

SAMPLE STACKING AND ON-LINE DERIVATIZATION FOR THE ANALYSIS OF AMPICILLIN AND AMOXICILLIN BY MICROEMULSION ELECTROKINETIC CHROMATOGRAPHY

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Microemulsion electrokinetic chromatography (MEEKC) is an electrodriven separation technique which uses microemulsion buffer as a background electrolyte. In recent years MEEKC has gained considerable attention and widespread application because of its usefulness for determining the substances, which are different in their electrophoretic mobilities, and offers the possibility of highly efficient separation of both charged and neutral solutes covering a wide range of water solubilities.

Microemulsion can be used as a reaction medium for providing many chemical reactions due to its unique composition. In our work it was shown that derivatization of ampicillin (AMP) and amoxicillin (AMO) with naphthalene-2,3-dicarboxaldehyde (NDA) is accelerated greatly in microemulsion, compared with the standard derivatization procedure, no heating being required. This permits the reaction to proceed in the capillary in on-line mode. A novel method using MEEKC combining the concentration technique called reversed electrode polarity stacking mode (REPSM) with subsequent on-line derivatization was developed for the quantitative determination of antibiotics. The effect of each individual component within the microemulsions, i.e. the oil phase, the surfactant, the co-surfactant and the buffer concentration on the resolution of the analytes was systematically studied.

The limits of the detection were 150 $\mu\text{g/l}$ for AMO and 110 $\mu\text{g/l}$ for AMP. The method developed allowed us to decrease the detection limits by about 200-fold, to reduce the analysis and preparation time considerably, to diminish the consumption of the expensive reagents and to avoid high temperatures during the derivatization procedure.