



## SHORT COMMUNICATION

# Occurrence of Staphylococcal Subclinical Mastitis in Cattle in and Around Jabalpur (M.P.)

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### ABSTRACT

Mastitis, caused by multifactorial etiopathological factors, is one of the costliest disease of dairy animals across the globe. The study was conducted for a period of more than 1 year i.e. from February 2015 to February 2016. For the epidemiological study 550 lactating cattle were screened by modified California mastitis test (MCMT). Clinical examination of animals and their udder/milk and phenotypic characterization of *Staphylococcus* spp. was carried out. The overall occurrence of Staphylococcal SCM was reported to be 16.36% (90/550) animal wise and 6.07% (127/2092) quarter wise as identified on the basis of colony morphology, characteristic colour changes on Mannitol salt agar, positive catalase test, haemolysis pattern on blood agar and DNase activity on DNase agar. Thirty one isolates were found coagulase positive as revealed by coagulase test and 96 were found to be coagulase negative *Staphylococci* (CNS). The occurrence was highest in right hind quarter (8.77%), in age group of 5-7 years (23.77%), in 5<sup>th</sup> parity (25.64%) and in early lactation (31.64%) period. Occurrence was also reported higher in monsoon and post monsoon.

**Keywords:** Mastitis, MCMT, *Staphylococcus* spp., Staphylococcal SCM

The present work was conducted in the Department of Veterinary Medicine, College of Veterinary Science & A.H., Nanaji Deshmukh Veterinary Science University (NDVSVU), Jabalpur (M.P) for a period of more than one year i.e. from February 2015 to February 2016. A total of 550 lactating cattle were screened belongs to the different dairy farms. Different parameters, about individual animals i.e. age, lactation number, stage of lactation and number of quarters affected was recorded. The milk sample was collected from each teat of cows indicating MCMT positive for subclinical mastitis. The udder and teats were cleaned and washed with potassium permanganate 0.01% then wiped with clean cloth. First few streams of foremilk was discarded and then about 8 ml of milk from each affected quarter was collected in fresh, sterile, labeled screw cap test tubes and brought to the department in ice for isolation and characterization of *Staphylococcus* spp. Analysis of data of occurrence studies was done by using Chi square test (Snedecor and Cochran, 1994).

Milk samples were collected for bacterial isolation and identification on primary and selective media, respectively, from 212 quarters found positive on MCMT. As many as 127 samples were found positive for *Staphylococcus* spp. as identified on the basis of characteristic colour changes on Mannitol salt agar (yellow or pink colour colony), colony morphology (Gram positive violet colour cocci arranged in grape-like clusters) positive catalase test, haemolysis pattern on blood agar (alpha and beta haemolysis) and DNase activity on DNase agar. Out of 212 milk samples collected from mastitic quarters, 31 (14.62 per cent) isolates were found coagulase positive *Staphylococci* (CPS) as revealed by coagulase test and 96 (45.28 per cent) isolates were found to be coagulase negative *Staphylococci* (CNS). The proportion of CPS was found lesser than CNS in Staphylococcal SCM in cattle. Tenhagen *et al.* (2009) observed 4.0% *S. aureus* and 46.80% *Staphylococcus* spp. in a milk samples submitted for microbiological examination. Contrary to this, Sindhu



*et al.* (2010) reported higher proportion (53.78%) of CPS and lesser proportion (11.76%) of CNS in quarter milk samples from buffaloes in Haryana. *Staphylococci* are the most important and prevalent mastitis causing organism globally including India. It is an opportunistic pathogen which survives on skin of udder and can infect udder via teat canal or any wound (Saravanajayam *et al.*, 2015). The occurrence of Staphylococcal SCM was higher in the hind quarters (7.16%) when compared to fore quarters (4.94%) which are in agreement with the reports of Khanal and Pandit (2013). The high chance of getting faecal and environmental contamination, furthermore, this could be attributed to the high production capacity of hind quarters (Radostits *et al.*, 2010). The occurrence was found higher in right side quarters (7.20%) as compared to left side quarters (4.94%). Because the animals adopted right side sitting posture which causes widening of teat canal due to pressure exerted to right side quarters hence, it provides exposure to entrance of organism.

Further, the study revealed that right hind quarter (8.77%) was found to be more susceptible as compared to left hind quarter (5.59%). The higher occurrence of right hind quarter could be further justified as common practice adopted by the milkers during milking the animals. So, there may be probability of infection because of the handling of right hind quarter at first by the milkman while milking the animal. The age wise occurrence of Staphylococcal SCM revealed highest occurrence of 23.77 per cent in cattle of 5-7 years age group and parity wise it was highest in 5<sup>th</sup> parity (25.64%) as compared to other parity. This finding agreed with Garedeew *et al.* (2015), who reported that the risk of *Staphylococcus* associated clinical and subclinical mastitis increases significantly with age and parity of the cattle. The increasing occurrence of mastitis along with age and parity could be partially explained by the possibility of exposure to the infectious agents with increasing age and parity.

Increased occurrence may be the result of increased incidence of new intramammary infection (IMI) or increased duration of Staphylococcal SCM infection (Sampimon *et al.*, 2009). The occurrence of Staphylococcal SCM was found highest in early lactation stage (31.64%). Similar to present findings, Zadoks *et al.* (2001) and Osteras *et al.* (2006) also reported high incidence of *S. aureus* IMI in early stage than late stage of lactation. High incidence of udder infection and mastitis in early lactation

might be due to the rapid physiological changes which take place in the mammary tissues post partum, resulting in reduced udder resistance (Oliver *et al.*, 1956).

Increased incidence of mastitis during early or peak lactation may be a result of negative energy balance (Suriyasathaporn *et al.*, 2000). Highest occurrence of Staphylococcal SCM was observed during July to October months (49.76%) may be due to more calving, unhygienic conditions, more fly population, high humidity and other stress factors associated with it. Monsoon months were associated with high humidity, high precipitation and air temperatures, such combinations were influencing growth of *Staphylococcus* spp. Osteras *et al.* (2006) studied effect of season on prevalence of both *S. aureus* and CNS in Norwegian dairy herds. However, they (Osteras *et al.*, op.cit.) have reported higher prevalence of *S. aureus* in summer season.

## CONCLUSION

On the basis of culturing of bacteria, overall occurrence of Staphylococcal SCM was reported 16.36% animal wise and 6.07% quarter wise. However, in subclinical mastitis the occurrence was reported as 58.82% animal wise and 59.90 % quarter wise. The proportion of CPS was lesser than CNS. Occurrence of Staphylococcal SCM was found to be highest in age group of 5-7 years, in right hind quarter, in 5<sup>th</sup> parity and in early lactation period. Occurrence was also reported higher in monsoon and post monsoon.

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