

Separation of terbutaline enantiomers in capillary electrophoresis with neutral cyclodextrin-type chiral selectors and investigation of the structure of selector-selectand complexes using nuclear magnetic resonance spectroscopy

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The major goal of this study was to determine the affinity pattern of the terbutaline (TB) enantiomers towards α -, β -, γ - and heptakis(2,3-di-O-acetyl)- β -cyclodextrins and using nuclear magnetic resonance (NMR) spectroscopy for the understanding of the fine mechanisms of interaction between the cyclodextrins (CD) and TB enantiomers. It was shown once again that CE in combination with NMR spectroscopy represents a sensitive tool to study the affinity patterns and structure of CD complexes with chiral guests. Opposite affinity patterns of TB enantiomers towards native α - and β -CDs were associated with significant differences between the structure of the related complexes in solution. In particular, the complex between TB enantiomers and α -CD was of the external type, whereas an inclusion complex was formed between TB enantiomers and β -CD. One of the possible structures of the complex between TB and heptakis(2,3-di-O-acetyl)- β -CD (HDA- β -CD) was quite similar to that of TB and β -CD, although the chiral recognition pattern and enantioselectivity of TB complexation with these two CDs were very different.

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