

Abstract

The focus of this thesis is the synthesis of chiral modifiers for silica gel based on amylose modified with dimethyl or dichlorophenyl isocyanates and positively charged anchors, which will allow strong ionic binding to silica gel. The stability of the stationary phases thus prepared is then studied by liquid chromatography as well as the ability to separate selected enantiomers.

Two chiral silica gel modifiers were prepared in which the amylose contained dimethyl phenyl carbamate (DMFKA) or dichlorophenyl carbamate (DCFKA) groups in addition to the covalently bonded anchor. The results of elemental analysis showed incomplete modification of the hydroxyl groups of the second modifier, DCFKA, which also corresponded to the poor chromatographic results obtained on columns packed with this phase. Enantioselective separations of α -(1-naphthyl)benzylamine, fenamiphos and a number of chiral adamantane derivatives were achieved on columns packed with DMFKA phase.

The possibility of modifying silica gel in an already packed HPLC column with a modifier from solution was also demonstrated by pumping this solution through a silica gel packed column and subsequent washing into the mobile phase.

Keywords: *chiral separation, electrostatic interaction, HPLC*