

HPLC-UV Method for the Determination of Linezolid Using a Core Enhanced Technology Accucore Column

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Abstract

This application note demonstrates the use of the Thermo Scientific Accucore RP-MS column for the determination of linezolid by HPLC-UV.

Introduction

Accucore™ HPLC columns use Core Enhanced Technology™ to facilitate fast and high efficiency separations. The 2.6 µm diameter particles are not totally porous, but rather have a solid core and a porous outer layer. The optimised phase bonding creates a series of high coverage, robust phases. Accucore RP-MS uses an optimized alkyl chain length for more effective coverage of the silica surface. This coverage results in a significant reduction in secondary interactions and thus highly efficient peaks with very low tailing. The tightly controlled 2.6 µm diameter of Accucore particles results in much lower backpressures than typically seen with sub-2 µm materials.

Linezolid is a member of the oxazolidinone class of drugs. It is a synthetic antibiotic which is used to treat pneumonia, serious skin infections and infections caused by Gram-positive bacteria such as MRSA that are resistant to other antibiotics.

This application note demonstrates the successful analysis of linezolid using an Accucore RP-MS column.



Key Words

- Linezolid
- Accucore RP-MS
- Antibiotics

Experimental Details

Chemicals and Reagents	Part Number
Fisher Scientific HPLC grade water	W/0106/17
Fisher Scientific HPLC grade acetonitrile	A/0626/17
Sigma Aldrich linezolid	

Sample Handling Equipment	Part Number
NSC Mass Spec Certified 2 mL clear vial with blue bonded PTFE silicone cap	MSCERT4000-34W

Separation Conditions	Part Number	
Instrumentation:	Thermo Scientific Accela UHPLC system	
Column:	Accucore RP-MS 2.6 µm, 100 x 2.1 mm	17626-102130
Mobile phase:	80:20 (v/v) water/acetonitrile	
Flow rate:	0.4 mL/min	
Column temperature:	30 °C	
Injection details:	1 µL partial loop	
Injection wash solvent:	80:20 (v/v) water/acetonitrile	
UV detector wavelength:	251 nm	
Backpressure:	300 bar	

Solutions

Working standard contained 125 µg/mL of linezolid in water.

Results

The analysis was performed on an Accucore RP-MS 2.6 μm , 100 x 2.1 mm column. As shown in Figure 1, linezolid was analyzed in under three minutes. Table 1 shows the results from six replicate injections.

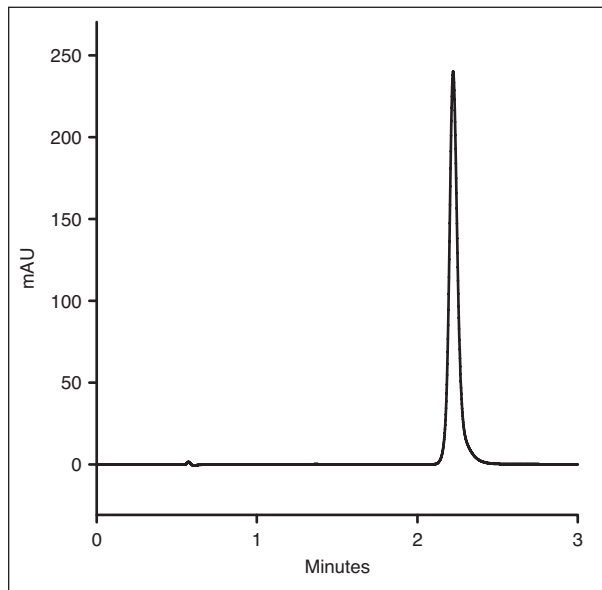


Figure 1: Chromatogram of linezolid separated using an Accucore RP-MS 2.6 μm , 100 x 2.1 mm column

	Linezolid
Retention time (minutes)	2.22
%RSD on retention time	0.2
Asymmetry (10%)	1.14
%RSD on asymmetry (10%)	0.9

Table 1: Retention time and asymmetry results for linezolid

Conclusions

Replicate injections of linezolid showed that Accucore RP-MS produced stable and reproducible results. This demonstrates that Accucore RP-MS is an excellent choice of column for the rapid analysis of linezolid.

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