Fast Analysis of Decitabine Using a Solid Core HILIC Column

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Key Words
Decitabine, α-anomer impurity, Accucore HILIC column

Abstract
This application note demonstrates the use of the Thermo Scientific™ Accucore™ HILIC column for the determination of decitabine and its α-anomer impurity by HPLC-UV.

Introduction
Decitabine (Figure 1) is an anti-cancer (antineoplastic or cytotoxic) chemotherapy drug. Decitabine is classified as an antimetabolite and a hypomethylation agent. This application note demonstrates a simple and rapid method for the determination of decitabine and its α-anomer impurity using an Accucore HILIC column.

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. This coverage results in a significant reduction in secondary interactions and thus yields 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.

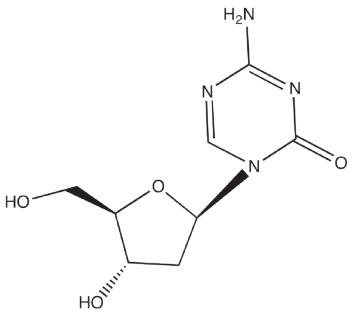

Figure 1: Decitabine

Experimental Details

Consumables	Part Number
Fisher Scientific™ Optima™ LC/MS grade acetonitrile	A/0626/17
Ammonium acetate (HPLC grade)	
Water, from a water purification system	
Decitabine system suitability solution	

All solutions were provided by the customer.

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Vials and Closures	Part Number
Thermo Scientific borosilicate glass vials (2 mL, 12 mm x 32 mm) with 8 mm black screw cap fitted with a silicone/PTFE seal)	60180-600

Separation Conditions		Part Number
Instrumentation:	Thermo Scientific™ Dionex™ UltiMate™ 3000	
Column:	Accucore HILIC 2.6 µm 150 mm x 3.0 mm	17526-153030
Mobile phase:	20 mM ammonium acetate in water / acetonitrile (5:95 v/v)	
Flow rate:	0.5 mL/min	
Column temperature:	40 °C	
Autosampler temperature:	10 °C	
UV detector wavelength:	244 nm	
Injection details:	5 µL partial loop	
Run time:	10 minutes	
Back pressure:	Approximately 270 bar	

Data Processing
Data were acquired and processed using Thermo Scientific™ Chromeleon™ 7 software

Results

The analysis was performed on an Accucore HILIC 2.6 µm, 150 mm x 3.0 mm column. As shown in Figure 2, decitabine and α-anomer impurity were analyzed in less than 10 minutes. The results are shown in Table 1.

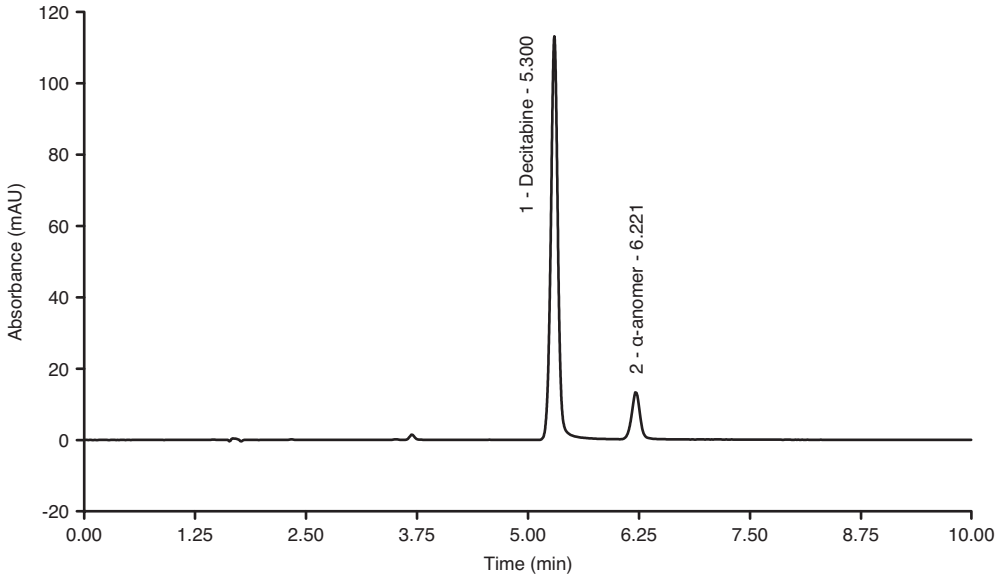

Figure 2: Chromatogram of decitabine and its α-anomer impurity

Compound	Retention time (min)	Retention time (% CV)	Area (% CV)
Decitabine	5.30	0.14	1.72
α-anomer	6.22	0.13	2.44

Table 1: Retention time for decitabine and α-anomer impurity

Conclusion

The Accucore HILIC column provides enhanced retention of polar and hydrophilic analytes. Decitabine and its α-anomer are easily separated using an Accucore HILIC column, which provides excellent resolution (Rs>5) for these compounds. This demonstrates that the Accucore HILIC column is an excellent choice of column for the rapid analysis of decitabine and related substances.

References

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