

## 5. Cationic polyelectrolyte copolymer modified polyurethane foam for flow injection preconcentration and separation of trace amounts of $\beta$ -lactam antibiotics

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### Abstract

A more sensitive flow injection preconcentration method has been developed for the determination of four  $\beta$ -lactam antibiotics (BLAs) namely cefaclor, cefotaxime, amoxicillin and ampicillin in urine, pharmaceuticals and milk. A mini-column packed with PUF functionalized with the cationic polyelectrolyte, poly(*N*-chloranil *N,N,N',N'*-tetramethylethylene diammonium dichloride) PCTDD, was utilized for selective preconcentration. The detection limits with this method were 3.3, 3.8, 5.1 and 7.0 ng mL<sup>-1</sup> and enrichment factors were 38, 21, 39, and 36 for cefaclor, cefotaxime, amoxicillin and ampicillin, respectively with a sample throughput of 12 h<sup>-1</sup> for all BLAs. Moreover, the BLAs were successfully separated by isocratic elution using a micellar mobile phase. Application of the method developed has resulted in recovery values in the range 95–109% (RSD  $\leq$  8.7), 83–99% (RSD  $\leq$  9.7) and 91–103% (RSD  $\leq$  4.0) for urine, pharmaceuticals and milk samples, respectively.