

## Abstract

*Staphylococcus* spp are recognized as the most frequent causes of biofilm associated infections. This exceptional status among biofilm-associated pathogens is due to the fact that staphylococci are frequent commensal bacteria on the human skin and mucous surfaces. The ability to form a biofilm seems to play an essential role in staphylococcal infections Polysaccharide intercellular adhesin (PIA), which is an important component of the staphylococcal biofilm, is synthesized by enzymes encoded by the *ica* operon. Biofilm related infections are reversible and usually difficult to respond to treatment. In this study, the biofilm-forming capacity of 100 clinical isolates of *Staphylococcus* spp was examined. All *Staphylococcus aureus* (27 isolates) and *Staphylococcus epidermidis* (73 isolates) isolates were identified by traditional microbiological methods. Staphylococcal isolates were tested for their ability to produce biofilm using the Congo red (CRA) and Test tube (TM) assay methods. The presence of *icaA*, *icaD*, *icaB*, *icaC* and *icaR* genes was determined by PCR technique. One hundred staphylococcal (27 *S.aureus* and 73 *S.epidermidis*) isolates, were identified from 100 clinical samples. Out of 100 staphylococcal isolates, 68% were biofilm producers. A total 16%, 19%, 14%, 12%, and 11% were positive for *icaA*, *icaD*, *icaB*, *icaC* and *icaR* respectively. By PCR method, we identified that among 68% biofilm producer isolates (TM and CRA) 27% and 30% were positive for *ica* operon and 45% TM<sup>+</sup> 65% CRA<sup>+</sup> also were negative for *ica* operon. The results obtained showed that inconsistent with other researches; biofilm formation in Staphylococcal isolates was not associated with present of *ica* operon and presumably depend on several factors.

Keywords: Biofilm formation, *ica* operon, CRA, TM, *Staphylococcus*



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**Title:**

**Molecular detection of ica operon genes associated with biofilm formation of *Staphylococcus* Spp. isolated from clinical samples in Zabol city**

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