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Nota de aplicación

Chiral Separation of Phenylalanine Methyl Esters using UPC^2

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This is an Application Brief and does not contain a detailed Experimental section.

Abstract

A UPC^2 method was developed for the chiral separation of D- and L-phenylalanine methyl esters. The method provides better resolution and 5X the throughput of normal phase HPLC, allowing for high throughput analysis.

Benefits

The method provides better resolution and throughput than of normal phase HPLC.

Introduction

Phenylalanine methyl and other amino acid esters are used as starting material for the production of some active pharmaceutical ingredients (APIs). To ensure the correct and pure isomer is used for synthesis, it is important to perform chiral separations to resolve the enantiomers.

Experimental

Instrumentation and Consumables

System:	ACQUITY UPC^2 with photodiode array (PDA) detection
Column:	CHIRALPAK ID, 4.6 x 100 mm, 3 µm
Column temp.:	40 °C
Mobile phase A:	CO_2
Mobile phase B:	MeOH with 0.1% NH_4OH

Isocratic conditions:	90% A, 10% B
Flow rate:	1.5 mL/min
Back pressure:	2500 psi
Detection:	UV 210 nm, compensated mode
Injection volume:	4 µL
Sample:	5 mg/mL and 500 ng/mL in isopropanol with 0.1% triethanolamine
Vials:	Waters Maximum Recovery
Data management:	Empower 3 Software

Conclusion

A UPC^2 method was developed for the chiral separation of D- and L-phenylalanine methyl esters. The method provides better resolution and 5X the throughput of normal phase HPLC, allowing for high throughput analysis. Due to the low baseline noise observed in UV, the method is capable of detecting down to 500 ng/mL of each enantiomer, which is 0.01% of a 5 mg/mL stock solution. UPC^2 provides a rapid method for determining the purity of chiral compounds prior to and during API synthesis.

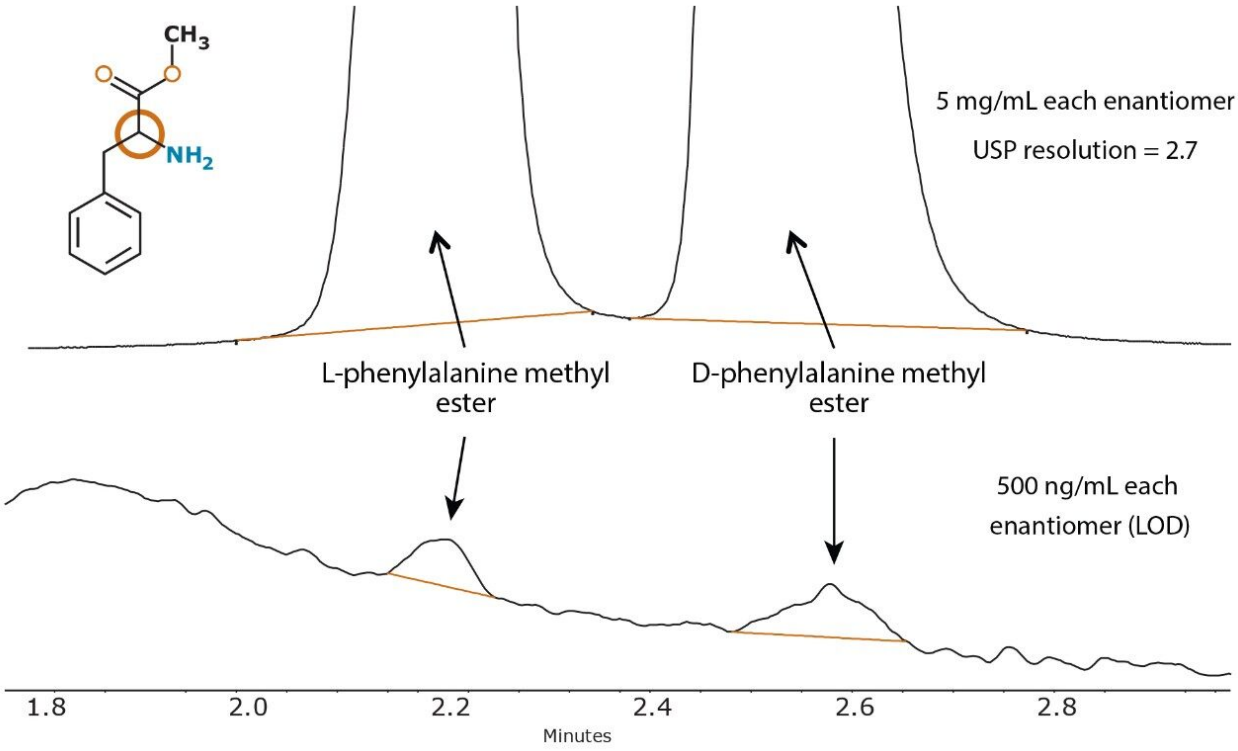

Figure 1. Separation of phenylalanine methyl ester enantiomers using UPC [2].

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ACQUITY UPC2 System <https://www.waters.com/134658367>

Empower 3 Chromatography Data Software <https://www.waters.com/513188>

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