

Relationship Between PpyR, PslA And PelA Genes with Biofilm Formation in Clinical Samples of *Pseudomonas aeruginosa* Strains

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Background & Objectives: *Pseudomonas aeruginosa* is the opportunistic pathogen which causes the most important nosocomial skin and urinary tract infections in patients. Furthermore immunocompromised and cystic fibrosis patients are the most victims of *Pseudomonas aeruginosa* infections. Biofilm-forming ability of *Pseudomonas aeruginosa* is considered an important virulence factor for the establishment of chronic infections and antibiotic resistance. The ppyR, pslA and pelA are three key genes which have role in developing biofilm formation. The aim of this study was to investigate the presence of these genes by Multiplex PCR in *P.aeruginosa* strains isolated from various clinical samples from the Baqiyatallah Hospital.

Methods: A total of 110 *P.aeruginosa* strains isolated from various clinical samples of blood, wounds, urine, and tracheal aspirate were used in this study. Phenotypic assay of biofilm formation was performed by spectrophotometry Methods. Also we designed three sets of specific primers for Multiplex PCR to detect the presence of ppyR, pslA and pelA genes.

Results: Phenotypic assays showed all clinical samples were capable to biofilm formation; although the amount of biofilm formation by *P.aeruginosa* strains was difference. Multiplex PCR results showed that all strains have at least two biofilm-forming genes. Also a significant relationship was obtained between phenotypic and genotypic assays in all biofilm-forming strains.

Conclusion: The results of this research indicate that ppyR, pslA and pelA are three genes with high frequency in clinical strains, so that can participate as bacterial virulence factors by their potential to biofilm production. Therefore our study can help future investigations for find effective factors on molecular processes involved in the formation of biofilms.

Keywords: Biofilm; *Pseudomonas aeruginosa*; Clinical Infection