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Investigation of Antibiotic Susceptibility and methicillin Resistance in*Staphylococcus aureus* Strains, isolated from Subclinical mastitis in Cattle, Mashhad

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Background and Objectives: *Staphylococcus aureus* is considered asan importantpathogen causing a wide range of diseases in humans and animals. The most important infection in animals is bovine mastitis. Since 1942, after two years of the discoveryof penicillin, *Staphylococcus aureus*became resistant to penicillin. Laterin 1959, the first MRSA had emerged. MRSA was first reported in 1972 in bovine mastitis.

Materials and Methods: In our study, 75 *Staphylococcus aureus* isolates from clinical mastitis in cattle were confirmed by the biochemical tests and then tested for five antimicrobials include:penicillin, cefoxitin, norfloxacin, trimethoprim-sulfamethoxazole, and tylosinby disc diffusionmethod, according to CLSI protocols. Finally, the presence of *mecA, B and C* genes was screenedby three different PCR assays.

Results: Resistance was highest againstpenicillin(n=44; %58.66),trimethoprim-sulfamethoxazol (n=28; %21) and tylosin(n=11; %14.6), but low to cefoxitin(n=3; %4) and norfloxacin(n=0; %0). In phenotypic test, only 3 strains were reported as MRSA (resistant to cephoxitin according to CLSI recommendations, 2018). Only one MRSA isolate harbored the *mecA*gene in PCR assay.

Conclusion: Our study results show thatmost tested antibiotics can still be used for the treatment of subclinical mastitis in cattle. Although the MRSA isolation rate was not high in the region, compared to some previous studies, stewardship strategies must be implemented to prevent the spread of resistant MRSA clones in animals. It is not clear if new genetic mechanisms are attributed to methicillin resistance in *S. aureus* in Iran.