Antimicrobial Resistance Pattern and Prevalence of Class 1, 2, and 3 Integrons in Clinical Isolates of *Klebsiella Pneumoniae* in Loghman-E Hakim Hospital, Tehran

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Abstract

Background and Objective: Multiple drug resistance has increased in recent years in *Klebsiella pneumoniae* isolates. The Integrons are mobile genetic elements that carry antibiotics resistance genes. The aim of this study was to determine antibiotic susceptibility and the prevalence of class 1, 2, and 3 integrons in clinical *Klebsiella pneumoniae* isolated from clinical specimens.

Material and Methods: A total of 108 *K. pneumoniae* isolates were collected between April and December 2011 from different clinical specimens of Loghman hospital in Tehran and identified by biochemical tests. Susceptibility of isolates to 14 antibiotic disks was determined by disk diffusion method. The template DNA was extracted by freeze-thaw method and the presence of class 1, 2, and 3 integrons was investigated by PCR method. Level of resistance to antibiotics in integron-positive and integron-negative isolates was determined.

Results: The highest level of resistance was seen for cefotaxime, ceftriaxone, and amoxicillin-clavulanic acid (55.5%). In 79 isolates (73.14%) class 1 integron and in 57 of 79 isolates (72.15%) resistance to at least two classes of drugs were seen. The class 2 and 3 integrons were not detected. Among integron-negative isolates, 8 isolates (27.58%) had resistance to at least one antibiotic.

Conclusion: The prevalence of class 1 integron in resistant *K. pneumoniae* is high; therefore, the monitoring of drug resistance and limiting the use of antibiotics are necessary.

Keywords: *Klebsiella Pneumoniae*, Integron, Multi-Drug Resistance