Analysis of Bromhexine Hydrochloride Using a Solid Core C18 Column

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Key Words

Accucore C18, bromhexine hydrochloride, solid core, Core Enhanced Technology

Abstract

This application note demonstrates the use of the Thermo Scientific™ Accucore™ C18 HPLC column for the analysis bromhexine hydrochloride.

Introduction

Thermo Scientific Accucore HPLC columns use Core Enhanced Technology™ to facilitate fast and highly efficient separations. The 2.6 µm diameter particles are not totally porous, but instead have a solid core and a porous outer layer. The optimized phase bonding creates a series of high-coverage, robust phases. The carbon loading of the Accucore C18 column provides high retention of non-polar analytes via a predominantly hydrophobic interaction mechanism. The tightly controlled 2.6 µm diameter of Accucore particles results in much lower backpressures than typically seen with sub-2 µm materials.

Bromhexine is a mucolytic agent that reduces mucus viscosity and aids the cilia (small hairs) in the respiratory tract in removing excess mucus.

Experimental Details

Sample Handling	Part Number
Fisher Scientific™ HPLC grade water	W/0106/17
Fisher Scientific HPLC grade methanol	M/4062/17
8 mm Standard Opening Screw Thread Vial Convenience Kit, 2 mL Clear Vial with Patch, Black Polypropylene Closure with Red PTFE/White Silicone Septa	60180-600

Sample Preparation
A primary standard of bromhexine hydrochloride was prepared in methanol at 1 mg/mL.
The working standard contained 2 µg/mL bromhexine hydrochloride in water / methanol (90:10 v/v)

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Separation Conditions		Part Number
Instrumentation:	Thermo Scientific Dionex™ UltiMate™ 3000 RSLC HPLC System	
Column:	Accucore C18 2.6 µm, 50 x 2.1 mm	17126-052130
Mobile phase:	0.1% formic acid in water / 0.1% formic acid in methanol (90:10, v/v)	
Flow rate:	0.8 mL/min	
Column temperature:	40 °C	
Injection volume:	1 µL	
Injection wash solvent:	water / methanol (90:10, v/v)	

Results

Good retention and peak shape of bromhexine hydrochloride is demonstrated in Figure 1 and Table 1.

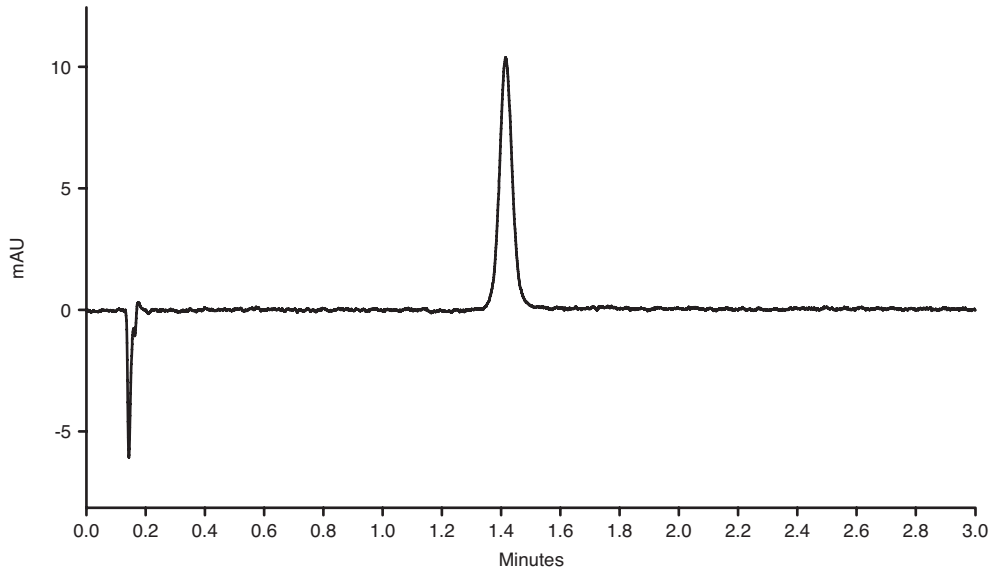

Figure 1: Chromatogram for bromhexine hydrochloride analyzed on an Accucore C18 2.6 µm, 50 x 2.1 mm column

	Bromhexine
Retention time (minutes)	1.44
%RSD on retention time	1.01
Asymmetry	1.12

Table 1: Results obtained from an Accucore C18 column, based upon 6 replicate injections

Conclusion

Analysis of bromhexine can be achieved using an Accucore C18 column in under 2 minutes with excellent peak shape and good retention time reproducibility.

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