

Prevalence of Multidrug-Resistance and Extensively-drug Resistance in Gram-Negative Clinical Isolates from Outpatients

Sakina FATIMA ¹, Iyad N. MUHAMMAD ¹, Shahnaz USMAN ² * & Subia JAMIL ³

¹ Department of Pharmaceutics, Faculty of Pharmacy and Pharmaceutical Sciences, University of Karachi, Karachi, Pakistan

² Department of Pharmaceutics, RAK College of Pharmaceutical Sciences, RAK Medical and Health Sciences University, Ras Al Khaimah, UAE

³ Faculty of Pharmacy, Jinnah University for Women, Karachi, Pakistan

SUMMARY. The aim of the study was to identify multidrug-resistance (MDR) and extensively drug-resistance (XDR) in clinical isolates of gram-negative bacteria obtained from specimens of non-hospitalized patients. A cross-sectional study was conducted over a period of one year (January 2015 to December 2015) and samples were cultured and bacterial strains were identified. Susceptibility of bacteria against different antibiotics was analyzed to identify MDR and XDR. A total of 1005 of *Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa* and *Proteus mirabilis* isolates were analyzed by the disc diffusion method. MDR was found in 91% (620/680), 56% (140/248), 62.16% (46/74) and 0%, whereas XDR was found 6.32% (43/680), 12.6% (31/248), 37.83% (28/74) and 0% respectively. It was concluded that a high prevalence of MDR was found in gram-negative isolates along with appearance of possible XDR. So it is needed to monitor the appropriate use of antibiotics and to perform proper screenings along with hygienic practices to overcome the risk of infections.

RESUMEN. El objetivo del estudio fue identificar la resistencia a múltiples fármacos (MDR) y la resistencia extensiva a fármacos (XDR) en aislamientos clínicos de bacterias gram-negativas obtenidas de pacientes no hospitalizados. Se realizó un estudio transversal durante un período de un año (enero de 2015 a diciembre de 2015), se cultivaron muestras y se identificaron cepas bacterianas. Se analizó la susceptibilidad de bacterias contra diferentes antibióticos para identificar MDR y XDR. Un total de 1005 aislamientos de *Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa* y *Proteus mirabilis* fueron analizados por el método de difusión en placas, encontrándose MDR en el 91% (620/680), 56% (140/248), 62,16% (46/74) y 0%, mientras que XDR se encontró en el 6,32% (43/680), 12,6% (31/248), 37,83% (28/74) y 0%, respectivamente. Se concluyó que se encontró una alta prevalencia de MDR en los aislados gram-negativos junto con la aparición de posibles XDR. Por lo tanto, es necesario vigilar el uso de los antibióticos y realizar pruebas adecuadas junto con las prácticas de higiene para superar el riesgo de infecciones.

KEY WORDS: antimicrobial susceptibility, gram-negative bacteria, multidrug-resistance, possible extensively-drug resistance.

* Author to whom correspondence should be addressed. E-mail: shahnaz.usman@rakmhsu.ac.ae; shahnazgauhara@gmail.com