Investigation of resistance to biocide and the frequency of efflux qacE and qac ΔE1 gene in clinical strains of pseudomonas aeruginosa

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Introduction & Objective: Pseudomonas aeruginosa is one of the most important causes of infection in the hospital. Excessive consumption of antibiotics and antimicrobial agents has been rescuing bacteria in medical centers. The purpose of this study was to evaluate the effectiveness of the current disinfectants in hospitals on Pseudomonas aeruginosa and to investigate the presence of qacE and qacΔE1 genes in them. Methods: 45 strains of Pseudomonas aeruginosa were collected medical diagnostic laboratories of Rasht city. The minimum inhibitory concentration (MIC), the diameter of the inhibition zone of inhibition of bacteria around the disk and the frequency of qacE and qacΔE1 genes were determined by broth macrodilution, agar disk diffusion mathod and PCR respectively, for Pseudomonas aeruginosa and the data were analyzed using SPSS software. Results: Based on the results, the highest percentage for resistant of Pseudomonas aeruginosa against biocides related to Microzed Ultra (79%) with mean MIC 110 micrograms per ml and Epimax II (51%) with mean MIC 90.2 mg/ml. proliferation of genes qacE and qac ΔE1 in the PCR reaction 45 strains examined in 22 strains (55.55%), the presence of qacE gene and 17 strains (42.5%) indicated the presence of the qacΔE1 gene. Conclusion: The results of this study showed the high bacterial resistance to biosciences, including Microzed Ultra and Epimix, and confirmed the presence of the qacE gene and qacEΔ1 in Pseudomonas aeruginosa. In general, there are concerns about the resistance to bioside solutions that are still in use and these results are important for the proper application of the use of antimicrobial agents.

Keywords : Pseudomonas aeruginosa, biocides, qacE, qacΔE1