SEPARATION OF ENANTIOMERS OF SOME CATHIONIC CHIRAL DRUGS WITH NEUTRAL CYCLODEXTRINS

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A signficant part of biological processes is based on chiral recognition. Therefore,these recognition mechanisms are widely studied. One of the valuable instrumental methods for such studies is capillary electrophoresis(CE). The addition of chiral selector is necessary to separate the enantiomers. For this purpose, native and substituted cyclodextrins(CD) can be used.CDs can bind enantiomers selectively and thus lead to a difference in their migration speed. Thus, the thermodynamic selectivity of recognition 1.01 is sufficient for observing baseline resolved peaks in CE while this is not the case in chromatographic techniques even with the most advanced packing materials, column technologies and instrumentation.

In the present study CE was used for separation of enantiomers of cationic chiral drugs, such as brompheniramine and dimethindene with β-CD and its derivative, heptakis-(2,3,6-tri-O-methyl)-β-CD (TM-β-CD). Separation of enantiomers was performed in fused-silica capillary of 50 μm ID and 24 and 32.5 cm, effective and total lengths, respectively. The background electrolyte was 100 mM triethanolamine phosphate with pH=3.0. Various concentrations of cyclodextrins (CD) were used having in mind using CE for determination of selector-selectand association constants. The most interesting result of this study was that the enantiomers of all 4 analytes exhibited opposite affinity pattern towards studied β-CD and TM-β-CD.

On the next step we shall determine selector-selectand association constants and compare CE results with the results obtained by using isothermal titration calorimetry (ITC).