

Effect of the eluent on enantiomer separation of controlled drugs by liquid chromatography–ultraviolet absorbance detection–electrospray ionisation tandem mass spectrometry using vancomycin and native α -cyclodextrin chiral stationary phases

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“...between fully ionised amphetamines (pK_a values are between 9.2 and 10.6 [34] or calculated with the Pallas software (Compudrug) and vancomycin become more important. To ensure a fast analysis and the sufficient resolution...”

Abstract

Enantioseparation of nine amphetamine derivatives, methorphan and propoxyphene was studied by comparing two different chiral stationary phases, macrocyclic antibiotic vancomycin and native α -cyclodextrin (α -CD). Effects of 46 eluent compositions on enantioseparation in reversed-phase (RP) and polar organic phase modes were investigated. α -CD was found to be more suitable to phenethylamines in general and vancomycin for methorphan and propoxyphene. An eluent system capable of separating the enantiomers of all phenethylamines in one run was developed. Also, systems providing competitive analysis times for enantioseparation of methorphan and propoxyphene were reported. The suitability of the eluent systems to electrospray ionisation (ESI) was discussed and methods using a tandem mass spectrometric (MS/MS) detection were developed. The suitability of chiral LC–ESI–MS/MS was tested with 14 seized drug samples. The results were in agreement with conventional non-chiral methods. Repeatability of the methods was good and limits of detection were 25–100 ng/ml for most compounds using mass spectrometric detection.

Author Keywords: Author Keywords: Enantiomer separation; Chiral stationary phases, LC; Mobile phase composition; Vancomycin; α -Cyclodextrin; Amphetamines

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