**Objectives:** Acinetobacter baumannii (A. baumannii) has emerged as a highly troublesome pathogen and a leading cause of mortality and morbidity among hospitalized patients. The aims of this study were to determine the frequency of adeABC, adeIJK and adeSR genes and the role of efflux pump(s) in imipenem resistance of A. baumannii strains isolated from Taleghani and Shahid Motahari burn hospitals during 2012-13.

**Methods:** This study was conducted on 60 A. baumannii isolates collected from 240 different clinical samples (included burn wounds) from patients admitted to the Taleghani and Shahid Motahari burn Hospitals, Tehran-Iran. Antibiotic susceptibility test (AST) was performed by Kirby-Bauer disc diffusion method (all antibiotic disks were purchased from Mask, Co. UK) and MIC of imipenem was determined by broth microdilution method according to CLSI guidelines 2012(1). Activity of the efflux pump was evaluated using efflux pump inhibitor phenylalanine-arginine β-naphthylamide (PAβN).

The frequency of adeABC, adeIJK and adeRS genes were detected by PCR method and confirmed after sequencing by Bioneer Co, Korea.

**Results:** The resistance of A. baumannii isolates to tested antibiotics was mentioned in the table-1. MIC$_{50}$ and MIC$_{90}$ were 64µg/ml and 125µg/ml by microdilution method, respectively. So that, in 58 (96.6%) of isolates, (PAβN) reduced the MIC from 4 to 64 folds. The frequency of tested genes were 100% for adeA, B, I and J, (98%) adeS, (85%) adeC, and (60%) adeR, respectively. All sequences were aligned and submitted in NCBI.

**Discussion:** There is correlation between AST results of this study and other studies in Iran and also Turkey(2,3). Also 89.2% of isolates were MDR and 48% of XDR which is in accordance of other studies(2,4) and different with Lean etal (75% and 25.9%, respectively)from Malasia which may related to different therapy(5). Reduction of MIC from 4 to 64 by PAβN here was correlated to Lee(Korea), LiuLin and PF Hou (China)(6-8).

**Table 1:** Percentage of antibiotic-resistant A. baumannii isolates

<table>
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<tr>
<th>Antibiotic</th>
<th>100</th>
<th>100</th>
<th>100</th>
<th>100</th>
<th>94</th>
<th>83</th>
<th>76</th>
<th>100</th>
<th>100</th>
<th>97</th>
<th>100</th>
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<tbody>
<tr>
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<tr>
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<tr>
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<tr>
<td>Prolinazinc</td>
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</tbody>
</table>

The frequency of ade A,B,C,I and J genes are highly related to other studies (7,8).

**Conclusion:** Existence of adeABIJ genes in more than half of A. baumannii isolates in this study shows the presumptive role of efflux pump mechanism in the antibiotic resistance of A. baumannii isolates. So, new strategies are required in order to ban the vertical or horizontal exchanges of the efflux pump genes from the resistant A. baumannii isolates which causing nosocomial infections to sensitive strains.

**Keywords:** A. baumannii, imipenem, antimicrobial drug resistance, multidrug efflux pump genes

**References**