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## Parity wise prevalence of subclinical mastitis in cattle in organised farm

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### Abstract

In this study, a total 198 forequarters and 196 hindquarters of 100 cows were screened for subclinical mastitis on the basis of milk pH test, modified California mastitis test, somatic cell count, electrical conductivity test and culture examination. The highest quarters wise prevalence of SCM was found in somatic cell count (28.42%). The prevalence of SCM in forequarters was 15.65 percent, 19.69 percent, 18.68 percent, 15 percent, 14.64 percent and in hind quarters was 33.67 percent, 37.24 percent, 34.69 percent, 33.67 percent and 32.65 percent in milk pH, somatic cell count, electrical conductivity, modified California mastitis test and culture examination, respectively. Right hind quarters were more affected than the left forequarters and hindquarters are more affected then forequarters in each mastitis detection tests.

**Keywords:** Cattle, prevalence, SCM (Subclinical mastitis)

### Introduction

Mastitis is defined as inflammation of the parenchyma of mammary glands and is characterized by, chemical, physical, and usually bacteriological changes in milk and pathological changes in glandular tissues (Constable, 2017) <sup>[1]</sup>. Besides causing huge losses to milk production, the subclinically affected animals remain a constant source of infection to other herd mates and incidence of subclinical mastitis was also observed due to some risk factors, viz. age, lactation number, stage of lactation, method of milking and housing. (Swami *et al.*, 2017) <sup>[12]</sup>. Whereas in subclinical mastitis, visible changes are not observed in the udder and appearance of milk but milk production decreases with an increase in somatic cell count and secretion of pathogen in milk (Nithya *et al.*, 2017) <sup>[6]</sup>. Due to non-observable change in milk in subclinical mastitis it can be detected indirectly by several diagnostic methods including the somatic cell count (SCC), modified California mastitis test (MCMT), milk pH, electrical conductivity (EC) of milk and culture examination. So, the present study was undertaken with the aim to detect the prevalence of SCM in cattle in Bikaner area of rajasthan.

### Materials and Methods

#### Collection of milk samples

Collection of all the milk samples were done aseptically using proper antiseptic measures. Approximately about 30 ml of fore milk from each teat was collected in a sterilized vial from each quarter. The Modified California mastitis test (MCMT) of milk samples was conducted as per the method of Schalm and Noorlander (1957) <sup>[9]</sup>. The somatic cell count of milk samples was done using as described by Schalm *et al.* (1971) <sup>[10]</sup>. The electric conductivity (EC) is because of its soluble salt fraction. EC of milk samples was measured by Pen type EC035 (ATC) conductivity meter of ERMA instruments. The pH of milk shows status of udder health of the animal milk. The pH of milk was determined using single electrode Pen type digital pH meter PH-035 (ATC) of ERMA Instruments. The milk samples were collected aseptically. The milk sample was streaked on nutrient agar plate and MacConkey (MCA) agar plates in primary, secondary and tertiary pattern in order to obtain isolated colonies of bacteria. These petri dishes were incubated for 24 hours at 37 °C and identification of bacteria is done.

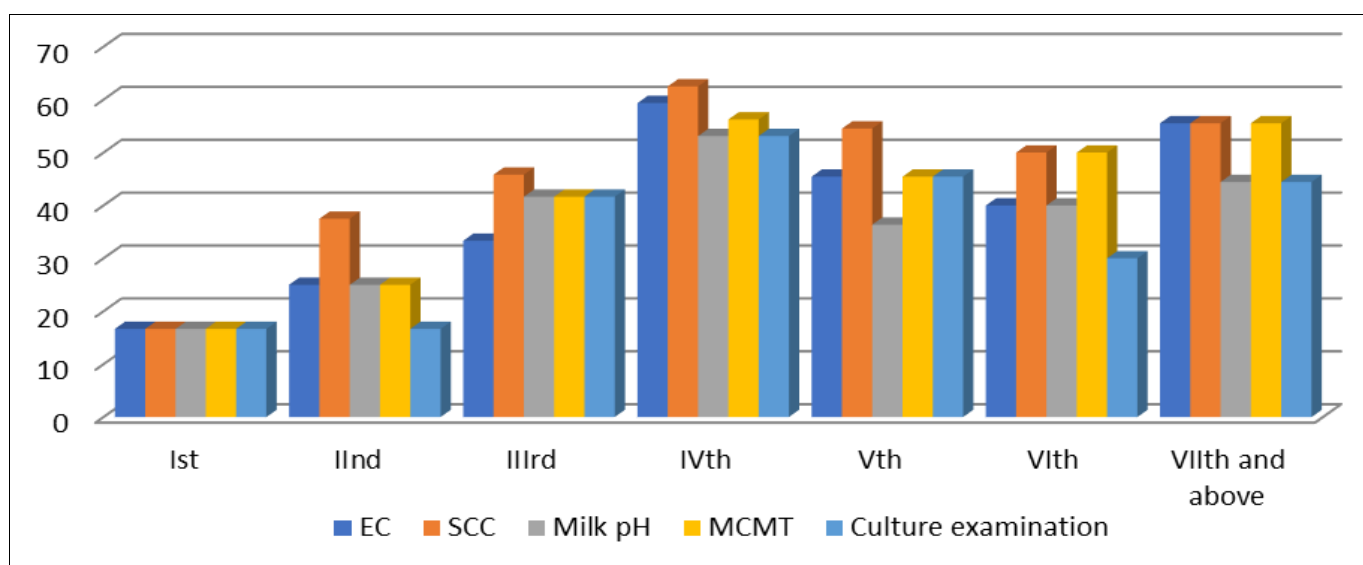
**Result and Discussion**

Data of parity wise prevalence of subclinical mastitis by various indirect diagnostic tests has been presented in Table 1 and depicted in Figure 1. In milk pH study shows 16.66 percent, 25 percent, 41.66 percent, 53.12 percent, 36.36 percent, 40.00 percent and 44.44 percent animals found positive for subclinical mastitis by milk pH test were in their Ist, IInd, IIIrd, IVth, Vth, VIth and VIIth and above parity, respectively. Parity wise highest prevalence of SCM was observed in animals of IVth parity, followed by VIIth and above, IIIth, VIth, Vth, IInd and least in Ist parity. In present study based on somatic cell count (SCC), 16.66 percent, 37.50 percent, 45.83 percent, 62.50 percent, 54.54 percent, 50 percent and 55.55 percent animals of Ist, IInd, IIIrd, IVth, Vth, VIth and VIIth and above parity were found positive for subclinical mastitis, respectively. The highest prevalence of subclinical mastitis based on parity was observed in animals belonged to IVth parity followed by VIIth and above, Vth, VIth, IIIrd, IInd and least in Ist parity. Electrical conductivity in the present investigation, 16.66 percent, 25 percent, 33.33 percent, 59.37 percent, 45.45 percent, 40.00 percent and 55.55 percent animals were of Ist, IInd, IIIrd, IVth, Vth, VIth and VIIth and above parity were found positive for subclinical mastitis by electrical conductivity test, respectively. The highest prevalence of SCM was observed in IVth parity, followed by VIIth and above, Vth, VIth, IIIrd, IInd and least in Ist parity. In the present study based on positive in MCMT, 16.66 percent, 25.00 percent, 41.66 percent, 56.25 percent, 45.45 percent, 50.00 percent and 55.55 percent animals suffered from SCM were in their Ist, IInd, IIIrd, IVth, Vth,

VIth and VIIth and above parity, respectively. Parity wise highest prevalence of SCM was observed in IVth parity, followed by VIIth, VIth, Vth, IIIrd, IInd and least in Ist parity. Culture examination in the present investigation, 16.66 percent, 16.66 percent, 41.66 percent, 53.12 percent, 45.45 percent, 30.00 percent and 44.44 percent animals were of Ist, IInd, IIIrd, IVth, Vth, VIth and VIIth and above parity were found positive for subclinical mastitis by culture examination, respectively. The highest prevalence of SCM was observed in IVth parity, followed by Vth and above, VIIth, IIIrd, VIth, IInd and Ist parity. It was observed that prevalence of subclinical mastitis in cows were lowest in first parity and subsequently increases up to IVth parity and then remain almost steady. In present investigation, parity wise highest prevalence of SCM was observed in IVth parity. The finding of our study was almost similar by all diagnostic tests viz. milk pH test, somatic cell count, electrical conductivity and modified California mastitis tests. The parity wise prevalence of present study was similar to Devi *et al.* (1997) [2] who also reported that the incidence of SCM was the lowest during first parity which increased with subsequent parities. Similar finding of higher prevalence of SCM in IVth parity were also recorded by Singh (2015) [11], Savita (2016) [8], Kachhawa (2018) [4], Mourya *et al.* (2020) [5] and Gupta (2021) [3]. It was found that the prevalence of sub-clinical mastitis increased with parity and attained peak in 4th to 7th parity. Due to lowered resistance of the animals as lactation number increased and improper functioning of the teat sphincter results of increased incidence of new intramammary infection (Sampimon *et al.*, 2009) [7].

**Table 1:** Parity wise prevalence of subclinical mastitis in cattle based on various diagnostic tests and culture examination

S. No	No. of Parity	Cow Screened	Diagnostic tests									
			EC (ms/cm)		Somatic cell count		Milk pH		Modified California mastitis test (MCMT)		Culture examination	
			Cows positive	Prevalence (%)	Cows positive	Prevalence (%)	Cows positive	Prevalence (%)	Cows positive	Prevalence (%)	Cows positive	Prevalence (%)
1	Ist	06	01	16.66	01	16.66	01	16.66	01	16.66	01	16.66
2	IInd	08	02	25.00	03	37.50	02	25.00	02	25.00	01	16.66
3	IIIrd	24	08	33.33	11	45.83	10	41.66	10	41.66	10	41.66
4	IVth	32	19	59.37	20	62.50	17	53.12	18	56.25	17	53.12
5	Vth	11	05	45.45	06	54.54	04	36.36	05	45.45	05	45.45
6	VIth	10	04	40.00	05	50.00	04	40.00	05	50.00	03	30.00
7	VIIth and above	09	05	55.55	05	55.55	04	44.44	05	55.55	04	44.44
Total		100	44	44.00	51	51.00	42	42.00	46	46.00	41	41.00



**Fig 1:** Parity wise prevalence of subclinical mastitis in cattle based on various diagnostic tests and culture examination

## Conclusion

It was concluded in present study that prevalence of subclinical mastitis in cows were lowest in first parity and subsequently increases up to IVth parity and then remain almost steady. In present investigation, parity wise highest prevalence of SCM was observed in IVth parity.

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