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High prevalence of multidrug resistance pattern and molecular characterization of antibiotic resistance gene in bovine subclinical mastitis in southern Rajasthan

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Background: In the present study 200 pooled milk samples were collected aseptically from healthy dairy Cattle and buffaloes of Sirohi district of Southern Rajasthan, India, and examined for the status of subclinical mastitis by Modified California mastitis test and Somatic cell count respectively. Positive samples were further investigated for isolation and identification of the major mastitis-causing pathogens: *S. aureus*, predominant Streptococcal species, and *E. coli* for assessing antimicrobial resistance models in southern Rajasthan.

Results: The results of the current study indicate high levels of multi-drug antibiotic resistance among bacteria that commonly cause mastitis, particularly ampicillin, penicillin, tetracycline, erythromycin, and methicillin. However, the highest sensitivity was conferred to ceftriaxone, gentamicin, and co-trimoxazole, suggestive of judicious use of these antibiotics in the treatment of bovine mastitis. Concurrent implementation of gradient PCR indicated the presence of *mecA* and *blaZ* genes in 51.9% and 81.4% of S. *aureus* isolates, respectively. Meanwhile, 56.6% of the streptococcal isolate contained the tetracycline-conferring *tetMgene*, and none of the streptococci contained the *ermB* gene. The 92.3% *E. coli* isolates contained the *tetA* gene and the *tetB* gene for tetracycline resistance.

Conclusion: The presence of a high prevalence of multidrug resistance in the dairy animal impacts milk quality and coexistence of pathogenic bacteria in milk which is an alarming situation that may threaten overall human health and has public health significance in this particular region. The high multidrug resistance against the commonly used antibiotic in the study needs a timely address towards the rational use of common antibiotics.

Keywords: Antimicrobial, Multidrug, Resistance, PCR, Prevalence, Sirohi.

Biography

Sudeep Solanki is an Assistant Professor Senior Scale at Rajasthan University of Veterinary and Animal Sciences, India. He has over several years' experience as an Assistant Professor and has a keen interest in laboratory diagnostics. He also has knowledge of veterinary pathology and is proficient in performing routine, non-routine tests. His background includes being an experienced trainer for diagnostic laboratories and writing training manuals, procedures, and policies. Additionally, he has good computer skills including the development and implementation of online courses.

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