

Some peculiarities of enantioseparation of selected chiral dihydropyridine derivatives and antimycotic drugs on polysaccharide-based chiral stationary phases

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Dihydropyridine derivatives are widely used drugs as heart muscle stimulators. Most of those drugs are chiral and only one of the enantiomers is active. Thus, it is very important to analyse their enantiomeric purity. For this purpose high-performance liquid chromatography is generally used technique. The goal of the present work was to study separation of enantiomers of several dihydropyridine derivatives on new types of polysaccharide-based chiral stationary phases using various mobile phases.

In addition, the separation of enantiomers of 10 chiral antimycotic drugs was studied on polysaccharide-based chiral columns with polar organic mobile phases. The emphasis was placed on some interesting examples of enantiomer eluent order reversal observed depending on the chemistry of the chiral selector, separation temperature, major component, as well as the minor additive in the mobile phase. In particular, it was found that the elution order of enantiomers of chiral drug terconazole was opposite on cellulose- and amylose-based columns with the same pendant group. The affinity pattern of enantiomers of another chiral drug bifonazole was opposite towards to two amylose-based chiral selectors with different pendant groups. The affinity pattern of terconazole enantiomers also changed on some columns when the alcohol-based mobile phase was replaced with acetonitrile. An interesting effect of the minor acidic (formic acid) additives to the mobile phase on the affinity pattern of terconazole enantiomers was observed on Cellulose-2 and Cellulose-4 columns. In addition, a reversal of elution order of bifonazole enantiomers was observed on Amylose-2 column by variation of a separation temperature.

Keywords: Column liquid chromatography, Polysaccharide-based chiral columns, Separation of enantiomers, Enantiomer elution order, Chiral dihydropyridine derivatives, Antimycotic drugs.