

# The study of Frequency of SIM and ampC genes in clinical isolates of Pseudomonas aeruginosa in Guilan

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**Introduction & Objective:** Pseudomonas aeruginosa is a gram-negative bacterium and one of the most important opportunistic pathogens that causes hospital infections which usually produces multiple drug resistance at the same time. The aim of this study was to determine antibiotic resistance pattern in P. aeruginosa isolates and the frequency of blaSIM and ampC genes in resistant strains. **Materials and Methods:** A total of 95 isolates of Pseudomonas aeruginosa were collected from medical centers and laboratories in Rasht and identified by biochemical methods. Disc diffusion method was used to determine antibiotic resistance of strains and strains of broad-spectrum beta-lactamases and Metallo-beta-lactamases were detected using a hybrid disc method. The presence of bla SIM and bla ampC genes in resistant strains of PCR reaction was investigated. **Results:** In this study, the highest resistance levels of the isolates were shown with trimethoprim Sulfamethoxazole antibiotics and the most effective antibiotic was Colistin. Of the 95 isolates of P. aeruginosa, 38 isolates (36.17%) were resistant to imipenem. Also, in the phenotypic test, 29 isolates (30%) of generating Carbapenemase and 33 isolates (34.7%) resistant to Ceftazidime and broad-spectrum beta-lactamases were detected. A total of 44 productive samples of beta-lactamase and Carbapenemase were detected. Of these, the frequency blaSIM and ampC was 27.27% and 15.9%, respectively. **Conclusion:** Due to high prevalence,  $\beta$ -lactamase strains were studied in clinical isolates and the importance of these strains in hospitals and rapid identification and tracking of these strains can be considered as an important step in the treatment and control of infections caused by these strains.

**Keywords :** Pseudomonas aeruginosa, antibiotic resistance, bla SIM, bla ampC

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