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Article

Chiral Profiling Analysis of ÃƒÂŽÃ‚Â²ÃƒÂ¢Ã‚Â€Ã‚Â•Blockers by Capillary Electrophoresis Using Dual Chiral Selectors

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Abstract

Simultaneous analysis of several ÃƒÂŽÃ‚Â²ÃƒÂ¢Ã‚Â€Ã‚Â•blockers using a novel dual chiral selector system was achieved for their accurate chiral discrimination by chiral capillary electrophoresis (CE) in normal polarity mode. The CE system was operated using heptakis(2,6ÃƒÂ¢Ã‚Â€Ã‚Â•diÃƒÂ¢Ã‚Â€Ã‚Â•*O*ÃƒÂ¢Ã‚Â€Ã‚Â•methyl)ÃƒÂ¢Ã‚Â€Ã‚Â•ÃƒÂŽÃ‚Â²ÃƒÂ¢Ã‚Â€Ã‚Â•cyclodextrin (DMÃƒÂ¢Ã‚Â€Ã‚Â•ÃƒÂŽÃ‚Â²ÃƒÂ¢Ã‚Â€Ã‚Â•CD) dissolved in 100ÃƒÂ¢Ã‚Â€Ã‚Â‰mM phosphoric acidÃƒÂ¢Ã‚Â€Ã‚Â“triethanolamine buffer (pH 3) and (+)ÃƒÂ¢Ã‚Â€Ã‚Â• or (ÃƒÂ¢Ã‚Â^Ã‚Â’)ÃƒÂ¢Ã‚Â€Ã‚Â•18ÃƒÂ¢Ã‚Â€Ã‚Â•crownÃƒÂ¢Ã‚Â€Ã‚Â•6ÃƒÂ¢Ã‚Â€Ã‚Â•tetracarboxylic acid (18ÃƒÂ¢Ã‚Â€Ã‚Â•CÃƒÂ¢Ã‚Â€Ã‚Â•6ÃƒÂ¢Ã‚Â€Ã‚Â•TA) as a coÃƒÂ¢Ã‚Â€Ã‚Â•chiral selector in DMÃƒÂ¢Ã‚Â€Ã‚Â•ÃƒÂŽÃ‚Â²ÃƒÂ¢Ã‚Â€Ã‚Â•CD solution. All eight investigated analytes were resolved using (+)ÃƒÂ¢Ã‚Â€Ã‚Â•18ÃƒÂ¢Ã‚Â€Ã‚Â•CÃƒÂ¢Ã‚Â€Ã‚Â•6ÃƒÂ¢Ã‚Â€Ã‚Â•TA as a coÃƒÂ¢Ã‚Â€Ã‚Â•chiral selector in the presence of DMÃƒÂ¢Ã‚Â€Ã‚Â•ÃƒÂŽÃ‚Â²ÃƒÂ¢Ã‚Â€Ã‚Â•CD solution, whereas the other ÃƒÂŽÃ‚Â²ÃƒÂ¢Ã‚Â€Ã‚Â•blockers, except propranolol, were resolved using (ÃƒÂ¢Ã‚Â^Ã‚Â’)ÃƒÂ¢Ã‚Â€Ã‚Â•18ÃƒÂ¢Ã‚Â€Ã‚Â•CÃƒÂ¢Ã‚Â€Ã‚Â•6ÃƒÂ¢Ã‚Â€Ã‚Â•TA as the second chiral selector in DMÃƒÂ¢Ã‚Â€Ã‚Â•ÃƒÂŽÃ‚Â²ÃƒÂ¢Ã‚Â€Ã‚Â•CD solution. Also, DMÃƒÂ¢Ã‚Â€Ã‚Â•ÃƒÂŽÃ‚Â²ÃƒÂ¢Ã‚Â€Ã‚Â•CD had a major effect on chiral discrimination compared with 18ÃƒÂ¢Ã‚Â€Ã‚Â•CÃƒÂ¢Ã‚Â€Ã‚Â•6ÃƒÂ¢Ã‚Â€Ã‚Â•TA as a coÃƒÂ¢Ã‚Â€Ã‚Â•chiral selector. Relative migration times to that of (*S*)ÃƒÂ¢Ã‚Â€Ã‚Â•pindolol as an internal standard were characteristic of each enantiomer with good precision. The method showed good linearity with a correlation coefficient (*r*ÃƒÂ¢Ã‚Â€Ã‚Â‰ÃƒÂ¢Ã‚Â‰Ã‚Â¥ÃƒÂ¢Ã‚Â€Ã‚Â‰0.993). The precision as a percentage of relative standard deviation (% RSD) and accuracy as a percentage of relative error (%

RE) ranged from 0.5 to 9.6 and from ÃƒÂ¢Ã‚Â^Ã‚Â'5.7 to 9.1, respectively. These were adequate for the chiral assay of the ÃƒÂŽÃ‚Â²ÃƒÂ¢Ã‚Â€Ã‚Â•blockers investigated. Thus, the present chiral profiling method is expected to be useful for accurate chiral discrimination and optical purity tests of chiral ÃƒÂŽÃ‚Â²ÃƒÂ¢Ã‚Â€Ã‚Â•blockers and their related drugs.

Citing Literature

Number of times cited: 4

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