Title: Prevalence of genes of types 5 and 8 capsular polysaccharide among *Staphylococcus aureus* isolated from dairy cattle in northeastern Brazil

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Abstract:

Staphylococcus aureus is recognized worldwide as a pathogen that causes skin and soft tissue infections and invasive diseases. Capsular polysaccharides (CPs) are virulence factors that contribute to the pathogenesis of staphylococcal infections. Staphylococcal CP5 and CP8 have similar trisaccharide repeating units, which consists of N-acetyl mannosaminuronic acid (ManNAc), N-acetyl-L-fucosamine (L-FucNAc) and N-acetyl-Dfucosamine (D-FucNAc). The aim of the present study was to determine the prevalence of genes of types 5 (CP5) and 8 (CP8) capsular polysaccharide among *S. aureus* isolates from bovine mastitis in northeastern Brazil. *S. aureus* species confirmation was performed by PCR amplification of the nuc gene. Genotyping of CPs types were performed by PCR amplification too. The amplicons were purified and bidirectionally sequenced. Sequences were aligned using the BioEdit v.7.0.9 software and compared with those available in the GenBank database by Basic Local Alignment Search Tool. Four hundred and ninety five milk samples were collected from 14 cattle herds and 100 isolates were presumptively identified as *S. aureus* by primary culture and biochemical analysis. Of the 100 isolates presumptively identified as *S. aureus*, 72 (72%) were confirmed as *S. aureus* after amplification of the nuc gene (approximately 296 bp) by PCR. According to the sequencing assay, the CP5 (amplicon of approximately 555 bp) and CP8 (amplicon of approximately 608 bp) genes were identified in 70 (97.22%) and nine (12.5%) isolates, respectively. Only one isolate (1.39%) did not show the CP5 or CP8 genes**.** The CP5 was the predominant capsular genotype among the *S. aureus* isolates evaluated in the present study. These data suggest that *S. aureus* vaccines containing CP5 and CP8 would be effective for controlling bovine mastitis in northeastern Brazil.

Keywords: mastitis, bovine, *S. aureus*, capsular polysaccharide, antigens

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