

عنوان مقاله:

Investigation of the Role of Virulence Gene in Biofilm Formation of Escherichia coli Obtained from Clinical Specimens in Baghdad

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خلاصه مقاله:

Several strains of Escherichia coli (E. coli) cause many diseases, including gastrointestinal illness, urinary tract infections, pericarditis, and septicemia. The present study aimed to evaluate the prevalence of the Universal Stress Protein (USP) virulence gene and the level of antibiotic resistance patterns associated with biofilm formation of E. coli in patients with infected burns, wounds, and urinary tract infections. Cases were selected from two hospitals of Al-Yarmouk Educational Hospitals and Baghdad Medical City, Baghdad, Iraq. The clinical specimens were classified as E. coli according to CLSI. The frequency of the USP gene was determined using the PCR technique. The rate of biofilm formation and antibiotic resistance were determined using microplate and agar diffusion methods, respectively. The recorded data on the distribution of E. coli isolates indicated that 33 (66%) of isolates were recovered from females and 17 (34%) of them were obtained from males ($P=0.02$). The results of the distribution of the isolates indicated that 16 (32%) and 18 (36%) isolates were recovered from 10–20 and 21–30 and 31–40 years old participants, respectively. The recorded data revealed that the highest rate of E. coli isolates was obtained from urine samples while the lowest one was recovered from burn samples ($P<0.0001$). The frequency of USP gene distribution from all strains was analyzed by the PCR and gel electrophoresis techniques. The results of the PCR test identified the USP gene (toxin gene) at 435 bp. The USP gene was presented in 41 (82%) E. coli isolates of all samples, including 28 isolates (46%) in women and 13 isolates (26%) in men with no significant association. Concerning the distribution due to the age groups, the USP gene was presented in 11 isolates (22%) in the age group of 10–20 years, while 14 (28%) and 16 (32%) isolates in the age groups of (21–30) and (31–40), respectively. Concerning the distribution of samples, the USP gene was presented in 1 isolate (2%) from the burn, 4 isolates (8%) from the wound, and 36 isolates (72%) from the urine. The microtiter plate method was used to evaluate biofilm formation and the results showed that 7 (14%), 28 (56%), and 15 (30%) isolates were weakly, moderately, and strongly adherent, respectively. These results filled the national gap about virulence and antimicrobial resistance of E. coli responsible for several diseases and should be used to improve the management of patients in Baghdad.

کلمات کلیدی:

Antibiotic resistance, biofilm, E. coli, usp gene

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