Accepted Manuscript

Title: Chiral gas chromatography of 2,5-diketopiperazines following a ring-opening derivatization method for complete isomeric separation

Authors: Koichi Mimura, Riku Okada, Tamihito Nishida

PII: S0021-9673(18)30807-0
DOI: https://doi.org/10.1016/j.chroma.2018.06.051
Reference: CHROMA 359495

To appear in: *Journal of Chromatography A*

Received date: 7-5-2018
Revised date: 19-6-2018
Accepted date: 20-6-2018

Please cite this article as: Mimura K, Okada R, Nishida T, Chiral gas chromatography of 2,5-diketopiperazines following a ring-opening derivatization method for complete isomeric separation, *Journal of Chromatography A* (2018), https://doi.org/10.1016/j.chroma.2018.06.051

Chiral gas chromatography of 2,5-diketopiperazines following a ring-opening derivatization method for complete isomeric separation

Koichi Mimura*, Riku Okada, Tamihito Nishida

Department of Earth and Environmental Sciences, Graduate School of Environmental Studies, Nagoya University, Nagoya 464-8601, Japan

*To whom correspondence should be addressed. E-mail: mimura@eps.nagoya-u.ac.jp (K. Mimura), Tel: 81-52-789-3030, Fax: 81-52-789-3033

Highlights

- A ring-opening derivatization method was developed for *cis*-DKP isomeric separation.
- The method was the esterification combined by acylation.
- Enantiomers of cyclo(Ala-Ala) were changed into dipeptide derivatives by the method.
- These derivatives were completely separated by chiral gas chromatography.
- The method was also useful for cyclo(Asp-Phe) and cyclo(Met-Pro).

ABSTRACT

2,5-Diketopiperazines (DKPs) are widely recognized as chiral molecules with great potential in medicinal chemistry. Complete separation of DKP stereoisomers is very important for efficiently investigating the chemical characteristics of DKPs. The combination of esterification and acylation caused the enantiomers of cyclo(D-Ala-D-Ala) and cyclo(L-Ala-L-Ala) to ring-open and generate their dipeptide derivatives. These derivatives were completely separated by chiral gas chromatography (GC), and the determined isomer ratios were the same as the original isomer ratios.