عنوان مقاله:

Evaluation of Biofilm Formation and Frequency of Genes Encoding Curli Fiber, Colanic Acid Capsule and Fic Fimberia Among Uropathogenic Escherichia coli Isolates With Strong Cell Surface Hydrophobicity

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خلاصه مقاله:

Background: The uropathogenic Escherichia coli (UPEC) is an important bacterium that colonizes the bladder mucous membrane as biofilm and causes urinary tract infection (UTI). In addition, UPEC favors long-term persistence and leads to relapses in untreatable UTI. Further, bacterial hydrophobic interactions play a role in bacterial adherence to the surface and facilitate biofilm formation due to adhesion. Similarly, cell surface hydrophobicity (CSH), fimbriae, curli fiber, and colanic capsule allow UPEC isolates to initiate infections. Considering the above-mentioned explanation, this study evaluated the association between genes encoding curli fimbriae, colanic acid (CA) capsule, and fic fimbriae with biofilm formation and CSH among UPEC isolates. Methods: To this end, 100 Escherichia coli strains were isolated from the urine samples of the patients and were diagnosed by biochemical tests. Furthermore, a tissue culture plate method was used to determine the capacity of biofilm formation, followed by conducting microbial adhesion to hydrocarbons method for CSH determination. Finally, the presence of csgA, csgD, rcsA, rcsC, and foc genes was determined by applying polymerase chain reaction. Results: Totally, Fo, YY, and YA isolates had strong, moderate, and weak biofilm formation capacity, respectively. Moreover, FY and WA isolates had strong and moderate CSH. Similarly, among the isolates with strong CSH, "Y, 1", and a isolates had strong, moderate and weak biofilm formation capacity and the prevalence of csgA, csgD, rcsA, and foc genes was MP, MO, MO, IF, and Y9, respectively. Based on the findings, no significant difference was observed between the frequency of csgA, csgD, rcsA, rcsC, and foc genes among the strong, moderate, and weak biofilm producers. Conclusions: In general, there is an association between CSH and the biofilm formation of UPEC isolates. This result showed the role of CSH as an effective factor on bacterial adhesion for the first stage of biofilm formation. However, differentiating the strains is not confirmed regarding their .ability to form biofilms and their CSH and the presence of all studied genes

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