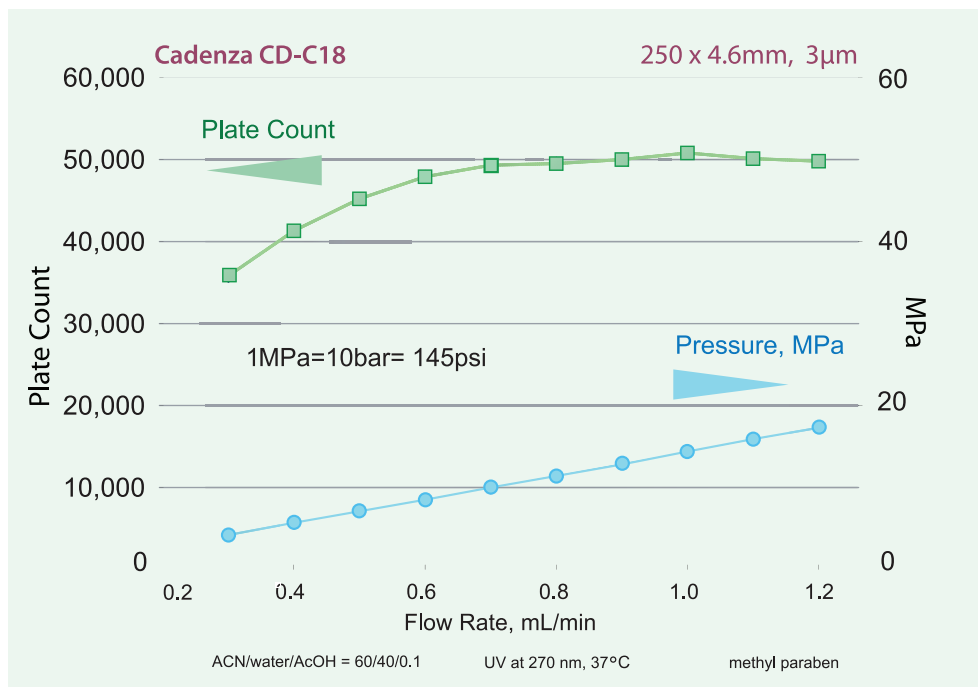


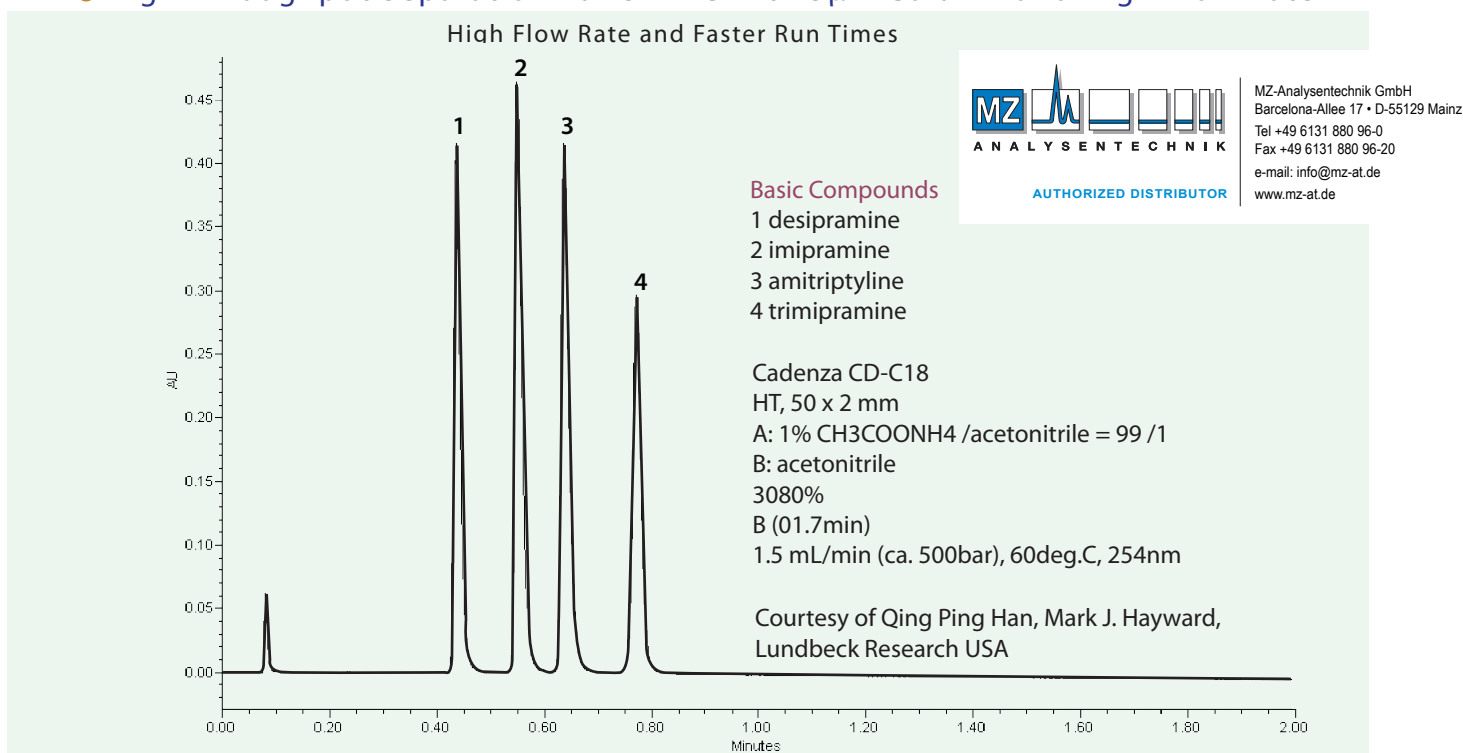
- Higher Column Efficiency
- Lower Back Pressure
- Better Separation of Hydrophobic Compounds
- Higher Steric Selectivity
- High Plate Count at a Low Flow Rate

- Lower Back Pressure
1.2mL flow rate and only 2,600 psi for 250mm length column



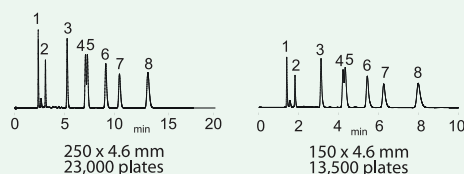
Cadenza CD-C18 offers lower back pressure for a 3 μ m packing material. In the above graph, a 250 x 4.6mm 3 μ m Cadenza CD-C18 has pressure of only 50 MPa (500 bar, 7250 psi) with a flow rate of 1.2 mL/min. The graph also shows lower analysis pressure, LC-ESI usage even with a 4.6mm column and decreased solvent consumption.

- High Throughput Separation For UHPLC with 3 μ m Column and High Flow Rate



● A Revolution in Column Efficiency

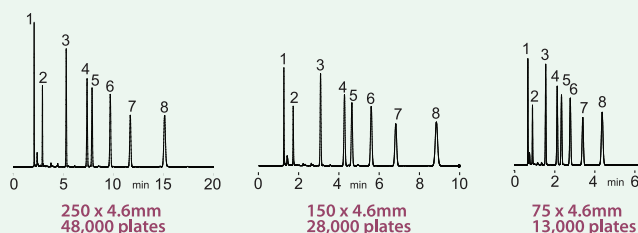
Conventional 5µm ODS Columns



10mM CH₃COONH₄ / ACN = 61/39
1.0 mL/min, 37 °C
UV at 254nm

1. 1-Hydroxy-7-azabenzotriazole
2. Acetoaminophen
3. Prednisolone
4. 6-Methylprednisolone
5. Methyl-3-amino-2-thiophenecarboxylate
6. Corticosterone
7. 4-Aminobenzophenone
8. Propyl paraben

Cadenza CD-C18



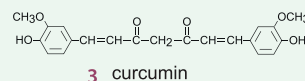
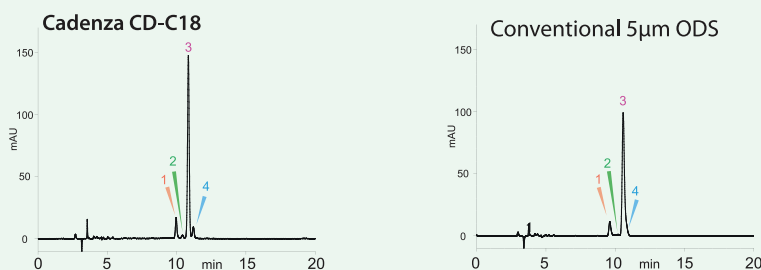
Higher Throughput

Cadenza CD-C18 is a leader in high throughput. Cadenza yields equal or better results than our competitors, but with a shorter column length. This results in three major benefits: shorter analysis time, less solvent use, and more efficient methods development.

Higher Resolution

As shown in the examples at left, Cadenza CD-C18 provides twice the efficiency of equivalently sized columns. Cadenza CD-C18 demonstrates impressive plate numbers and exceptionally high recognition of molecules in the stationary phase. Cadenza CD-C18 users can expect unprecedented performance. The 250 x 4.6mm columns offer 50,000 plates per column.

● 250mm 3µm Column Offers Outstanding Resolution



250 x 4.6 mm
acetonitrile / water / formic acid
= 55 / 45 / 0.05
0.8 mL/min, 37°C, UV at 220 nm

This comparison data demonstrates the high efficiency of Cadenza CD-C18's separation. Curcumin is the main ingredient found in turmeric. When analyzing the market reagent curcumin, a number of impurities are detected, as shown above. Cadenza CD-C18 clearly uncovered three impurities.

Under the exact same conditions, a conventional ODS column did not even detect the impurity shown in peak #2 of Cadenza's chromatogram. Moreover, peak #4 overlapped with the curcumin peak. This level of separation is unsatisfactory.

A high resolution column is essential to check for impurities in natural products and compounds. Cadenza CD-C18's 250 x 4.6mm column proudly offers our users the revolutionary power of 50,000 plates per column, twice the number found in standard columns.

● For Maximum Resolution, Use a 500mm Length Column with 3µm Packing Materials

Cadenza CD-C18 alkylparabens

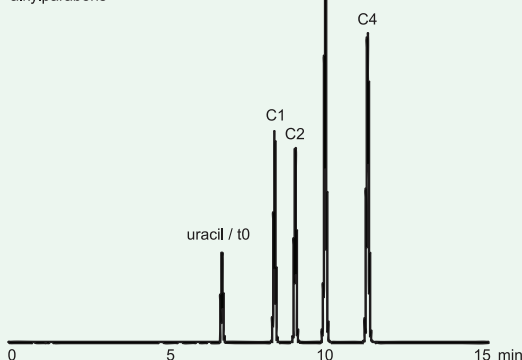


plate count

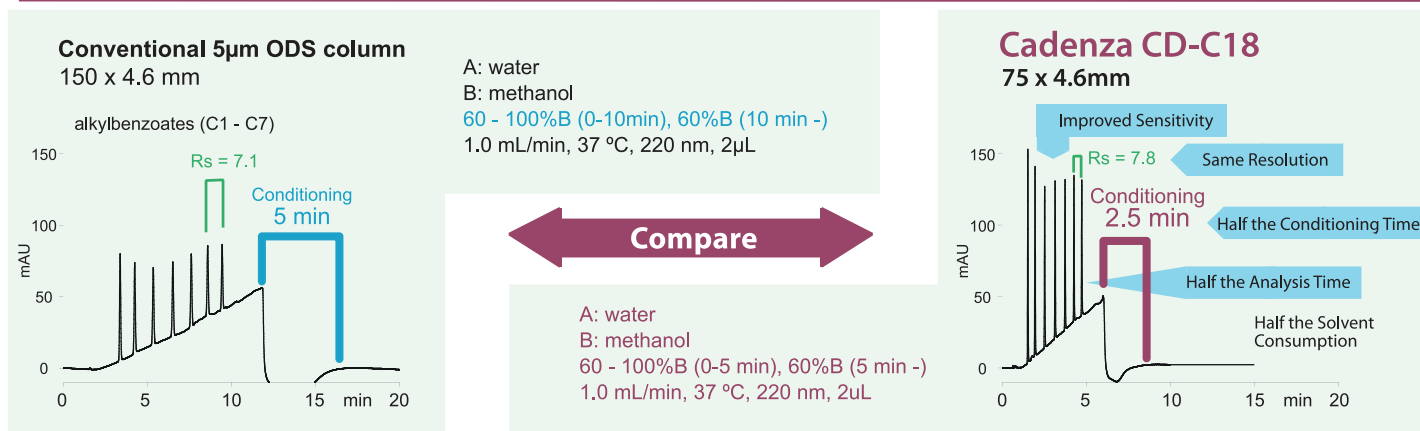
t0 109,300
C1 110,200
C2 108,300
C3 105,400
C4 102,500

Cadenza CD-C18
500 x 4.6 mm
water / acetonitrile = 20 / 80
0.7 mL/min
room temperature
270 nm
13.6 MPa

The chromatogram at left shows the performance of a new Cadenza CD-C18 column that is 500mm in length. In the separation of parabens, the 500mm column provides over 100,000 plates for each peak. This includes uracil's peak, which is used as a void marker. The Cadenza packing method is optimized so that our 250 x 4.6mm column provides 50,000 plates as well.

Our technology combines low pressure and high theoretical plates to provide 500mm columns. The 500mm length column offers superior resolution compared to two 250 x 4.6mm columns connected in series.

Achieve Higher Efficiencies with Shorter Cadenza CD-C18 Columns



The shorter Cadenza CD-C18 75 x 4.6mm can replace your conventional 150 x 4.6mm and offer you:

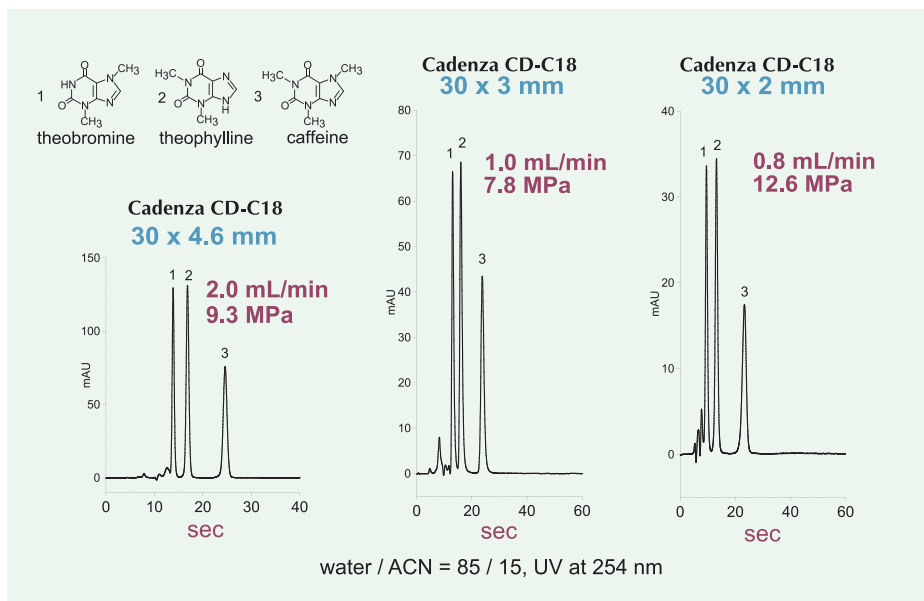
- Similar or improved resolution
- Half the analysis time
- Improved concentration and sensitivity
- Half the conditioning time
- Half the solvent use

A shorter Cadenza column offers the same degree of separation while cutting analysis time and conditioning time in half.

It's easy to switch conditions for gradient analysis. Gradient time is reduced by 50%, while the gradient's initial and final concentration remains the same. In the case of isocratic analysis, the same conditions apply. Cadenza offers improved sensitivity with the same resolution by fully realizing the power of a 3 μ m particle column design.

Cadenza offers an advantage of 13,000 plates in a 75mm column, double that of a same dimension 5 μ m ODS column. Achieve the same separation quality as a conventional column with a shorter Cadenza column.

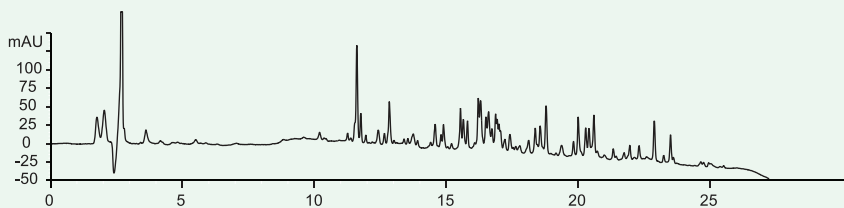
High Speed Analysis with High Flow Rates and Short Columns



For the highest throughput, use the shortest column that gives you sufficient separation and resolution. Cadenza CD-C18 comes in unusually short sizes of 10mm, 20mm, and 30mm, allowing customers to minimize their run times. Because our columns have high efficiency, separation remains satisfactory for most customers when they use our shorter columns to cut run times.

● Examples of Peptide Separations

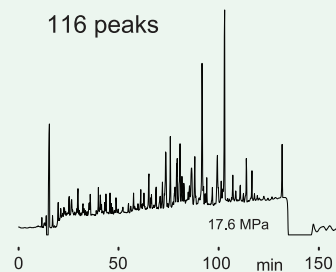
Cadenza CD-C18 150 X 2mm



150 X 2 mm
 A: water / TFA = 100 / 0.08
 B: acetonitrile / TFA = 100 / 0.05
 5%B (0-2min), 5-40%B, 40-90%B (20-25min), 90%B (25-30min), 90-5%B (30-33min)
 0.2mL/min
 UV at 214 nm
 40 °C
 BSA tryptic Digest. 18.5uL (ca. 6.5ug)

Cadenza CD-C18 500 x 4.6 3um Particles

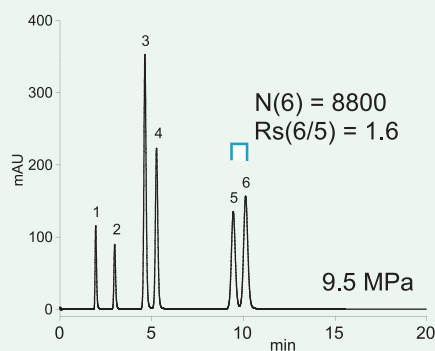
Peptides, Tryptic Digest of α -Casein
 10-45%B (0-120min), 20 μ L



A: water / TFA, B: acetonitrile / TFA
 0.5 mL/min, room temperature, 220 nm

● Examples of Isomer Separation

Cadenza CD-C18 75 X 2mm



MeOH / water = 55 / 45
 0.2 mL/min
 30 deg.C
 UV at 270 nm

- 1 CC(=O)Oc1ccc(O)cc1
methylparaben
- 2 CCOC(=O)c1ccc(O)cc1
ethylparaben
- 3 CC(C)C(=O)Oc1ccc(O)cc1
isopropylparaben
- 4 CCCC(=O)Oc1ccc(O)cc1
propylparaben
- 5 CC(C)C(C)C(=O)Oc1ccc(O)cc1
isobutylparaben
- 6 CCCCC(=O)Oc1ccc(O)cc1
butylparaben

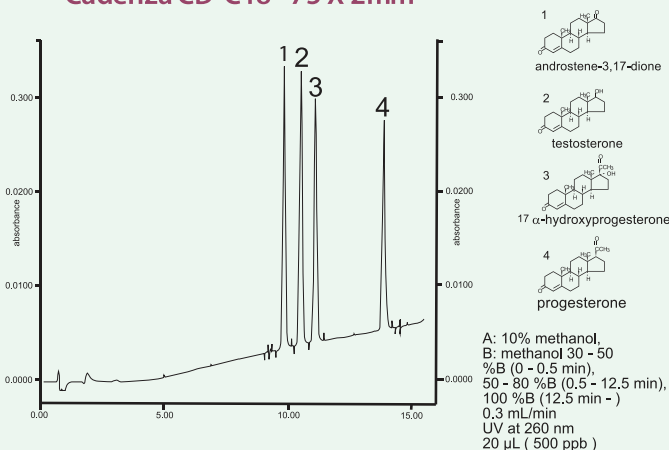
Cadenza CD-C18 excels at separating structural isomers.

As shown in this separation example, when one compares the separation of paraben isomer structures such as propylparabens and butylparabens, Cadenza provides more plates and better resolution in half the column length.

Cadenza CD-C18 offers quicker results and greater sensitivity under the same separation conditions used for a conventional column.

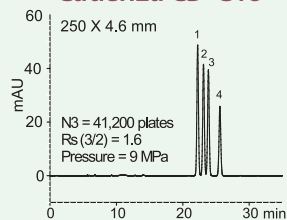
● Examples of Steroid Separations

Cadenza CD-C18 75 X 2mm



A: 10% methanol,
 B: methanol 30 - 50
 %B (0 - 0.5 min),
 50 - 80 %B (0.5 - 12.5 min),
 100 %B (12.5 min -)
 0.3 mL/min
 UV at 260 nm
 20 μ L (500 ppb)

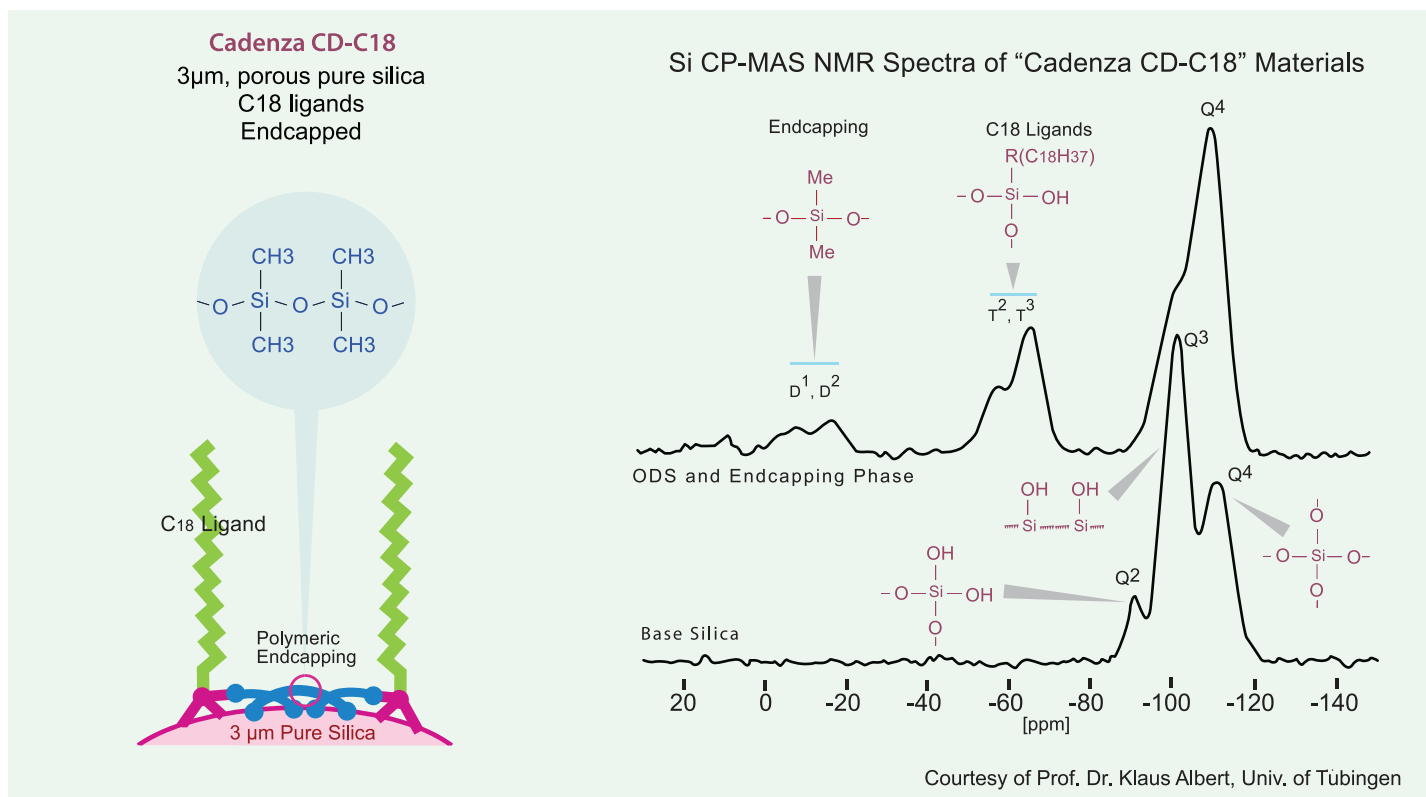
Cadenza CD-C18



- 1 C[C@]12CC[C@@H]3[C@H]([C@@H]1CC[C@@]3(O)C(=O)O)C
prednisolone
- 2 C[C@]12CC[C@@H]3[C@H]([C@@H]1CC[C@@]3(O)C(=O)O)C
prednisone
- 3 C[C@]12CC[C@@H]3[C@H]([C@@H]1CC[C@@]3(O)C(=O)O)C
hydrocortisone
- 4 C[C@]12CC[C@@H]3[C@H]([C@@H]1CC[C@@]3(O)C(=O)O)C
cortisone

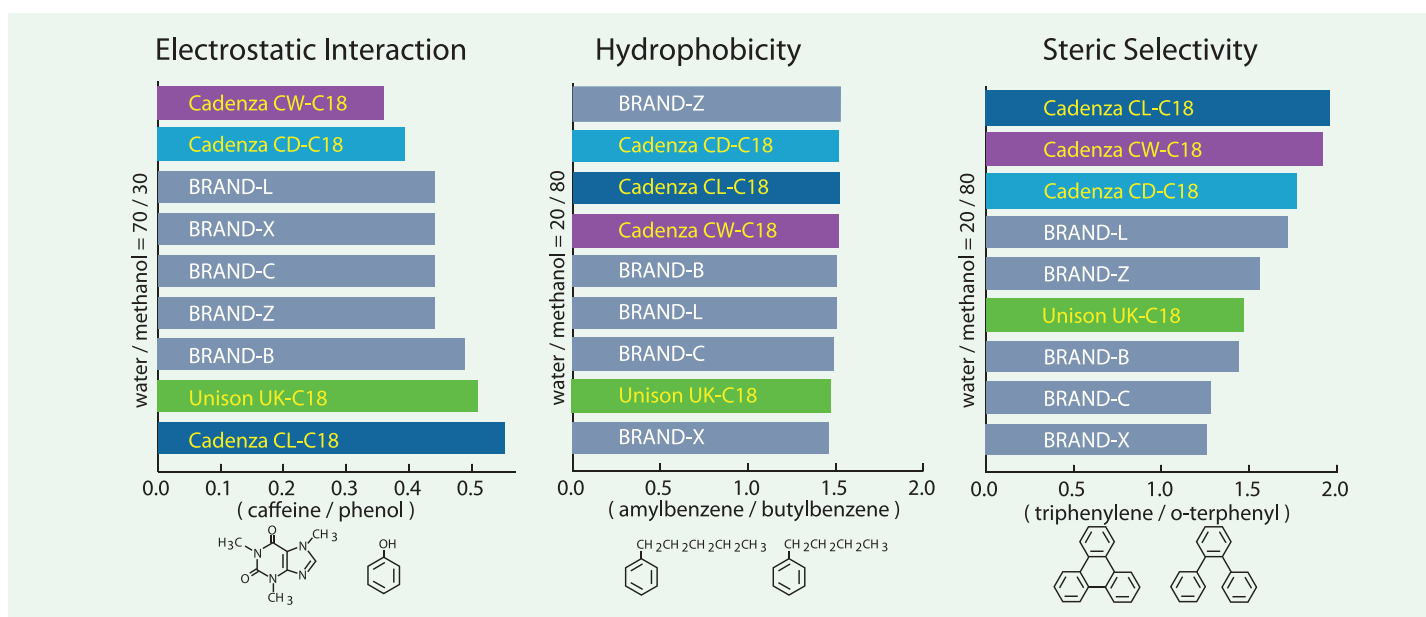
water / acetonitrile / acetic acid = 70 / 30 / 0.1
 0.5 mL/min, 37 °C, 260 nm

●Cadenza CD-C18 Phase Structure



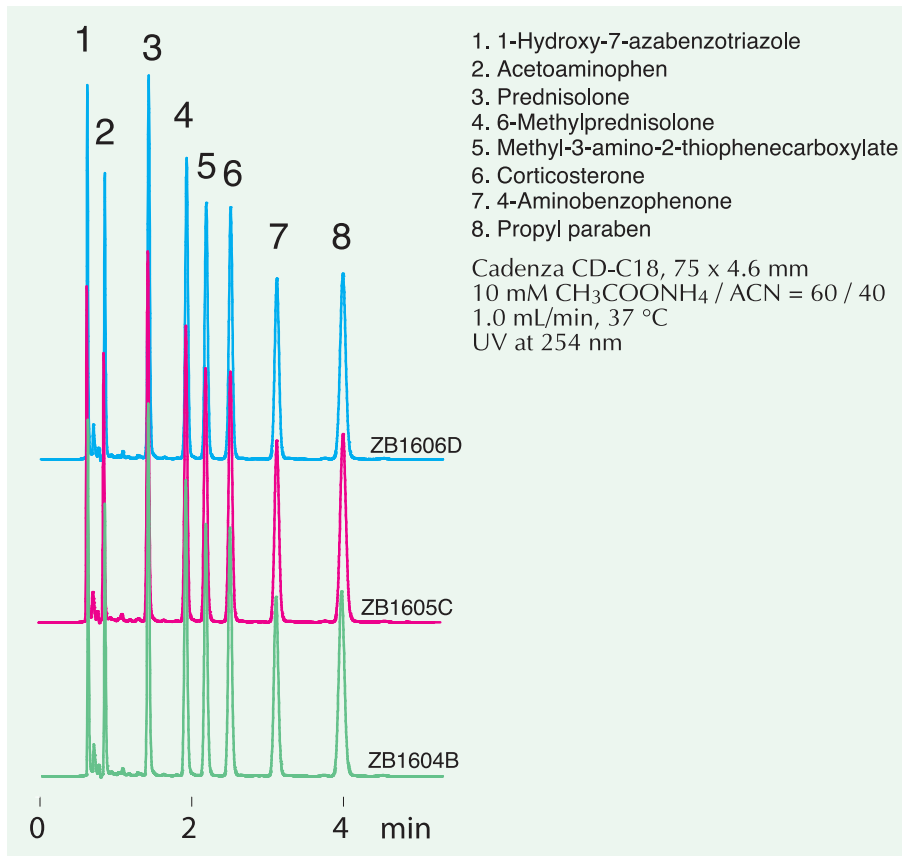
The stationary phase structure model of Cadenza CD-C18 has a novel end-capping technology called “Polymeric Endcapping”. This unique phase structure is proven by Si CP-MAS Spectra.

●Chromatographic Characteristics



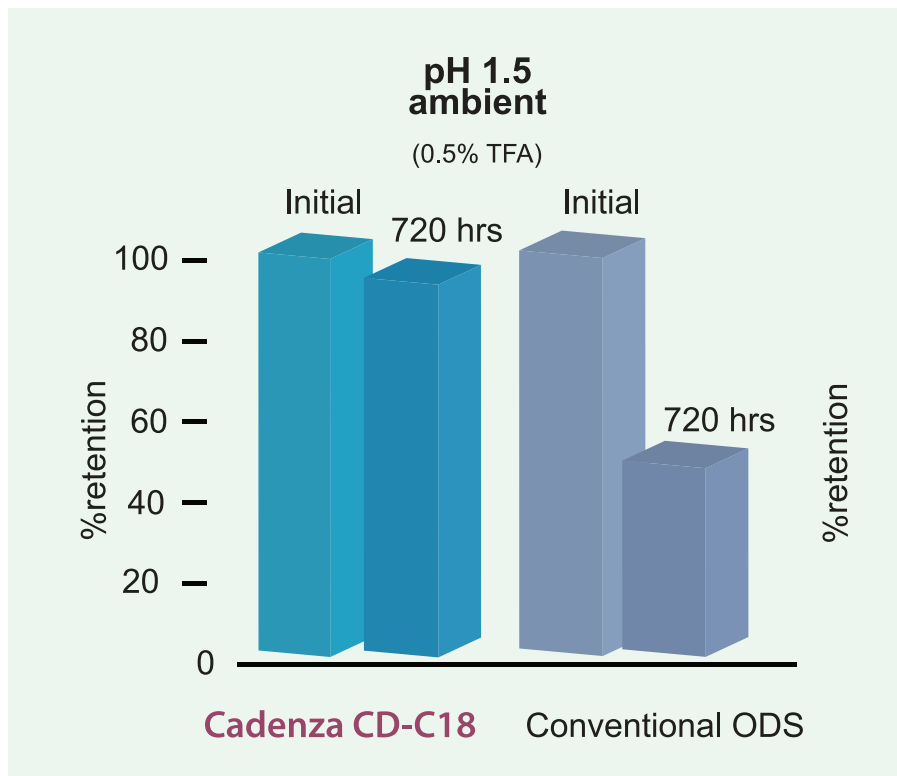
Cadenza CD-C18 is designed to provide hydrophobicity similar to that of other conventional ODS phases. However, Cadenza CD-C18 also offers lower hydrogen bonding capacity and has higher steric selectivity than other columns. These characteristics provide excellent performance for molecular recognition.

World Class Batch-to-Batch Reproducibility



This data demonstrates Cadenza CD-C18's world-class consistency. A drug-related chemical compound was separated using three columns packed with ODS material from different batches. The eluent is neutral pH and LC-MS compatible with volatile and low ionic strength. Even in this quick analysis of multiple ingredients, Cadenza CD-C18's elution peaks show no change in elution peak behavior. The column achieves high-reproducibility even with multiple ingredients including base compounds. Our material processing, ODS substitution method, and end-capping technology guarantees world-class reproducibility through proprietary total design, manufacture, and quality-control techniques.

Excellent Durability Over a Wide pH Range



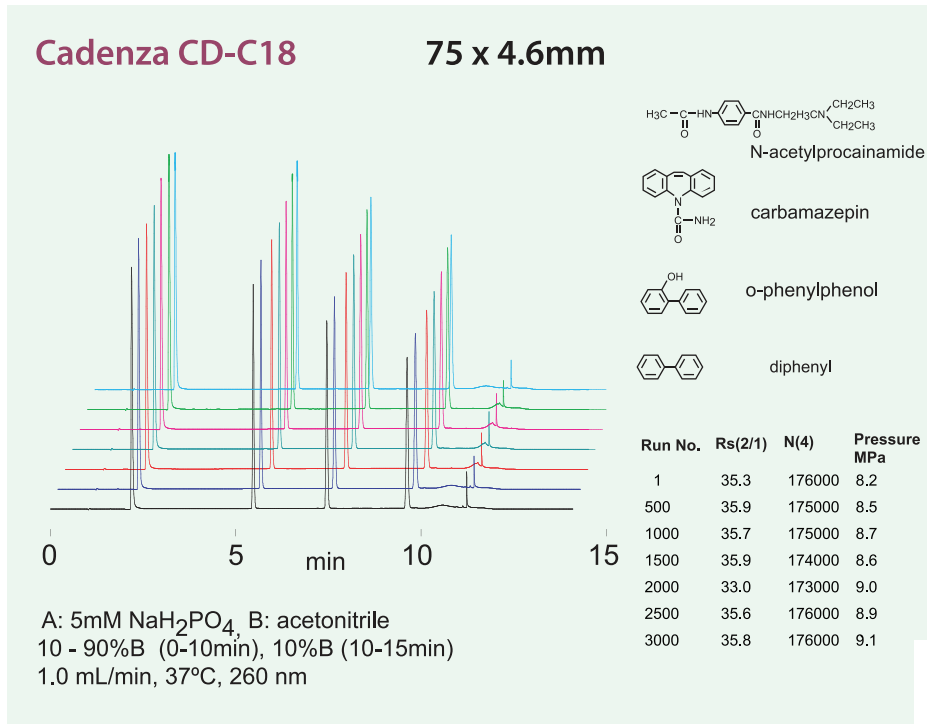
This data shows Cadenza CD-C18's pH stability.

In the water eluent of acids and alkalis (not including organic solvents), we measured the rate of change in column durability after a constant period of exposure to solvent.

Conventional ODS columns showed a huge change in column life with acidic and alkali eluents caused by hydrolysis degradation both of the stationary phase ODS and the endcapping functional group.

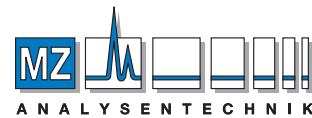
Cadenza CD-C18 excels in severe conditions, with little change in retention despite extreme pH conditions. Cadenza CD-C18's polymeric endcapping eliminates the traditional problems associated with moving from low pH to high pH in the mobile phase.

● Column Consistency in Gradient Analysis



This data shows Cadenza CD-C18's durability through gradient analysis. Gradient analysis is a stressful elution mode for columns. Researchers are concerned about column degradation, particularly through the degradation of packing material that can result after the use of a wide range of organic solvent concentrations.

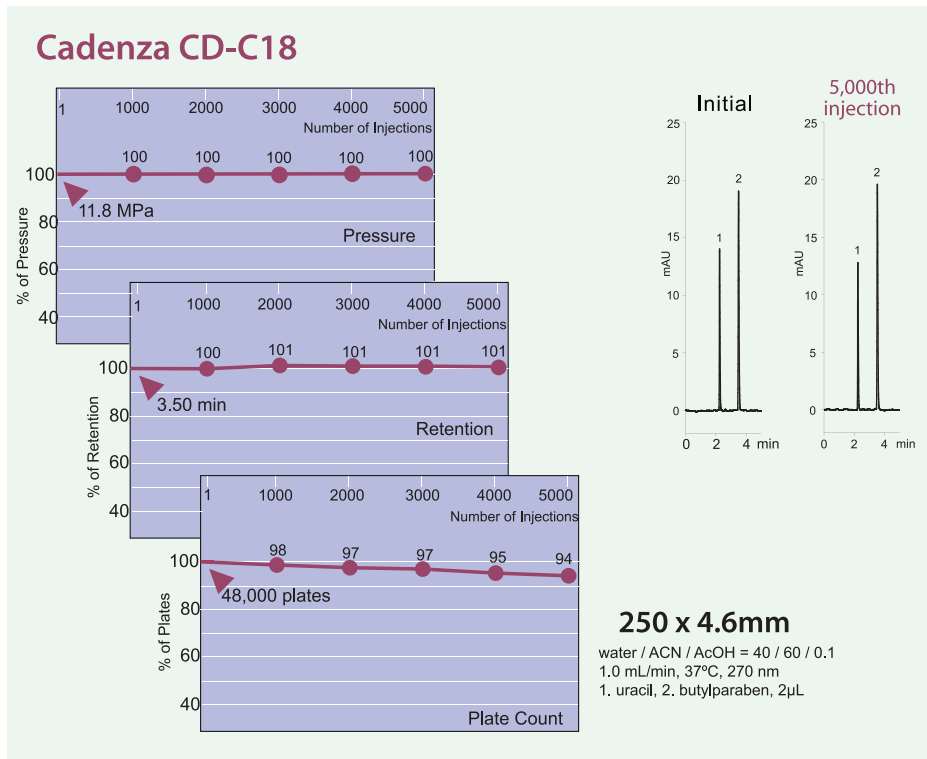
We examined the column's durability through repeated analysis using gradient elution. There was no column deterioration after 3000 injections under optimized conditions. The basic compound's separation (Peak 1, 2) was also excellent. Under such conditions, it is possible to achieve stable analysis during non-stop 24 hour experimentation.



MZ-Analysentechnik GmbH
 Barcelona-Allee 17 • D-55129 Mainz
 Tel +49 6131 880 96-0
 Fax +49 6131 880 96-20
 e-mail: info@mz-at.de
 www.mz-at.de

AUTHORIZED DISTRIBUTOR

● Column Durability through Repeat Injections



This data shows the column life of Cadenza CD-18 under inspection conditions.

We conducted a repeat injection experiment with an optimized Cadenza. The resulting packing situation yielded over 90% of the normal plate numbers, even after 5000 injections. There was little effect on column life or column pressure.

The column life changes dramatically with temperature, pH, and mobile phase composition. While this experiment's results may not apply to all situations, the Cadenza CD-C18 offers the industry's highest efficiency in processing the most samples possible.

● Ordering Information for Cadenza CD-C18

3µm Columns, Pressure limits of up to: 50MPa, 500 bar, 7,500 psi						3µm, 100MPa, 1000 bar, 15,000 psi	
	ID					Column Length	ID
Column Length	1.0 mm	1.5 mm	2.0 mm	3.0 mm	4.6 mm		2.0 mm
10			CD020T	CD030T	CD000T	10	
20			CD029T	CD039T	CD009T	20	
30	CD011T	CD071T	CD021T	CD031T	CD001T	30	CD021U
50	CD012T	CD072T	CD022T	CD032T	CD002T	50	CD022U
75	CD013T	CD073T	CD023T	CD033T	CD003T	75	CD023U
100	CD014T	CD074T	CD024T	CD034T	CD004T	100	CD024U
150	CD015T	CD075T	CD025T	CD035T	CD005T	150	CD025U
250	CD016T	CD076T	CD026T	CD036T	CD006T	250	CD026U

3µm Columns, Pressure limits of up to: 20MPa, 250 bar, 3,000 psi							
	Internal Diameter						
Column Length	1.0 mm	1.5 mm	2.0 mm	3.0 mm	4.6 mm	6.0 mm	10.0 mm
10			CD020	CD030	CD000		
20			CD029	CD039	CD009		
30	CD011	CD071	CD021	CD031	CD001	CD061	CD0P1
50	CD012	CD072	CD022	CD032	CD002	CD062	CD0P2
75	CD013	CD073	CD023	CD033	CD003	CD063	CD0P3
100	CD014	CD074	CD024	CD034	CD004	CD064	CD0P4
150	CD015	CD075	CD025	CD035	CD005	CD065	CD0P5
250	CD016	CD076	CD026	CD036	CD006	CD066	CD0P6
500					CD007		

Guard Column System for Cadenza CD-C18							
	Internal Diameter						
	1.0 mm	1.5 mm	2.0 mm	3.0 mm	4.6 mm	6.0 mm	10.0 mm
Guard Holder	GCH01S	GCH01S	GCH01S	GCH01S	GCH01S	GCH01S	GCH02M
Guard Cartridge (Set of 3)	GCCD0C	GCCD0C	GCCD0S	GCCD0S	GCCD0S	GCCD0S	GCCD0M

5µm Columns, Pressure Limits of up to: 20MPa, 200 bar, 3,000 psi										
	Internal Diameter									
Column Length	1.0 mm	1.5 mm	2.0 mm	3.0 mm	4.0 mm	4.6 mm	6.0 mm	10.0 mm	20.0 mm	28.0 mm
30	5CD011	5CD071	5CD021	5CD031		5CD001	5CD061	5CD0P1		
50	5CD012	5CD072	5CD022	5CD032		5CD002	5CD062	5CD0P2	5CD0Q2	
75	5CD013	5CD073	5CD023	5CD033		5CD003	5CD063	5CD0P3		
100	5CD014	5CD074	5CD024	5CD034		5CD004	5CD064	5CD0P4	5CD0Q4	
150	5CD015	5CD075	5CD025	5CD035	5CD045	5CD005	5CD065	5CD0P5	5CD0Q5	
250	5CD016	5CD076	5CD026	5CD036	5CD046	5CD006	5CD066	5CD0P6	5CD0Q6	5CD0R6

Guard Column System for Cadenza 5CD-C18										
	Internal Diameter									
	1.0 mm	1.5 mm	2.0 mm	3.0 mm	4.0 mm	4.6 mm	6.0 mm	10.0 mm	20.0 mm	28.0 mm
Guard Holder	GCH01S	GCH01S	GCH01S	GCH01S	GCH01S	GCH01S	GCH01S	GCH02M	GCH02M	GCH02M
Guard Cartridge (Set of 3)	GC5CD0C	GC5CD0C	GC5CD0S	GC5CD0S	GC5CD0S	GC5CD0S	GC5CD0S	GC5CD0M	GC5CD0M	GC5CD0M

All of our stationary phases can also be made in the following internal diameters:
 Nano: 0.05mm, 0.075mm Capillary: 0.1mm, 0.3mm, 0.5mm Semi-Prep: 20mm, 28mm

Four Easy Ways To Order:

1. Call us at (215) 665-8902
2. Order by fax (501) 646-3497
3. Through VWR (vendor code 8070779) or Fisher (vendor code VN101253)
4. Via www.imtaktusa.com with any major credit card