Title: Plasmid mediated AmpC β-lactamases in *Escherichia coli* isolated from urinary tract infections in São Paulo, Brazil

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Abstract: Plasmid-mediated AmpC β-lactamases in *Enterobacteriaceae* encode resistance to third generation cephalosporins and when associated to porin loss can lead to carbapenem resistance, but there is no standardized phenotypic method for detection of these enzymes in the clinical microbiology laboratory. To date, no data is available about the frequency of this kind of resistance in *Enterobacteriaceae* in Brazil. This study was motivated by the increase of cefoxitin resistance in *Escherichia coli* isolated from urinary tract infection during the year of 2010 compared to 2011. In this study a total of 2,266 *E. coli* isolates were collected prospectively during January 2013. A total of 109 (4.8%) isolates showed non-susceptibility to cefoxitin. The strains were tested by multiplex PCR for the presence of genes encoding plasmid-mediated AmpC's and by inhibitor assay using cefoxitin and ceftazidime disks with and without phenylboronic acid. PFGE was used for evaluation of clonal dissemination. Genes encoding plasmidial AmpC's were detected in 1.8% of the isolates from inpatients and 0.46% of those from outpatients. The most prevalent gene was bla_{CMY-2}, but bla_{CMY-4} was also detected. The phenotypic test showed 100% sensitivity and specificity for CMY when isolates with a minimum of five millimeters zone diameter difference for both ceftazidime and cefoxitin were considered positive. Most isolates studied were non clonal, but one clonal group with two isolates each was observed. The most prevalent plasmidial AmpC in *E. coli* from São Paulo, Brazil, is CMY-2.

Keywords: bla_{CMY-2}, bla_{CMY-4}, *Escherichia coli*, AmpC, Cephalosporins, β-lactams.

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