Application Note:
ANCCSZILEUTSYNC

HPLC Analysis of Zileuton

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Key Words

- Zileuton
- HPLC

Abstract

This application note demonstrates the use of the Thermo Scientific Syncronis C18 column for the analysis of zileuton.

Introduction

Zileuton is a 5-lipoxygenase inhibitor [1] which inhibits the immunoregulators leukotrienes. Leukotrienes are involved in defence mechanisms such as inflammations. Controlling their biosynthesis can lead to the treatment of asthma and other allergic conditions. Zileuton is used for the maintenance treatment of asthma.

The original immediate-release formulation of zileuton, known as ZYFLO, was introduced in 1996 by Abbott Laboratories. The structure of this compound is shown in Figure 1.

Zileuton is a moderately polar compound, with a log P of 1.4, and therefore its retention under reversed phase LC requires a retentive stationary phase.

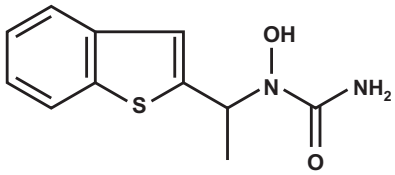

Figure 1: Structure of zileuton

Syncronis™ C18 columns are based on highly pure 100 Å silica, with a surface area of 320 m²/g and a carbon load of 16%. This ensures good retention of analytes with a range of hydrophobicities.

This application note shows an efficient and reproducible method for the analysis of zileuton, with excellent peak shape.

Experimental Detail

Chemicals and Reagents	Part Number
Fisher Scientific HPLC grade water	W/0106/17
Fisher Scientific HPLC grade methanol	M/4056/17
Thermo Scientific 2 mL clear vial and Si/PTFE seal	60180-600

Sample Preparation

A 1000 µg/mL standard solution of zileuton was prepared in mobile phase; this solution was then diluted to 20 µg/mL in mobile phase and used for analysis.

Separation Conditions		Part Number
Instrumentation:	Thermo Scientific Accela HPLC/UHPLC system	
Column:	Syncronis C18 5 µm, 50 x 2.1mm	97105-052130
Injection volume:	1 µL	
Flow rate:	0.2 mL/min	
UV detection:	227 nm	
Mobile phase:	30:70 (v/v) acetonitrile/water	

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Results

Zileuton was retained on the Syncronis C18 column using an isocratic method. Figure 2 shows the chromatogram obtained employing Syncronis C18 5 µm, 50 x 2.1 mm column, with zileuton eluting at 3.49 min (retention factor of 3.36).

The following chromatographic parameters were monitored: retention time (t_R), peak area, tailing factor and efficiency. Mean and % RSD values for the above parameters were based on data derived from six replicate injections, and are reported in Table 1.

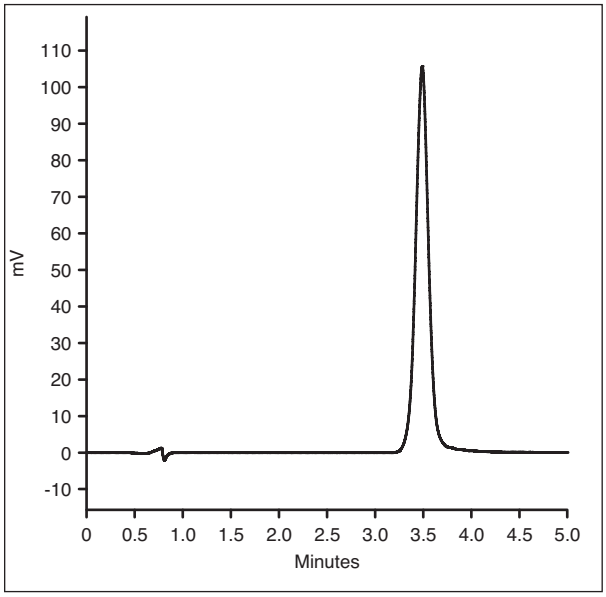

Figure 2: Chromatogram of zileuton, separated on a Syncronis C18 5 µm, 50 x 2.1 mm column

Zileuton	t_R (min)	Tailing Factor	Efficiency (Plates/m)	Peak Area
Mean	3.49	1.01	63646	10121320
% RSD	0.02	0.39	0.24	0.06

Table 1: Average and Method Precision (%RSD) of chromatographic parameters, for the analysis of zileuton on a Syncronis C18 5 µm, 50 x 2.1 mm column (data calculated from six replicate injections)

Conclusions

The use of a Syncronis C18 column allowed the successful retention of zileuton. Syncronis C18 columns are an excellent choice for the reversed-phase separation of zileuton, affording highly reproducible analysis.

References

[1] F.J. Alvarez and R.T. Slade, Pharmaceutical Research, Vol 9, N 11, 1992.

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