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Antibiotic Susceptibility Profile and Horizontal Gene Transfer in Pseudomonas sp. Isolated from Clinical Specimens

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Abstract : The extensive use of antibiotics has led to increases emergence of antibiotic-resistant organisms. Pseudomonas is a notorious opportunistic pathogen involoved in nosocomial infections and exhibit innate resistance to many antibiotics. The present study was conducted to assess the prevalence, levels of antimicrobial susceptibility and resistance mechanisms of Pseudomonas. A total of thirty clinical strains of Pseudomonas were isolated from different clinical sites of infection. All clinical specimens were collected from Chughtais Lahore Lab. Jail road, during 8-07-2010 to 11-01-2011. Biochemical characterization was done using routine biochemical tests. Antimicrobial susceptibility was determined by Kirby-Baeur method. The plasmids were isolated from all the strains and digested with restriction enzyme PstI and EcoRI. Transfer of Multi-resistance plasmid was checked via transformation and conjugation to confirm the plasmid mediated resistance to antibiotics. The prevalence of Pseudomonas in clinical specimens was found out to be 14% of all bacterial infections. IPM has shown to be the most effective drug against Pseudomonas followed by CES, PTB and meropenem, wheareas most of the Pseudomonas strains have developed significant resistance against Penicillins and some Cephalasporins. Antibiotic resistance determinants were carried by plasmids, as they conferred resistance to transformed K1 strains. The isolates readily undergo conjugation, transferring the resistant genes to other strains, illustrating the high rates of cross infection and nosocomial infection in the immunocompromised patients.

Keywords : pseudomonas, antibiotics, drug resistance, horizontal gene transfer
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