

Inducible Clindamycin Resistance Due to Expression of Erm and Msr Genes in *Staphylococcus aureus*: Report from Teaching Hospitals of Tabriz University of Medical Science

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Background & Objectives: *Staphylococcus aureus* is an organism well known for causing wide range of hospital and community-acquired infections worldwide. Increasing frequency of MRSA infections and changing patterns in antimicrobial resistance have led to renewed interest in the use of MLSB antibiotics to treat such infections. Clindamycin has long been an attractive option because of its efficacy against MSSA and MRSA. Clindamycin resistance can be constitutive or inducible. The main aim of this study was to determine phenotypic and genotypic aspects of inducible clindamycin resistance in *S. aureus*.

Methods: The isolates were identified as *S. aureus* based on standard bacteriological procedures. Antibiogram was performed by disk agar diffusion Methods. Inducible clindamycin resistance was performed by D-zone test. Extraction of genomic DNA was carried out by SDS-Proteinase K Methods modified with CTAB. The Multiplex-PCR assay was performed for the distribution of *mecA*, *nuc*, *femB*, and genes coding for constitutive and inducible clindamycin resistance.

Results: Among 1,257 clinical and nasal (admitted patients in cardiac and hemodialysis wards) specimens, 197 *S. aureus* were isolated and identified. Antibiotic pattern incidence of MLSBi and MLSBc is shown in the following table. However *nuc*, *femB* and *mecA* genes respectively were revealed in 197 (100%), 181 (91.8%) and 96 (48.7%) strains while. Also Multiplex-PCR for *ermA*, *ermC*, *ermB* and *msr* genes respectively were revealed in 77(39.1%), 77(39.1%), 22(11.3%) and 12(6.1%).

Conclusion: Constitutive MLSB resistance was the most frequently encountered phenotypic pattern, *ermA* was the most prevalent gene, and *erm(A,C)* was the most frequent gene combination(18.2%). Constitutive resistance was predominant particularly among MRSA. *msr* was observed in minimum combination with the *erm* genes.

Keywords: *Staphylococcus aureus*; Clindamycin; Multiplex PCR