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# Molecular detection antibiotic resistance in multidrug *Acinetobacter baumannii* isolated from west province of Iran

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**Introduction & Aim**: *Acinetobacter baumannii* is a gram-negative bacteria and one of the important causes of nosocomial infection worldwide. Multidrug resistant (MDR), extremely drug resistant (XDR) strains are increasing worldwide and overuse and/or abuse of antibiotics has a key role in this global challenge. *A. baumannii* can become resistant to variety of antibiotics by intrinsic and acquisition mechanisms. Production of ESBL, carbapenemase and modified aminoglycoside enzymes are the most important mechanisms in *A. baumannii* that may lead to presence of MDR and XDR strains. The aim of this study was molecular detection of ESBL, carbapenemse and modified aminoglycoside enzymes in *A. baumannii* isolated from Sanandaj in west of Iran.

**Materials & Methods:** In this cross sectional study, all of *A. baumannii* that referred to Beesat hospital, Sanandaj were collected in nine months. Strains were identified by conventional biochemistry and microbiology methods. Antibiotic susceptibility testing was prepared according to CLSI by disc diffusion assay. DNA extraction was done by Thermo extraction kit. *TEM, SHV, CTX-M, VIM, IMP, NDM-1, SPM-1, GES, KPC, OXA-23, OXA-24, OXA-58, OXA-40, acc(6'), aph(3')via, aph(3')lib, aadA1, aphA1 and aph6* genes were detected by PCR.

**Results:** Sixteen of 50 collected stains were MDR. All of MDR strains are resistant to cefotaxime and ceftazidime; colistine remains the only effective antibiotic in these MDR strains. ESBL, carbapenemase and amino glycosidase were identified in 11, 16 and 11 strains, respectively. The detected genes were showed in table 1 and 2 by details.

**Table1. Carbapenemase genes**

| | VIM | IMP | NDM-1 | SPM-1 | GES | KPC | OXA-23 | OXA-24 | OXA-58 | OXA-40 |
|---|---|---|---|---|---|---|---|---|---|---|
| | _ | _ | 3 | _ | _ | _ | 12 | 14 | _ | 1 |

**Table2. Amino glycosidase and ESBL genes**

| | acc(6') | aph(3')via | aph(3')lib | aadA1 | aphA1 | aph6 | TEM | SHV | CTX-M |
|---|---|---|---|---|---|---|---|---|---|
| | 5 | 10 | _ | 3 | 6 | _ | 3 | 7 | _ |

**Discussion:** Increasing appearance of MDR and/or XDR strains of *A. baumannii* needs significant considerable because can move to high rate of mortality and morbidity especially in immune compromise patients. Presence of NDM-1 producing A.baumannii is very important health issue because plasmid that carries NDM-1gene can include other antibiotic resistant genes like amino glycosidase like our results and can make antibiotic cross resistance in *A. baumannii* an important cause of health care association infection. Also, NDM-1 can confer resistant to all beta-lactam antibiotics even carbapenem. So, identification of MDR strains and especially NDM-1 producing and isolation of patient who infected by these MDR organisms is the first step to control of spread of MDR *A. baumannii* in health care centers.

## Biography

Leila Azimi completed PhD from Iran University of Medical Sciences, Tehran, Iran. She is the faculty member of Pediatric Infections Research Center, Shahid Beheshti University of Medical Sciences, Iran. She has published more than 30 papers in reputed journals and she is an Associate Editor of *Archives of Pediatric Infectious Disease* journal.

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