

Analysis of Triazine Pesticides Using a Core Enhanced Technology Accucore HPLC Column

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Key Words

- Accucore C18
- Superficially porous
- Core Enhanced Technology
- Fused core
- Triazines
- Herbicides
- Pesticides

Abstract

This application note demonstrates the use of the Thermo Scientific Accucore C18 column, for the fast HPLC analysis of triazine herbicide and pesticides without losing resolution, all at low column back pressure.

Introduction

Triazines are widely used in weed control in agricultural and non-agricultural practices and work by inhibiting the photosynthetic pathways. If ingested by humans or animals they can prove to be poisonous leading to nausea, weight loss and weakness.

Fast HPLC analysis of selected triazines was achieved using an Accucore™ C18 column. 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. The carbon loading of Accucore C18 provides high retention of non-polar analytes via a predominantly hydrophobic interaction mechanism, enabling the separation of a broad range of analytes. The tightly controlled 2.6 µm diameter of Accucore particles results in much lower backpressures than typically seen with sub-2 µm materials.

Results

Figure 1 shows the chromatogram of the triazine herbicides and pesticides separated on an Accucore C18 2.6 µm 100 x 2.1 mm column under 3.0 minutes. The analysis was performed using fast HPLC demonstrating this column can provide good baseline resolution of triazines at low backpressure.

Conclusions

Separation of triazines was successfully achieved on an Accucore C18 column at low system backpressure. The column therefore provides an excellent choice for the fast analysis of these compounds, giving excellent retention time reproducibility.



Sample Preparation

A 1000 µg/mL solution of triazine herbicides and pesticides was prepared in acetonitrile; this solution was then diluted in water to the required concentration required for analysis. (refer to Table 1)

Thermo Scientific Column	Part Number
Accucore C18 2.6 µm 100 x 2.1 mm	17126-102130
Measured back pressure: 298 bar	

Thermo Scientific Accela HPLC/UHPLC

Column temperature	40 °C
Injection volume	2 µL
Flow rate	0.60 mL/min
PDA/UV detection	280 nm

Mobile Phase

Mobile phase A	Water	
Mobile phase B	Acetonitrile	
Gradient:		
Time/min	A%	B%
0.00	65	35
1.00	65	35
2.50	30	70
2.60	65	35

Consumables	Part Number
Fisher Scientific HPLC grade water	W/0106/17
Fisher Scientific HPLC grade acetonitrile	A/0626/17
Liquid handling hardware: FinnPippette (100-1000µL)	642090
NSC Mass Spec Certified 2mL clear vial with PTFE silicone cap	MSCERT4000-34W

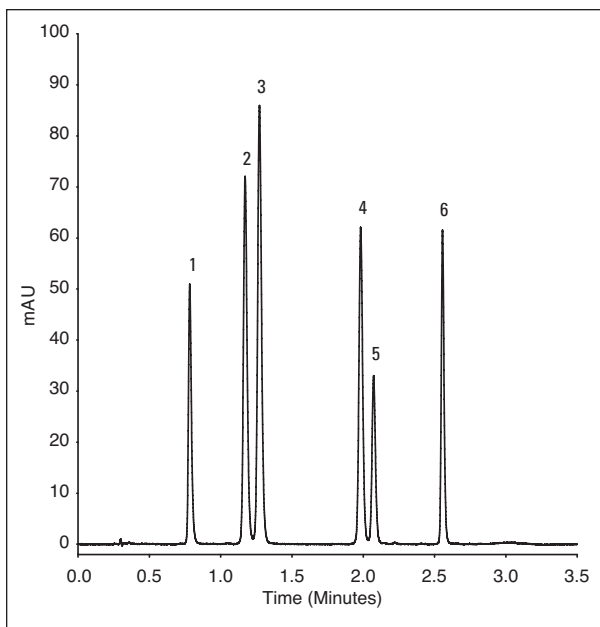


Figure 1: Chromatogram of triazines compounds mixture separated on an Accucore C18 2.6 μ m 100 x 2.1 mm column

	Compounds	t_r /min	t_r /min %RSD (n=6)
1	Simazine	0.78	0.12
2	Simetryn	1.17	0.18
3	Atrazine	1.27	0.17
4	Ametryn	1.98	0.13
5	Propazine	2.07	0.11
6	Prometryn	2.55	0.12

Table 1: The analysis of triazines compounds on an Accucore C18 2.6 μ m 100 x 2.1 mm column

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