

Shim-pack Arata LC Columns

Unprecedented Resolution and Peak Shape of Basic Compounds

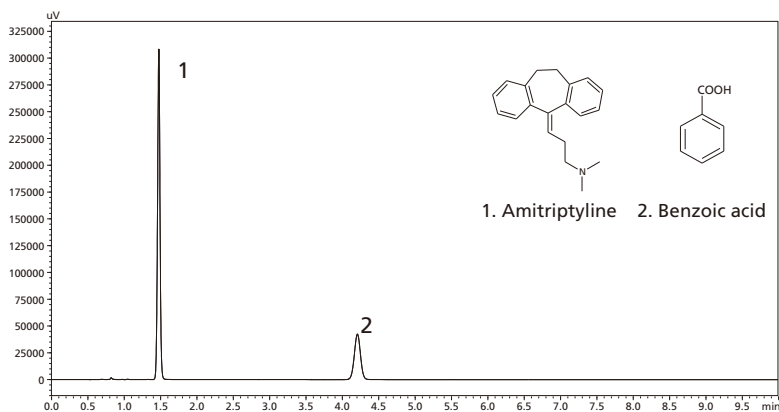
Even for LC columns that claim to be designed for basic compounds, adequate resolution often can not be obtained due to problems such as leading of highly polar basic compounds, peak shape deterioration of acidic compounds, or long equilibration time required for low ionic strength acidic mobile phase.

All of these issues have been solved with Shim-pack Arata that was specifically designed to give unmatched peak shape for basic compounds.



Unmatched Peak Shape Elegantly Designed for A Wide Range of Compounds

Unmatched peak shape of basic compounds could be achieved while maintaining good peak shape for acidic compounds with Shim-pack Arata LC columns. Even with low ionic strength acidic mobile phase, such as 0.1% formic acid containing mobile phase, excellent peak shape of both amitriptyline (a basic compound) and benzoic acid (an acidic compound) could be achieved.



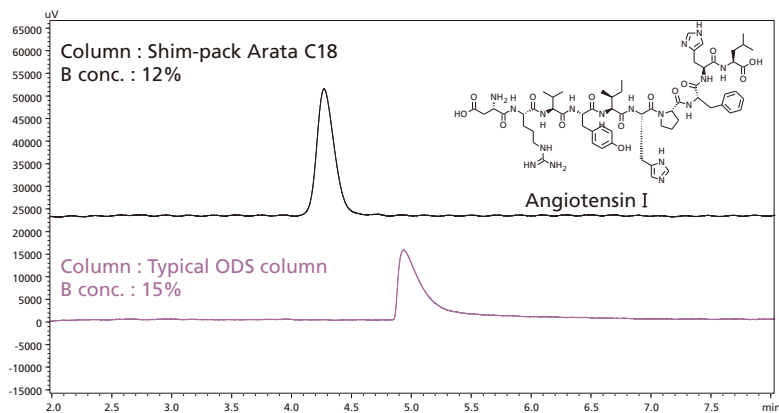
Analysis of Amitriptyline and Benzoic Acid with The Mobile Phase with 0.1% Formic Acid

■ Analytical Conditions
 Column : Shim-pack Arata C18
 Mobile Phase : 0.1% HCOOH in H₂O / CH₃CN = 70 / 30
 Flow Rate : 0.4 mL/min
 Detection : 254 nm
 Column Temp. : 40 °C
 Inj. Volume : 2 µL

*Gel Lot QC test analytical condition

Excellent Separation Performance for Peptides Even with Weak Ion Paring Acids

In order to obtain good peak shape of peptides under reversed phase chromatography, TFA containing mobile phases are frequently used which the ion pairing effect is relatively strong. However, TFA could cause ion suppression in LC/MS (IMS) analysis. Excellent peak shape and separation performance for peptides could be achieved on the Shim-pack Arata LC column even with 0.1% formic acid (weak ion pairing acid) containing mobile phase.



Analysis of Angiotensin I Using Isocratic Mobile Phase with 0.1% Formic Acid (Shim-pack Arata C18 vs. Typical ODS)

■ Analytical Conditions
 Mobile Phase : A: 0.1% HCOOH in H₂O
 : B: 0.1% HCOOH in CH₃CN
 Flow Rate : 0.4 mL/min
 Detection : 214 nm
 Column Temp. : 40 °C
 Inj. Volume : 1 µL
 Sample : Angiotensin I
 Vial : TORAST-H™ Bio Vial

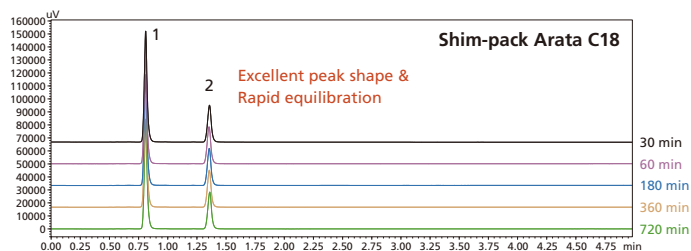
Column	Asymmetry
Shim-pack Arata C18	1.26
Typical ODS column	6.94

*Peptide is usually analyzed using gradient condition. Isocratic condition was used for this application in order to show the difference of LC columns more clearly. Result using gradient condition on Shim-pack Arata C18 was also evaluated and it was confirmed that angiotensin was fully eluted from the column with isocratic condition.

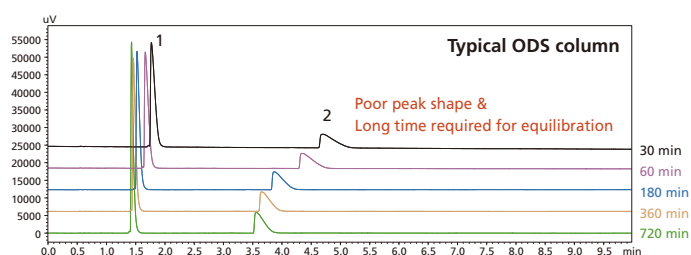
**Acetonitrile concentration was adjusted in order that the retention time of peptide on each column become similar.

Rapid Equilibration Even with Low Ionic Strength Acidic Mobile Phases

When analyzing basic compounds on a typical ODS column with low ionic strength acidic mobile phase, peak shape and long equilibration times are common problems. Shim-pack Arata LC columns can be rapidly equilibrated in low ionic strength acidic mobile phases yielding excellent peak shape and stable retention times.

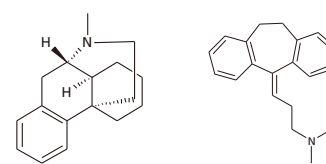


Compounds	Equilibration Time (min)	Retention Time (min)										CV(%)
		10	30	60	120	180	240	360	480	600	720	
1 Dextromethorphan	Retention Time (min)	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.2
	Symmetry Factor	1.20	1.19	1.19	1.18	1.18	1.18	1.18	1.18	1.18	1.18	0.6
2 Amitriptyline	Retention Time (min)	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	0.3
	Symmetry Factor	1.06	1.07	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	0.3



Compounds	Equilibration Time (min)	Retention Time (min)										CV(%)
		10	30	60	120	180	240	360	480	600	720	
1 Dextromethorphan	Retention Time (min)	1.9	1.8	1.7	1.6	1.5	1.5	1.5	1.4	1.4	1.4	10.4
	Symmetry Factor	3.28	3.14	3.01	2.70	2.63	2.56	2.51	2.49	2.56	2.49	10.2
2 Amitriptyline	Retention Time (min)	5.3	4.7	4.3	4.0	3.9	3.8	3.7	3.6	3.5	3.6	13.5
	Symmetry Factor	4.23	4.23	4.35	4.22	4.13	4.17	4.09	4.02	3.99	3.90	3.1

Comparison of Column Equilibration in The Mobile Phase with 0.1% Formic Acid (Shim-pack Arata C18 vs. Typical ODS Column)



1. Dextromethorphan 2. Amitriptyline

Analytical Conditions

Instruments : NexeraX2MP_M30A (STD Cell)
 Column : Shim-pack Arata C18 (3.0 × 75 mm, 2.2 μm)
 Typical ODS column (3.0 × 75 mm, sub 2 μm),
 Mobile Phase : 0.1% HCOOH in H₂O / CH₃CN = 70 / 30
 Flow Rate : 0.4 mL/min
 Detection : 280 nm
 Column Temp. : 40 °C
 Inj. Volume : 2 μL
 Sample : Amitriptyline, Dextromethorphan

*Both were new columns (shipping solvent : acetonitrile) and equilibrated with mobile phase without any conditioning. Basic drugs were analyzed after a certain period of time of equilibration and RT and symmetry factor of the drugs were compared.

Ordering Information

Shim-pack Arata C18 2.2 μm

Length (mm)	ID (mm)	2.0		3.0	
		227-32801-01	227-32802-01	227-32801-02	227-32802-02
50					
75					
100					
150					

Shim-pack Arata C18 5 μm (Coming Soon)

2.0 × 50 mm		3.0 × 50 mm		4.6 × 50 mm	
2.0 × 75 mm		3.0 × 75 mm		4.6 × 75 mm	
2.0 × 100 mm		3.0 × 100 mm		4.6 × 100 mm	
2.0 × 150 mm		3.0 × 150 mm		4.6 × 150 mm	
				4.6 × 250 mm	



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