

# Title: COAGULASE-NEGATIVE STAPHYLOCOCCI: MALDI-TOF VERSUS GENE *tuf* SEQUENCE-BASED IDENTIFICATION

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## Abstract:

Coagulase-negative staphylococci (CoNS) is an important opportunistic pathogens, associated with catheter infections and others medical devices which involve biofilm's formation. In hospital services these microorganisms represent a serious complication for immunocompromised patients, contributing to higher morbidity and mortality. Although the identification of species of CoNS have a clinical importance, laboratory limitations are still a challenge in distinguishing these pathogens. The purpose of this study was to characterize 182 CoNS species isolated from sterile body sites of hospitalized patients of tertiary care in Curitiba – PR by four different methodologies: phenotypic conventional (biochemical tests), automated (Vitek 2<sup>®</sup>), genotype (sequencing of the *tuf* gene) and proteomic (Matrix-assisted laser desorption ionization time of flight mass spectrometry, MALDI-TOF). Susceptibility test to commonly used antibiotics for treating infections caused by CoNS (oxacillin, daptomycin, linezolid and vancomycin) was also evaluated. Among the techniques proposed to characterize CoNS species, MALDI-TOF presented greater speed and accuracy, when compared to the gold standard technique by sequencing of the *tuf* gene, with concordance *kappa* index of 0,98. Vitek 2<sup>®</sup> showed *kappa* index of 0,868 compared with of *tuf* gene and compared with the phenotypic identification, index 0,608. Data from this study demonstrated that MALDI-TOF technique is a fast and effective method for identifying CoNS. Biochemical methods are time consuming and require technical skilled, while molecular techniques are not routinely available in many diagnostic laboratories. Regarding the susceptibility profile, 87,4% (159) of isolates exhibited resistance to oxacillin and presented *mecA*, while 11,5% (21) were sensitive to this antibiotic and *mecA* was not detected. All the samples were sensitive to daptomycin, linezolid and vancomycin.

**Keywords:** Coagulase-negative Staphylococci; Identification; Resistance.