

Biofilm Formation in *Staphylococcus Aureus* and its Relation to Phenotypic and Genotypic Criteria

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Abstract

Background and Objective: Biofilm is a complex microbial community embedded in a self-produced extracellular polymeric matrix. We aimed to study the extent of biofilm formation by *S. Areas* isolates and its relation to some phenotypic and genotypic criteria.

Material and Methods: One hundred-fifty strains of *Staphylococcus aureus* isolated from Gorgan were studied. Microtiter plate assay method was used for investigation of biofilm formation. The biofilm formation of strains were recorded and its relation to accessory gene regulator (*agr*) and antibiotic resistance were assessed by X^2 test.

Results: Eighty-four isolates (56%) were able to form biofilm. The strength of biofilm formation in *agr* group I was more than that of other groups. The biofilm formation among *S. Areas* isolated from the wound and urine (both with 75 %) had the highest capability. Methicillin-resistant isolates had a greater ability to biofilm formation.

Conclusion: Methicillin resistant isolates had a greater ability to biofilm formation. Given the importance and treatment related problems of Methicillin-Resistant *Staphylococcus Aureus* (MRSA) especially Community Acquired-Methicillin-Resistant *Staphylococcus Aureus* (CA-MRSA), it is a necessity to control or remove the biofilm formation alongside antibiotic treatment.

Keywords: *Staphylococcus Aureus*, Biofilm, Microtiter Plates Assay, PCR