

عنوان مقاله:

Analysis of Integrons and Associated Gene Cassettes in Clinical Isolates of Escherichia coli

محل انتشار:

مجله علمی پژوهشی دانشگاه علوم پزشکی زنجان، دوره 23، شماره 99 (سال: 1394)

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خلاصه مقاله:

Background and Objective: Horizontal transfer of integrons is the most successful transfer of antimicrobial resistance genes and the emergence of multi-drug resistance strains. The aim of the present study was to investigate the prevalence of class I and II integrons and their gene cassette assortments and antibiotic resistance profile in Escherichia coli strains isolated from diarrheal and urine specimens. **Materials and Methods:** In this cross-sectional study 200 E. coli isolates were collected from the clinical urine and stool specimens. After identification of isolates by biochemical tests, the antibiotic susceptibility test (disk diffusion method) was done according to CLSI advice against 13 antibiotics. DNA extraction was performed and class 1 and 2 integrons and associated gene cassettes were determined using PCR method. **Results:** The highest resistance was found against erythromycin (96.5%) and 98.5% of isolates were susceptible to imipenem. Out of 200 isolates, class 1 integron was detected in 181 (90.5%) isolates and 78.5% of these isolates were positive for the gene cassettes. Also, class 2 integron was detected in 15 (7.5%) isolates and 2% of them were positive for the gene cassettes. Dihydrofolate reductase (dfrA) and aminoglycoside adenyl transferase (aad) gene cassettes were found most frequently in intl1 positive isolates. **Conclusion:** These results indicate that class 1 integrons are widespread among E. coli isolates. Therefore, appropriate surveillance and control measures are essential to prevent further spread of integron producing isolates. **References** 1- Goossens H, Grabeind B. Prevalence and antimicrobial susceptibility data for extended- spectrum β - lactamas and AmpC-producing Enterobacteriaceae from the MYSTIC program in Europe and United States (1997- 2004). Diag Microbiol Infect Dis. 2005 53: 257-64. 2- Foxman B. Epidemiology of urinary tract infections: incidence, morbidity and economic costs. Dis Mon. 2003 49: 53-70. 3- Turner PJ. Extended-spectrum β -lactamases. Clin Infect Dis. 2005 41: 273-5. 4- Gillings MR. Integrons: past, present and future. Microbiol Mol Biol Rev. 2014 78: 257-77. 5- Collis CM, Hall RM. Site-specific deletion and rearrangement of integron insert genes catalyzed by the integron DNA integrase. J Bacteriol. 1992 174: 1574-85. 6- Ravi A, Avershina E, Ludvigsen J, L'Abbe e-Lund TM, Rudi K. Integrons in the intestinal microbiota as reservoirs for transmission of antibiotic resistance genes. Pathogens. 2014 3: 238-48. 7- Clinical and Laboratory ... Standards Institute. 2013. Performance standards for antimicrobial suscep

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