CHIRAL HIGH-PERFORMANCE LIQUID AND SUPERCRITICAL FLUID CHROMATOGRAPHIC ENANTIOSEPARATIONS OF LIMONENE-BASED BICYCLIC AMINOALCOHOLS AND AMINODIOLS ON POLYSACCHARIDE CHIRAL STATIONARY PHASES

Tímea Orosz[1], Gábor Németi[1], Attila Bajtai[1], Zsolt Szakonyi[2], Ferenc Fülöp[2], István Ilisz[1], Antal Péter[1]

[1]Institue of Pharmaceutical Analysis, University of Szeged, Somogyi utca 4, H-6720 Szeged, Hungary
[2]Institue of Pharmaceutical Chemistry, University of Szeged, Eötvös utca 6, H-6720 Szeged, Hungary
e-mail: orosz.ti@chem.u-szeged.hu

Chirality is extremely important for the modern pharmaceutical industry since many drug compounds are chiral molecules whose stereoisomers usually possess various toxicological and pharmacological properties. One of the enantiomers (eutomer) have the desired pharmacological activity, while the other isomer (distomer) is inactive or in worst cases some undesirable effects or even toxic effect can also be produced.
The investigated compounds were limonene-based bicyclic 1,3-aminoalcohols and 1,3,5- and 1,3,6-aminodiols. In recent years, these compounds have been intensively investigated due to their potential biological activity and their benefits in synthetic chemistry. Aminoalcohols and aminodiols are known to be outstanding building blocks for the synthesis of remarkable heterocyclic compounds. Aminodiol-based nucleoside analogs possess noteworthy antitumor or antiviral activity [1]. The synthesis of new, limonene-based chiral bicyclic 1,3-aminoalcohols and aminodiols from commercially available starting materials have recently been reported [2].
As a result of the pharmaceutical and biological activity of chiral 1,3-aminoalcohols and aminodiols, it is very important to have at hand enantioselective analytical methods for the identification and separation of these compounds. Enantioseparations of limonene-based bicyclic 1,3-aminoalcohols and 1,3,5- and 1,3,6-aminodiols were carried out with high-performance liquid chromatographic and supercritical fluid chromatographic (SFC) methods on commercial polysaccharide-based chiral stationary phases.
The effects of the mobile phase composition, the nature and concentration of the alcohol additive, the temperature and the structures of the studied analytes on the separations were investigated in the normal phase and SFC mode. The elution sequence was determined in all cases. The separations of the stereoisomers of the investigated analytes were optimized in both chromatographic modes.

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