Title: MOLECULAR DETECTION OF mecA and mecA VARIANT IN BOVINE Staphylococcus ASSOCIATED BOVINE MASTITIS FROM DAIRY FARMS IN TURKEY

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Abstract:

Staphylococcus spp. are among the main etiological agents of bovine mastitis and are often resistant to antimicrobials including the beta-lactams. The most studied resistance mechanisms of these bacteria to this class of antimicrobials are β-lactamases and low-affinity to penicillin-binding protein 2a (PBP2a) production determined by the presence of the chromosomal genes blaZ and mecA, respectively. Phenotypic expression of beta-lactam resistance in Staphylococcus isolates is usually heterogeneous. A study conducted earlier in Brazil detected the presence of a variant of the mecA gene in Staphylococcus spp. from bovine mastitis. This variant was not detected by PCR using primers based on sequence of mecA from human. Based on this, a new primer was designed in order to search for mecA gene variant in phenotypic methicillin-resistant Staphylococcus spp. bovine strains that tested negative for mecA gene amplification with primers previously reported in the literature. The present study evaluated Staphylococcus isolates from bovine mastitis in Turkey for mecA gene variant using the new primer designed in LABAC-VET/UFRRJ. For the present study, 134 strains of Staphylococcus spp. were selected from 17 different farms from the cities of Northwestern Turkey. PCR was performed to confirm the genus identity and detected the presence of the mecA gene or its bovine variant. All strains tested were confirmed by PCR as Staphylococcus spp. and 33 were identified as S. aureus. For detection of methicillin resistance a PCR was performed using primers based on sequence of mecA from human and primers based on sequence of mecA variant from bovine. Ten (n=10) strains were positive for the presence of the mecA variant and thirteen (n=13) were positive for the mecA gene. These results reveal that the spreading of mecA variant of bovine origin is a challenge and confirms the importance of PCR using primer based on sequence of mecA variant for a real detection of methicillin-resistant Staphylococcus in strains from bovine mastitis.

Key words: Bovine mastitis, MRSA, Staphylococcus spp.

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