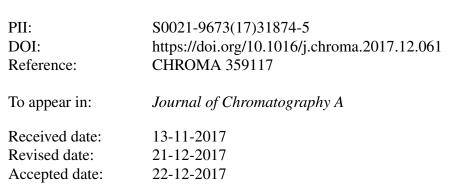
### Accepted Manuscript

Title: Interest of achiral-achiral tandem columns for impurity profiling of synthetic drugs with supercritical fluid chromatography

Authors: Caroline West, Elise Lemasson, Sophie Bertin, Philippe Hennig, Eric Lesellier



Please cite this article as: Caroline West, Elise Lemasson, Sophie Bertin, Philippe Hennig, Eric Lesellier, Interest of achiral-achiral tandem columns for impurity profiling of synthetic drugs with supercritical fluid chromatography, Journal of Chromatography A https://doi.org/10.1016/j.chroma.2017.12.061

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



## ACCEPTED MANUSCRIPT

# Interest of achiral-achiral tandem columns for impurity profiling of synthetic drugs with supercritical fluid chromatography

Caroline West<sup>a</sup>\*, Elise Lemasson<sup>a</sup>, Sophie Bertin<sup>b</sup>, Philippe Hennig<sup>b</sup>, Eric Lesellier<sup>a</sup>

- a. Univ Orléans, Institut de Chimie Organique et Analytique (ICOA), CNRS UMR
  7311, Pôle de Chimie, rue de Chartres, B.P. 6759, 45067 Orléans, Cedex 2,
  France
- b. Institut de Recherches Servier, 11 rue des Moulineaux, 92150 Suresnes, France

\* corresponding author: caroline.west@univ-orleans.fr

Tel: +33 238 49 47 78; Fax: +33 238 41 72 81

#### HIGHLIGHTS

- Coupling two columns is an easy way to assemble selectivities in SFC
- Tandem columns improve peak capacity and sensitivity over single columns
- Some column combinations are more effective than others
- The analysis time reduction with tandem columns is currently restricted by system pressure limits

#### Abstract

To achieve the most complete impurity profiling of synthetic drugs with a single chromatographic technique, high resolution is required, which may be gained with a combination of high efficiency and versatile selectivity, allowing to separate most similar analytes. Compared to a single-column chromatographic method, coupling complementary stationary phases promises both an increase in efficiency and an increase in selectivity possibilities. With supercritical fluid chromatography (SFC), the use of long columns is facilitated by the low viscosity of the mobile phase. In this paper, we investigate the interest of coupling two achiral stationary phases (Acquity UPC<sup>2</sup> HSS C18 SB and Nucleoshell HILIC) that were previously observed to have excellent complementarity in SFC to carry out impurity profiling on 25 individual drug substances containing varied numbers and amounts of impurities. The single-column gradient methods are compared to tandem-column gradient methods with the two possible ordering of columns (C18 phase in first or second position) based on sensitivity, UV-estimated selectivity, peak capacity, purity of the active pharmaceutical ingredient and number of impurities detected with UV-estimated concentration >0.04 %. It appears that it could be more beneficial to have two

Download English Version:

## https://daneshyari.com/en/article/7609024

Download Persian Version:

https://daneshyari.com/article/7609024

Daneshyari.com