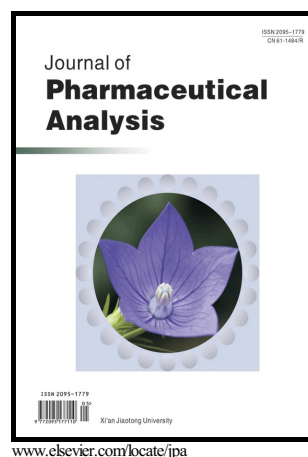


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Screening primary racemic amines for enantioseparation by derivatized polysaccharide and cyclofructan columns

Yeeun Lim^a, Zachary S. Breitbach^a, Daniel W. Armstrong^a, and Alain Berthod^{b*}

^a*Department of Chemistry, University of Texas at Arlington, Planetarium Place, Arlington, TX 76019, USA.*

^b*Institut des Sciences Analytiques, CNRS, Université de Lyon, 5 rue de la Doua, 69100 Villeurbanne, France*

Abstract

It is a challenge to separate the enantiomers of native chiral amines prone to deleterious silanol interactions. A set of 39 underivatized chiral primary amines was screened for enantiomeric separation. Seven recently introduced commercial chiral columns were tested. They included: six polysaccharide based chiral stationary phases (CSP) with bonded derivatives, ChiralPak[®] IA, IB, IC, ID, IE and IF columns and a cyclofructan derivatized CSP, Larihc[®] CF6-P column. Both the normal phase (NP) mode with heptane/alcohol mobile phases and the polar organic (PO) mode with acetonitrile/alcohol were evaluated. It was found that the cyclofructan based CSP demonstrated the highest success rate in separating primary amines in the PO mode with only one chiral amine not resolved. It is shown that, when screening the columns, there is no standard optimal conditions; an excellent mobile phase composition for one column may be poorly suited to another one. Though butylamine was a good mobile phase additive for the polysaccharide columns in both PO and NP modes, it was detrimental to the enantio-recognition capability of the cyclofructan column. Triethylamine was the appropriate silanol screening agent for this later column.

Keywords

Chiral primary amines, cyclofructan, bonded polysaccharide, enantiomeric separation.

* Corresponding author e-mail: berthod@univ-lyon1.fr

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