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Characterization of *Staphylococcus aureus* caused sub-mastitis in ewes

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Statement of the problem: In recent years, clonal lineages of *Staphylococcus aureus* from animals have emerged. Subclinical mastitis, a financially important disease of dairy sheep, can contribute to dissemination of strains with zoonotic potential to the general population through dairy product consumption and to farm workers through direct contact with animals. Objective of the study was the molecular characterization of *S. aureus* isolates from milk samples of ewes with subclinical mastitis in Greece.

Methodology: In total, 28 *S. aureus* strains were tested, which had been isolated from ewes with subclinical mastitis (defined as lack of clinically evident systemic or mammary abnormalities, but with simultaneous bacterial isolation and increased somatic cell counts). They had been identified by use of catalase and coagulase production test, combined with detection of nuc gene. Susceptibility to various antimicrobial agents was performed by the automated VITEK[®]2 system. The detection of the genes (*mecA*, *ermA*, *ermC*, *tetL*, *tetM*, *tetO*, *tetK*) was assessed by PCR, while, clonality of isolates was defined by Multi Locus Sequence Typing (MLST).

Findings: Rates of resistance to penicillin, ampicillin, ceftiofur, erythromycin, clindamycin, tetracycline and fusidic acid were 10%, 10%, 0%, 7%, 7%, 7% and 0%, respectively. The *ermC* and *tetK* genes were found to be associated with erythromycin and tetracycline resistance. Molecular typing revealed that 19 isolates (68%) belonged to ST133; the remaining isolates were distributed among ST5 (3 strains), ST2011 (2 strains), ST7 (1 strain), ST30 (1 strain), ST130 (1 strain) and ST581 (1 strain).

Conclusions & significance: This is the first report of predominant *S. aureus* clones from ewes in Greece. The findings indicate that ST133 *S. aureus* predominates in sheep milk in Greece, a clone considered predominant in small ruminants. Although lack of extensive antibiotic resistance in the tested strains is indicative of correct therapeutic management of *S. aureus*-associated infections, continuous surveillance is important to monitor development of the situation, especially as these clones might be of zoonotic concern.

Biography

Efi Petinaki is clinical microbiologist, Professor and Head of Department of Microbiology of the University Hospital/Medical School of University of Thessaly in Larissa (Central Greece). Her research interest is focused on the epidemiology of nosocomial infections, on the characterization of mechanisms of antimicrobial resistance and on the application of molecular methods for the identification of etiological agent of infectious diseases. She is responsible for the teaching of Microbiology in several undergraduate and postgraduate programs of Greek Universities and she is coordinator in many National research studies.

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