Frequency assay of ica genes on biofilm and slime formation in clinical isolates of \textit{Staphylococcus aureus} harboring mecA gene

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**ABSTRACT**

**Keywords:** Methicillin resistant \textit{Staphylococcus aureus} (MRSA) strains is one of the most important health care problems and life-threatening in worldwide. The methicillin resistant \textit{S. aureus} strains producing biofilm and slime have potential to colonize and transmit. The present study was conducted to understand the molecular correlation of ica genes on biofilm and slime formation in methicillin resistant \textit{S. aureus} harboring mecA gene.

**Materials and Methods:** In this cross-sectional study, a total of 85 bacterial isolates suspected to \textit{S. aureus} were prepared from clinical samples. The antibiotic susceptibility testing of bacteria to the penicillin, gentamicin, oxacillin, ciprofloxacin, ofloxacin and vancomycin was carried out based on disk diffusion agar method. Biofilm and slime formation of bacteria were examined by tissue culture polystyrene plate (TCP) and Congo red agar (CRA). The presence and frequency of ica\textsubscript{A}, ica\textsubscript{B}, ica\textsubscript{C}, icaD and mecA genes were detected by multiplex PCR.

**Results:** 45 out of 85 (52.94%) \textit{S. aureus} isolates were resistant to the methicillin. All of methicillin resistant \textit{S. aureus} were able to produce biofilm and slime. Consumedly surface hydrophobicity was seen in 55.55% and 100% of strains producing strong biofilm and slime, respectively. The ica\textsubscript{A}, ica\textsubscript{B}, ica\textsubscript{C}, icaD genes were detected in all isolates carrying mecA gene.

**Conclusion:** It seems that the ica\textsubscript{A}, ica\textsubscript{B}, ica\textsubscript{C}, icaD genes are required for polysaccharide intercellular adhesion, bacterial attachment, biofilm and slime production in \textit{S. aureus} isolates. Further molecular studies on ica operon and related mechanisms are needed to accurate understanding of the process.