

Abstract

This diploma thesis is focused on the comparison of enantioselective potential of chiral stationary phases based on derivatized cellulose by high performance liquid chromatography (HPLC). Polysaccharide – based chiral stationary phases are suitable choice for enantioseparation of various chiral compounds. In this work Chiralpak IB column containing cellulose tris(3,5-dimethylphenylcarbamate) selector immobilized onto silica gel and Chiralpak IC column containing cellulose tris(3,5-dichlorophenylcarbamate) selector immobilized onto silica gel were used. Their ability of enantioseparation was tested on 28 structurally different chiral analytes. Reversed-phase separation mode was used for enantioseparation. Mobile phases were composed of organic modifiers acetonitrile or methanol and the aqueous part was selected according to the nature of analytes. Acidic analytes were separated in mobile phases containing aqueous solution of formic acid (pH 2.1). Analytes of bifunctional nature were separated in the presence of aqueous solution of formic acid (pH 2.1), 10 mM ammonium acetate buffer (pH 8.8) or 100 mM solution of KPF₆. Mobile phases containing 10 mM ammonium acetate buffer (pH 8.8) or 100 mM solution of KPF₆ were used for enantioseparation of alkaline chiral analytes.

Twelve chiral analytes were separated partially and five were baseline separated from the set composed of 28 compounds on Chiralpak IB column.

Chiralpak IC column showed a different enantioselectivity, seven chiral analytes were partially separated while seven analytes were baseline separated.

The complementarity of compared columns Chiralpak IB and Chiralpak IC was observed.

Keywords: cellulose chiral stationary phase, chiral separation, HPLC