 6 animals were found to be sub clinical mastitis. These 6 sub clinical mastitis cases, pre-application of teat protect for the period of 6 weeks and another 12 weeks period after application/treatment of the TANUVAS MASTI GUARD. The somatic cell count, milk yield and milk P^H was recorded. The TANUVAS MASTI GUARD is found to be an easily identified and efficacious in reducing the incidence of sub clinical mastitis under field condition.

Keywords: efficacy, prophylactic control, sub-clinical mastitis and TANUVAS MASTI GUARD

Introduction

Bovine mastitis is the most costly disease of dairy cattle due to economic losses from reduced milk production, treatment costs, increased labour, milk withheld following treatment, death and premature culling (Miller *et al.*, 1993) [6], especially in its sub clinical form (Ali and Shook, 1980) [1]. Sub clinical mastitis in dairy cattle is a major and silent problem causes higher economic losses to the farmers. It is one major reason for low yield and poor quality milk and ranks first among the diseases that causes substantial loss to owners (Kumari *et al.*, 2018) [5]. Clinical mastitis can be easily detected by farmer but sub clinical mastitis can only be detected by the measurement of inflammatory components and pathogens in the milk (Woolford, 2001) [14]. Prevention of bovine mastitis is the most important and efficient component for successful dairy production. Since, Somatic Cell Count (SCC) and P^H of milk has been shown to be an excellent markers it can be to detect the sub-clinical mastitis.

One way to prevent and overcome the incidence of subclinical mastitis in dairy farms is by using teat dipping after post milking (Putri *et al.*, 2015) [8]. Dipping or spraying the teat immediately after milking has been practiced for many years. The chemicals present in the spraying solution kill the bacteria present on any sores on the teat and promoted quicker healing. Teat disinfection helps keep the teat skin healthy and heal skin lesions. These methods are most important for the mastitis management (Hillerton, 1997) [3]. Thus, the present study was conducted to estimate the prophylactic control of subclinical mastitis in dairy cattle using TANUVAS MASTI GUARD which contain TANUCHEK SCC and Teat Protect spray.

Materials and Methods

The Study was conducted on Theni district of Tamil Nadu, India. The efficacy of TANUVAS MASTI GUARD was assessed in farmer's field during on farm trail on 2019. The TANUVAS MASTI GUARD is a combined screening (TANUCHEK SCC kit) and teat protection (Teat Protect Spray). TANUCHEK SCC kit is an on-farm test kit for quick determination of the somatic Cell Count (SCC) and Teat Protect Spray is a unique germicidal teat protective spray for mastitis (TANUVAS, Chennai, 2006) [12]. Twenty 350 to 375 kg body weights with mid-lactating crossbred cattle were randomly selected for this study. All the selected cattle were screened by TANUCHEK SCC kit. Out of 20 animals, 6 animals were found positive for subclinical mastitis, taken as a treatment group (II). Remaining 14 animals, 6 animals (free from sub-clinical mastitis) were taken as a control group (I). The treatment group animals were subjected with Teat Protect Spray which was sprayed on all four teats and udder daily immediately after milking for period of 12 weeks.

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It was easily removed when udder was washed before milking. 30 ml of milk samples were collected once in a week from all the animals of control as well as treatment group in a 30 ml oven dried glass bottles for SCC and P^H of milk estimation. A drop of collected milk sample were added in a TANUCHEK SCC tube and 3 drops of enhancer was added in the milk sample, allowed to wait 30 minute to develop colour in the sample, the developed colour was compared with colour card and somatic cell count was measured. The milk P^H is measured by using ready made available P^H papers. All the control as well as treatment group animals daily milk yield was also recorded the 12 weeks study period. The collected parameters were analyzed with the standard statistical procedures (Snedecor and Cochran, 1994) [11].

Result and Discussion

The average value of somatic cell count, P^H of milk and daily milk yield in control and treatment groups of dairy cows were presented in Table I. In normal healthy cow group (I) the mean somatic cell count (SCC) was 1.48 ± 0.14 lakhs, 1.54 ± 0.12 lakhs and 1.52 ± 0.16 lakhs cells/ml in milk at 0, 1 to 6 and 7 to 12 weeks of study period. In subclinical mastitis, treatment group (II) mean SSC before spraying was 2.78 ± 0.18 lakhs cells/ml in milk and 0-6 weeks and 7-12 weeks after spraying was 1.50 ± 0.12 lakhs and 1.49 ± 0.14 lakhs cells/ml in milk respectively. The assessment of difference between treatment group indicated increase in SCC in subclinical mastitis group as compared to normal healthy group. These findings are in accordance with the findings of Sharma *et al.* (2000) [10]; Diami (2004) [2] and Thangadurai and Shanmugam (2019) [13]. The increase in SCC in subclinical mastitis might be due to shift of leukocytes to udder as a protective mechanism against infection (Murcus *et al.*, 1994) [7]. After application TANUVAS MASTI GUARD Teat Protect Spray, the SCC of milk was decreased 2 week post spraying. After 6 weeks post spraying in subclinical mastitis group animals, the SCC comes to normal range that is observed in healthy cows. After 6 to 12 weeks post treatment there is no change in SCC. These findings indicated that TANUVAS MASTI GUARD helped in improving the normalcy within 6 weeks and maintain the normal range of

SCC upto 12 weeks of post spraying period. These findings are in accordance with the findings of Thangadurai and Shanmugam (2019) [13].

In normal healthy cow group (I) p^H of milk was 6.5 ± 0.11 , 6.6 ± 0.16 and 6.5 ± 0.12 at 0, 1 to 6 and 7 to 12 weeks study period. In subclinical mastitis group (II) the mean P^H of milk before treatment was 6.8 ± 0.18 , 1to 6 weeks and 7 to 12 weeks were 6.7 ± 0.12 and 6.5 ± 0.13 respectively. The milk P^H of treatment group was alkaline before treatment when compared to normal healthy cow but restored to normal on 6th weeks and sustained upto 12 weeks treatment in treatment group. This indicates the effectiveness of TANUVAS MASTI GUARD spray in restoring normal P^H and further maintaining the P^H within that range. The result correlated with the finding of Diami (2004) [2] and Thangadurai and Shanmugam (2019) [13]. The Milk constituents responsible for p^H are casein, citrate, phosphate, dissolved CO₂ and bicarbonates which are balanced with permeability of udder cells to mammary blood capillaries. In mastitis due to mammary gland infection, increased permeability of the udder tissue to blood components *viz.*, bicarbonate ions, results higher value of p^H in the milk (Rao, 1990) [9]. Joshi *et al.* (1976) [4] suggested that increase in chloride concentration might be responsible for increase in p^H of milk in subclinical mastitis.

In the present study, the milk yields of all cows were recorded up to 12 weeks study period. In intact group, the average milk yield was 8.2 litre / day at day 0, whereas it being 7.3 litre / day in treatment group, indicating decreasing pattern in subclinical mastitis group. After 6 weeks treatment the average milk yield was 8.1litre / day in treatment group and maintain upto 12 weeks of the study period. Here, the subclinical mastitis was easily identified and effectively managed by the farmers by using TANUVAS MASTI GUARD under field condition. Thus, properties of TANUVAS MASTI GUARD may be responsible easily identified with normalization of SCC, p^H of the milk and leading to increase milk yield. The present study findings indicated that TANUVAS MASTI GUARD controlling the incidence of subclinical mastitis and reducing the SCC and p^H of subclinical mastitis milk in dairy cows under field condition.

Table 1: TANUVAS MASTI GUARD Teat Protect Spray Performance in Normal and Subclinical Mastitis Groups

Groups	Particulars	Somatic Cell Count (cells per ml) in lakhs	P ^H of milk	Average daily milk yield in litres
I	0 Week	1.48 ± 0.14	6.5 ± 0.11	8.2
	1 to 6 weeks	1.54 ± 0.12	6.6 ± 0.16	8.2
	7 to 12 weeks	1.52 ± 0.16	6.5 ± 0.12	8.1
II	Before treatment	2.78 ± 0.18	6.8 ± 0.18	7.3
	1 to 6 weeks treatment	1.50 ± 0.12	6.7 ± 0.12	8.1
	7 to 12 weeks treatment	1.49 ± 0.14	6.5 ± 0.13	8.1



Fig 1: Applied teat spray after milking

Conclusion

In the present study 100% success was noticed without any post treatment complications in TANUVAS MASTI GUARD in subclinical mastitis in field condition. The TANUVAS teat protect application for subclinical mastitis had given good results and increased one liter of milk per day in a cow which could be due to the action of constituent ingredients present in the preparation.

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