

Abstract

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Title of diploma thesis: Study of α -bromphenylacetic acid suitability as a model analyte for chiral separations using capillary electrophoresis as a separation technique

This thesis deals with the stability of α -bromphenylacetic acid, that was used as the model analyte for chiral separations using capillary electrophoresis as a separation technique (see reference Rizvi, S. A. A., Shamsi, A. S.. *Synthesis, Characterisation, and Application of Chiral Ionic Liquids and Their Polymers in Micellar Electrokinetic Chromatography*. Anal.Chem. 2006, Volume, 7061-7069). Stability of α -bromphenylacetic acid in methanol and in 50% aqueous methanolic solution has been studied by means of capillary zone electrophoresis under the employment of different background electrolytes (50 mM phosphate buffer at pH 7.5, 60 mM acetate buffer at pH 5.0 and 60 mM formate buffer at pH 3.0). The separation was conducted in 50 μ m id fused-silica capillary. UV detection was at 200 nm. The successful separation of all theoretically possible products of nucleophilic substitution (mandelic acid, α -methoxyphenylacetic acid and bromide) has been reached only in the 60 mM formate buffer at pH 3.0. Mandelic acid and α -methoxyphenylacetic acid were present in the solution of α -bromphenylacetic acid that was dissolved in 50% aqueous methanol. When α -bromphenylacetic acid was dissolved in pure methanol, only α -methoxyphenylacetic acid was detected during the separation in 60 mM formate buffer at pH 3.0. In the latter solvent, the nucleophilic substitution showed lower rate. This thesis confirms the inappropriateness of α -bromphenylacetic acid as a model analyte due to its insufficient stability in methanolic solutions.