Title: Biofilm formation by different genotyped uropathogenic *Escherichia coli* (UPEC)

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Uropathogenic *Escherichia coli* (UPEC) is the main bacterial pathogen associated with urinary tract infections (UTI). The expression of adhesion factors is the most important determinant of pathogenicity among UPEC strains, since the attachment of UPEC to urinary tract cells prevents the removal caused by the urine flow. Adhesion factors may contribute to the virulence of several other ways; for example, mediating the initial biofilm formation. Formation of bacterial biofilms has imposed deleterious clinical impact and is recognized as being responsible for much of the chronic, recurrent and difficult-to-treat infections. In order to assess the influence of virulence factors on bacterial adhesion, biofilm formation assays were conducted with different human urine samples (n = 14) exploiting genotyped UPEC strains recovered from clinical samples. Six (40%) of out 15 UPEC strains formed biofilm in half of the urine samples tested at least. The most efficient genotype was *fyuA*$^+$*chuA*$^+$*pap*$^+$*cnf*$^+$*csgA*$^+$ that formed biofilm in 13 of out 14 tested urine samples. Additionally, an efficient biofilm-forming strain had a genotype formed by a combination of EAEC and UPEC genes (*fyuA*$^+$*yfcV*$^+$*chuA*$^+$*vat*$^+$*csgA*$^+$*pCVD*$^+$*aggR*$^+$) and showed to form biofilm in 9 of out 14 tested urine samples. The other 5 biofilm-forming genotypes had typical genetic combinations of UPEC strains. Among best biofilm-forming genotypes, the common genetic array was *fyuA*$^+$*chua*$^+$*csgA*$^+$. Additionally, it became clear that some urine samples promote the biofilm formation at higher levels when compared with the general median of the formed biofilms. In conclusion, our data show that a specific genetic combination is critical for the biofilm formation by UPEC strains rather than the total load of genetic factors. Additionally, it appears that the urine composition can also influence the biofilm formation.

Palavras-chaves: biofilm, UPEC, genotype

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