

Comparison of Disc Diffusion Methods and PCR for Meca Gene in Detection of Methicillin Resistant *Staphylococcus aureus*

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Background & Objectives: Accuracy and immediacy in the detection of methicillin resistance are of key importance in ensuring the correct antibiotic treatment in infected patients and control of methicillin resistant *Staphylococcus aureus* (MRSA) in both community and hospital settings. The aim of our study was to evaluate the efficacy of disc diffusion tests to characterize MRSA and compare it with PCR in detection of *mecA* gene.

Methods: Methicillin resistance *S. aureus* isolated from Iranian healthy students was assessed using the CLSI disk-diffusion methods with a cefoxitin 30-mg disk (Mast,UK) in comparison with an oxacillin 10mg disk (Mast,UK). PCR-based detection of *mecA* gene was considered as the reference standard.

Results: Out of 80 *Staphylococcus* isolates 1 were methicillin resistant by oxacillin disc diffusion test, 4 were resistant by cefoxitin disc diffusion test, and 2 were *mecA* gene positive by PCR. The cefoxitin showed 100% sensitivity and 99% specificity, whereas the sensitivity and specificity of oxacillin were 50% and 100%, respectively.

Conclusion: Comparing two phenotypic methods for MRSA screening in routine microbiology laboratory, Cefoxitin disc have better sensitivity and specificity in comparison with oxacillin disc. However, according to the different results of these tests and PCR, it seems that phenotypic expression of methicillin resistance may alter depending on the growth conditions for *S. aureus*, such as temperature or osmolarity of the medium and some other factors.

Keywords: Disc Diffusion; PCR; Meca