## عنوان مقاله:

Survey of various carbapenem-resistant mechanisms of Acinetobacter baumannii and Pseudomonas aeruginosa isolated from clinical samples in Iran

## محل انتشار:

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## خلاصه مقاله:

Objective(s): Pseudomonas aeruginosa and Acinetobacter baumannii resist antibiotics by different intrinsic and acquired mechanisms. This study aims to define various carbapenem-resistant mechanisms of isolated P. aeruginosa and A. baumannii from nine different provinces of Iran.Materials and Methods: In this cross-sectional study, all carbapenem-resistant P. aeruginosa and A. baumannii samples from nine provinces of Iran on a one-year time horizon were gathered. Modified Hedge Test (MHT) and Carba NP-Test were applied to the identification of producing-carbapenemase strains. The most important carbapenemase genes recognized by PCR and gene overexpression of the efflux pump were surveyed by efflux pump inhibitors (EPIs) and confirmed by Real-Time PCR. Results: Twenty-one percent and 43.5% of P. aeruginosa and A. baumannii isolates were resistant to carbapenem, respectively. MHT and Carba-NP tests identified 21% and 11% carbapenemase-producing strains in these Gram-

negative bacteria, respectively. NDM-1 was the most prevalently detected carbapenemase in P. aeruginosa; OXA-51 and OXA-23 were the most significant genes in A. baumannii. EPIs identified active efflux pumps in 20% and 28% of P. aeruginosa and A. baumannii, respectively. Real-time PCR confirmed gene overexpression of efflux pumps in 54% and 30% of positive EPIs in P. aeruginosa and A. baumannii, respectively. Conclusion: P. aeruginosa and A. baumannii may become multi-drug-resistant (MDR) and Extensively Drug-Resistant (XDR) strains and cause a high .rate of mortality and morbidity. Thus, it is of necessity to prohibit the spread of antibiotic-resistant strains in hospitals

## کلمات کلیدی:

Acinetobacter baumannii, Carbapenems, Drug resistance, Iran, Pseudomonas aeruginosa