

Antibiotic Resistance Pattern and Identification of Enterotoxin Genes in Coagulase Negative Staphylococcus Isolated From Bulk Tank Milk Samples of Dairy Industry Farms in Mashhad

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Background & Objectives: The aim of this study was to investigate the prevalence and antibiotic resistance of Coagulase negative Staphylococci in bulk tank milk samples in Mashhad and analyze the frequency of genes encoding the staphylococcal Enterotoxins SEA, SEB, SEC, SED and SEE. Coagulase negative Staphylococcus was found in 37 (37%) out of 100 raw milk samples.

Methods: Totally 44 coagulase negative staphylococcus isolates including chromogenes staphylococcus (14 strains, 31.8%), hycus staphylococcus (12 strains, 27.2%), caprae staphylococcus (10 strains, 22.7%), saprophyticus staphylococcus (5 strains, 11.3%), epidermidis staphylococcus (2 strains, 4.5%) and simulanse staphylococcus (one strain, 2.2%) were investigated on the basis of conventional Methods. Total isolates confirmed by polymerase chain reaction (PCR). The antimicrobial susceptibility testing of isolates was determined against 14 antimicrobial agents using the disk diffusion Methods.

Results: The results showed that 44 (100%) of the isolates were resistant at least to one of the antibiotics tested. The highest level of resistance was observed against penicillin (79.54%), cefixim (79.54), streptomycin (56.81%) and cloxacillin (50%). 100% and 97.73% isolates were sensitive against ciprofloxacin and vancomycin. of 44 strains studied, 10 (22.73%) were positive for one genes encoding the enterotoxins. The gene coding for SEA (sea), was the most frequent (60%), followed by sec (40%). No CNS was found to be positive for seb, sed and see genes.

Conclusion: regarding high levels of staphylococcal contamination in milk and remarkable levels of resistance against some antibacterial agents and presence of enterotoxigenic Staphylococcus strains in raw milk poses a potential health hazard to consumers.

Keywords: Coagulase Negative Staphylococcus; Antibiotic Resistance; PCR; Enterotoxin