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The effect of Pyocyanin on Foley balloon latex catheter-associated pseudomonal biofilm and in increasing the resistance degree to anti-pseudomonal agents

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Abstract:

Background: *Pseudomonas aeruginosa* produced the maximum amount of pyocyanin pigment as a secondary metabolite as a virulence factor that responsible for increase pathogenesis. The study aims to improve our understanding of the emergence of pseudomonal biofilm formation by pyocyanin production. The correlation between minimal inhibitory concentration (MICs) values of ceftazidime, piperacillin, and ciprofloxacin with pyocyanin production is also targeting in this study. Materials and Methods: A total of 96 isolates from patients with catheter-associated urinary tract and wound infections were included in this study. Pyocyanin production was determined. The antimicrobial susceptibility tests including, Kirby– Bauer and E-test, were estimated. Finally, the detection of biofilm production, which includes microtiter plate assay and biofilm formation on FBCL, was done. Results: One hundred thirty-eight isolates of *P. aeruginosa*, isolates that produced biofilm were 96 (69.5%). There is a progressive relationship between pyocyanin production level and biofilm production. Furthermore, there is a relationship between MICs values of ceftazidime and pyocyanin production level. Conclusion: Our suggestion showed that pyocyanin could be one of the factors that help to induce biofilm formation. Wherefore, sessile cells were showed an increase in isolates that have higher pyocyanin levels more than others. Furthermore, pyocyanin increases the resistance against ceftazidime, which could be of clinical significance.

KEY WORDS: Minimal inhibitory concentration, Pseudomonal biofilm, Pyocyanin
