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Extended Spectrum beta-Lactamases among Gram-Negative Bacterial Isolates from Clinical Specimens in Three Major Hospitals in Northern Jordan

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Abstract: Background and Objectives. Extended spectrum -lactamase (ESBL) production is increasing all over the world, and organisms other than *E. coli* and *K. pneumoniae* are acquiring this character. ESBL production is detectable by automation, E-test, double disk diffusion (DDD), and PCR. This study aimed to determine the prevalence of ESBL production among clinical isolates of gram-negative rods, and to evaluate the effectiveness of augmentation of clavunate with Cefotaxime, Ceftazoxime, Aztreonam, Ceftriaxone, and Cefpodoxime in detecting ESBL production. Methods. 472 clinical gram-negative isolates identified by standard methods were tested for ESBL-production by (DDD) method using six cephalosporins and amoxicillin-clavulinate discs. Results. 108/472 (22.9%) of the isolates were ESBL producers, and were prevalent in tertiary care hospitals. 88.2% of *E. cloacae*, 71.4% of *K. pneumoniae*, 28.6% of *K. oxytoca*, 12.5% of *C. freundii*, 11.1% of *A. calcoaceticus*, and 10.8% of *E. coli* were ESBL producers. The DDD test demonstrated some variations in the efficacy of the different cephalosporins in detecting all the ESBL producers. The inclusion of ceftizoxime discs increased the efficacy of the test. It is concluded that ESBL-producing bacteria were prevalent among our hospitalized patients, and involved genera other than *Klebsiella* and *Escherichia*, and the inclusion of ceftizoxime increased the efficacy of ESBL detection by the DDD test.