IONIC LIQUIDS AS STATIONARY PHASE SOLVENTS FOR α- AND β-CYCLODEXTRIN IN GAS CHROMATOGRAPHY

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Room-temperature ionic liquids (RTILs) are molten salts with melting points well below room temperature. RTILs posses unique physicochemical properties including, low melting points, negligible vapor pressure, wide temperature ranges for liquid state, nonflammability, high thermal stabilites, tunable viscosities and variable polarities. In recent years room-temperature ionic liquids have proven to be of great interest to analytical chemistry. One important development is the use of RTILs as highly thermally stable gas chromatography stationary phases. Ionic liquids were used to dissolve cyclodextrin (CD) to produce a new type of gas chromatographic chiral stationary phases [1,2].

Cyclodextrins, classified as polycyclic compounds, are natural, chiral oligosaccharides. The ring has a cylindrical shape. The main representatives are native α-, β- and γ-cyclodextrin constructed with 6, 7 and 8 units of α-D-glucose respectively. Cyclodextrin have been used successfully in different chromatographic techniques for enantiomeric separation. The literature describes the enantioselective properties of modified cyclodextrin [1,2] dissolved in different ionic liquids applied as stationary phases in capillary gas chromatography. No reports have been found native cyclodextrins (α-, β- and γ-cyclodextrin).

In presented, stationary phases containing α- and β-cyclodextrin dissolved in 1-decyl-3-methylimidazolium chloride were prepared for packed column in gas chromatography. The model tested compunds were chiral terpenens. The complex formation and enantioselective properties of α- and β-CD in ionic liquid environment were tested.

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