Evaluation of class 1, 2 and 3 integrons in clinical Salmonella enteritidis strains by PCR method

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Abstract

Background & Objective: Gastroenteritis is one of the most common Salmonella infections in human which is caused by Salmonella serotypes especially S.enteritidis and S.typhimurium. The spread of multi-drug resistant (MDR) Salmonella strains is a serious global issue. Obtaining integrons is considered as one of the most important factors in multi-drug resistance among gram-negative microorganisms, particularly in intestinal bacteria. The aim of this study was to investigate the molecular level of class 1, 2 and 3 integrons which are the most important integrons in Salmonella enteritidis isolated from patients using Multiplex PCR.

Methods: In this study, 567 stool and blood samples were collected from patients with acute gastroenteritis and Salmonella enteritidis were detected using culture method, standard biochemical test, and PCR. After DNA extraction, the presence of class 1, 2, and 3 of integrons was analyzed by multiplex PCR.

Results: From 567 samples, 48 strains were identified as Salmonella enteritidis. Of all 48 strains, 45 strains (95%) had the intI gene, 7 strains (14.5%) had the intII gene, and 2 strains (4%) had the intIII gene.

Conclusion: In this study, high incidence of class 1, 2 and 3 integrons was detected. Screening integrons as a sign of obtaining and expansion of antibiotic resistance could be considered as an important mechanism to deal with antibiotic resistance in microorganisms.

Key words: Salmonella enteritidis, class 1 integrons, class 2 integrons, class 3 integrons, Multiplex PCR

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