

Separation of Phenothiazines Applying Capillary Electrophoresis and Micromolar Concentration of Carboxyethyl- β -cyclodextrin

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Key words: promethazine, dioxopromethazine, capillary electrophoresis, cyclodextrins, pharmaceutical analysis

This paper demonstrates applicability of cyclodextrin (CD)-mediated capillary electrophoresis (CE) to the separation of structurally related compounds: promethazine (PRO) and dioxopromethazine (DIO). The CDs used significantly differed in respect of their selectivity towards the analytes, which depended on the cavity size and the effective charges of both: the selectors and the analytes. The effect of pH and the type and concentration of CDs on the separation quality of DIO and PRO have been investigated in detail. Comparing to the modification of separation selectivity by pH changes or organic solvents as separation media, CDs appeared to be much more effective tool for the separation of the studied analytes. For example, native β -CD exhibited a remarkable selectivity. Separation effectiveness was additionally enhanced using negatively charged carboxyethyl- β -CD, so that the separation of phenothiazines was accomplished employing extremely low (micromolar) concentrations of this CD derivative for complexation. The purposed method for the separation and determination of PRO and DIO has been evaluated in respect of its sensitivity, linearity, precision, and accuracy/recovery. It has been successfully applied to the purity control of pharmaceuticals.