Expanded-spectrum ß-lactamases in Escherichia coli

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Since first reported in Europe in the early 1980's, plasmid-mediated expanded-spectrum ß-lactamases (ESBL) have been reported worlwide in Enterobacteriaceae. These clavulanic-acid inhibited ESBL hydrolyze most ß-lactams except cephamycins and carbapenems and belong to the Ambler class A group. They were mostly of the TEM and SHV-type in nosocomial isolates of *Klebsiella pneumoniae*. However, during the late 1990s and 2000s, Enterobacteriaceae, mostly non-clonally related *E. coli* producing novel ESBLs, i.e. the CTX-Ms have been identified predominantly from the community as a cause of urinary tract infections. These enzymes which reservoir is *Kluyvera* sp. are associated with novel genetic structures such as insertion sequences and *sul1*-type integrons that may enhance their expression and spread. *E. coli* isolates that express ESBLs are frequently resistant to other class of antibiotic such as fluoroquinolones and aminoglycosides. In addition, plasmid-mediated quinolone resistance and emergence of ESBL with carbapenemase activity may compromize further the therapeutic alternatives for treating infections due to ESBL-producing *E. coli* isolates