

## PREVALENCE OF SUBCLINICAL MASTITIS IN DAIRY COWS OF THENI DISTRICT IN TAMILNADU

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**Abstract:** Mastitis has been and continues to be recognized as one of the major disease problems concerning the dairy industry. It is also one of the most costly diseases confronting the dairy farmer. Unlike the clinical mastitis, in sub clinical mastitis there is neither visual abnormality in milk nor in mammary gland. Therefore, knowledge of routine physical examination of udder and diagnostic screening tests for early detection of mastitis and proper treatment of affected animal is one of the paramount importances in order to minimize losses encountered due to sub clinical as well as clinical mastitis. This study was undertaken to evaluate the prevalence of subclinical mastitis in apparently healthy dairy Cows of Theni District in Tamil Nadu. The prevalence of subclinical mastitis in dairy cows of Theni District was 67.50 % out of 80 dairy cows tested. In addition, the result shows that there was a significance difference in SCC levels between subclinical mastitis infected dairy cow non infected healthy dairy cows

**Keywords:** Dairy cows, Sub clinical mastitis, Theni District.

### Introduction

Subclinical mastitis (SCM) is a major cause of economic loss in dairy herds that shows no gross inflammatory changes in udder, hence remains unnoticed unless investigated by employing laboratory tests. Often it is more prevalent than the Clinical mastitis, it usually precedes the clinical form, it reduces milk production, and adversely affects milk quality. Sub clinical mastitis causes colossal losses than clinical mastitis (Joshi and Gokhale, 2004). Today Mastitis stands second to Foot and Mouth Disease as a most challenging disease in high yielding dairy animals in India (Varshney and Mukherjee, 2002) as documentary but present scenario has been changed. As per reports of occurrence of mastitis in dairy animals, it stands at first position because prevalence of mastitis had been reported more than 90% in high yielder cross bred dairy cows (Sharma, 2003). Sharma *et al.* (2004) reported 70.32% incidence of sub clinical mastitis in buffaloes and Maiti *et al.* (2003) reported 70.37% incidence of sub clinical mastitis in cows. Somatic cell count (SCC) is the most common test to detect changes in the milk due to the inflammatory process. The greater the SCC in the milk, the higher the level of inflammation in the tissue. Hence, the present study was

undertaken to evaluate the prevalence of subclinical mastitis in apparently healthy dairy Cows of Theni District in Tamil Nadu.

### **Materials and Methods**

A total of 320 milk samples were randomly collected from 80 apparently healthy dairy Cows from Theni District of Tamil Nadu. Out of these 80 dairy Cows, 48 were Jersey crossbred and 32 were Holstein. At the time of sample milk collection, the breed of the cow, age of the cow, stage of lactation and health status of the mammary glands were recorded.

Aseptic procedures for collecting quarter milk samples as described by Hogan et al. (1999) and Quinn et al. (2004). were followed. During collection of milk sample, teats were washed, dried and sterilized with cotton soaked in 70% ethyl alcohol. The first 3-4 streams of milk were discarded. 15 ml. of milk were collected from each quarter into sterile vials. The collected milk samples were immediately kept in an insulated container with ice packs and were transferred to the laboratory for CMT, SCC, chemical analysis and bacterial culturing.



The California Mastitis test was applied to all milk samples involved as described by Coles (1986): The 3 ml of milk were taken from each of the 4 milk samples that were collected from each cow involved in this study and poured into the 4 shallow cups of the plastic paddle used in this test. Following that, an equal volume of the CMT reagent (Bovivet CMT Test Liquid, USA) was added to each cup and mixed thoroughly by a gentle circular motion of the paddle.

The results of the CMT were reflected by the degree of precipitation or gel formation and they were scored as follows: “Negative” when the consistency of the mixture is homogenous, liquid and not associated with visible changes; “trace” when the reaction was associated with slight precipitate that tended to disappear with continued movement of the paddle; “1+” when a distinct precipitate was formed but with no tendency toward gel formation; “2+” when the

mixture was thickened immediately with a suggestion of gel formation; “3+” when a distinct gel was formed, tended to adhere to the bottom of the paddle and during swirling a distinct central peak was formed.



Somatic cell count was measured microscopically by the method of Singh and Ludri (2000). Differential cell counting was also carried out to determine the presence of different cell types like lymphocyte, neutrophils, basophils, eosinophils and monocytes. The same Somatic cell count was confirmed through PortaSCC Milk Test (PortaCheck Inc, USA). The PortaSCC milk test digital reader was used to measure the SCC in simple and easy way. The kit contains all of the materials needed to perform the SCC test including digital reader, working solutions and strips. The SCC was measured as per the detailed product directions. The SCC was also verified with direct microscope to avoid error in SCC measurement.

### Results and Discussion

The prevalence of subclinical mastitis in dairy cows of Theni District was 67.50 % out of 80 dairy cows tested in Theni District as shown in the Table 1. In addition, results of the CMT showed that the prevalence of subclinical mastitis was significantly high in Jersey cross bred cows 70.83% followed by 62.50 % in Holstein Friesian cross bred dairy Cows.

**Table 1: Prevalence of subclinical mastitis in dairy cows of Theni district**

Breeds of cattle	Number of tested cattle	Number of non infected cattle	Number of infected cattle	Prevalence rates of subclinical mastitis in cows
Jersey Crossbred	48	14	34	70.83% <sup>a</sup>
Holstein Friesian Crossbred	32	12	20	62.50% <sup>a</sup>
Total	80	26	54	67.50%

Detection of subclinical mastitis was carried out by CMT.

Prevalence of subclinical mastitis in the study area differed significantly ( $P > 0.05$ ) based on Chi Square value.

**Table 2: prevalence of subclinical mastitis in examined quarter milk samples**

Number of dairy cattle tested	Total number of milk samples	Number of positive samples	Percentage (%) of positive samples
80	320	180	56.25%

Detection of subclinical mastitis was carried out by CMT.

Out of 320 milk samples collected from all 4 quarters of 80 apparently healthy Cows tested in this study, 180 quarters milk samples of 54 Cows showed positive results for subclinical mastitis by the CMT as shown in the Table 2. In the present study, the prevalence of subclinical mastitis in dairy cows of Theni District was 67.50 %. This finding is generally agreement with Tuteja et al., (1993) and he reported that the prevalence of subclinical mastitis on farms could range from 19 to 78%. The incidence of subclinical mastitis among dairy animal may be attributed mainly to poor hygiene practices, inadequate housing and malfunctioning milking machines, improper milking procedures and inadequate treatment methods. Several research studies concluded that the contagious organisms spread during the milking process (Bray and Shearer, 1996) causing an infection of the udder as a result of entering the teat canal (Rodenburg, 1990).

**Table 3: Somatic cell count in non infected and infected dairy cows**

BREEDS OF CATTLE	SCC *10 <sup>5</sup> CELL / ML OF MILK (MEAN± SE) IN NON INFECTED CATTLE	SCC *10 <sup>5</sup> CELL / ML OF MILK (MEAN± SE) IN INFECTED CATTLE
Jersey crossbred	1.87 ± 0.13 <sup>a</sup>	4.47 ± 0.12 <sup>b</sup>
Holstein Friesian Crossbred	1.92 ± 0.52 <sup>a</sup>	4.57 ± 0.21 <sup>b</sup>
Overall	1.90 ± 0.26 <sup>a</sup>	4.45 ± 0.16 <sup>b</sup>

The least square mean values carrying the different superscript are significantly different ( $p > 0.05$ )

In addition, the result shown that there was a significance difference in SCC levels between subclinical mastitis infected dairy cow non infected healthy dairy cows as shown in the table 3. The mean ± SE values of SCC levels in subclinical mastitis infected dairy cows was 4.45 ±

$0.16 \times 10^5$  cell / ml of milk and  $1.90 \pm 0.26 \times 10^5$  cell / ml of milk in case of non infected healthy dairy cows. Somatic cells are always present in milk and they increase due to mammary gland infections. When udders are healthy the somatic cell count (SCC) in milk is between 50,000 and 100,000 cells/ml (Skrzypek *et al.*, 2004). Skrzypek *et al.*, (2004) and Harmon (2001) reported that SCC is greater than 200,000 cells/ml means; it is assumed to be a threshold distinguishing a healthy udder from a diseased udder. The mean  $\pm$  SE values of SCC levels in subclinical mastitis infected Jersey crossbred cows and Holstein Friesian crossbred Cows were  $4.47 \pm 0.12$  and  $4.57 \pm 0.21 \times 10^5$  cell / ml of milk. Whereas the mean  $\pm$  SE values of SCC levels in non infected healthy Jersey crossbred cows and Holstein Friesian crossbred Cows were  $1.87 \pm 0.13$  and  $1.92 \pm 0.52 \times 10^5$  cell / ml.

### **Conclusion**

The result of the present study indicated a relatively high prevalence of subclinical mastitis in dairy cattle of the study area. Lack of maintenance of strict hygiene and poor management may be the contributory factors for subclinical mastitis. It is therefore important that farmers should adopt good management practices to prevent subclinical mastitis in dairy cows and ensure good quality of milk.

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