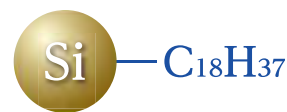


- **Base Material** : High Purity ES Silica Gel
- **Particle Size** : 2 μm , 3 μm , 5 μm , 10 μm
- **Surface Area** : 350 m^2/g
- **Pore Size** : 100 \AA (10 nm)
- **Pore Volume** : 0.85 mL/g
- **Functional Group** : Octadecyl
- **End-capping** : Yes
- **Carbon Loading** : 14 %
- **USP Code** : L1
- **pH Range** : 1 - 10



In general, silica based columns are mechanically stable and highly efficient but cannot be used under alkaline conditions as their residual silanol groups tend to adsorb organic bases. InertSustain C18 employs a radically new type of silica that is uniquely surface-modified for precise control of the silica properties.

InertSustain C18 inherits the advantages of all current Inertsil HPLC columns (e.g., extremely low operating back pressure, superior inertness to almost all analytes, high efficiency, and compatibility with a wide range of solvents) while additionally enabling wide pH analysis with consistent column-to-column and lot-to-lot performance.

Figure 1 : Basic Compounds

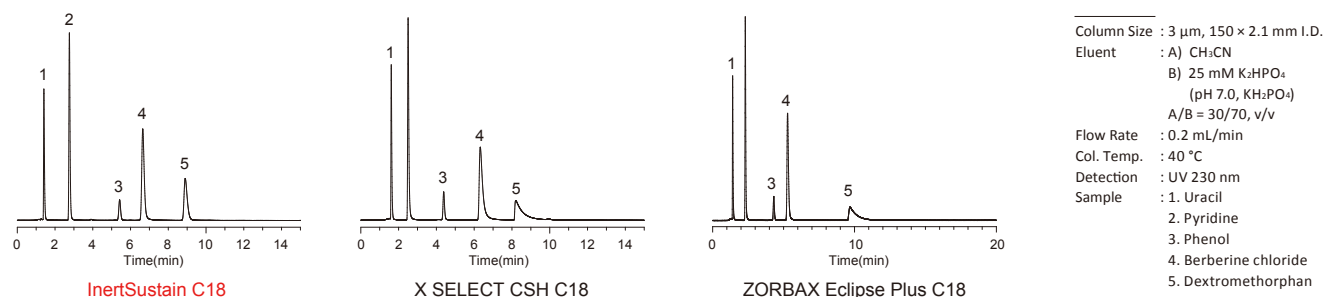


Figure 2 : Acidic Compounds

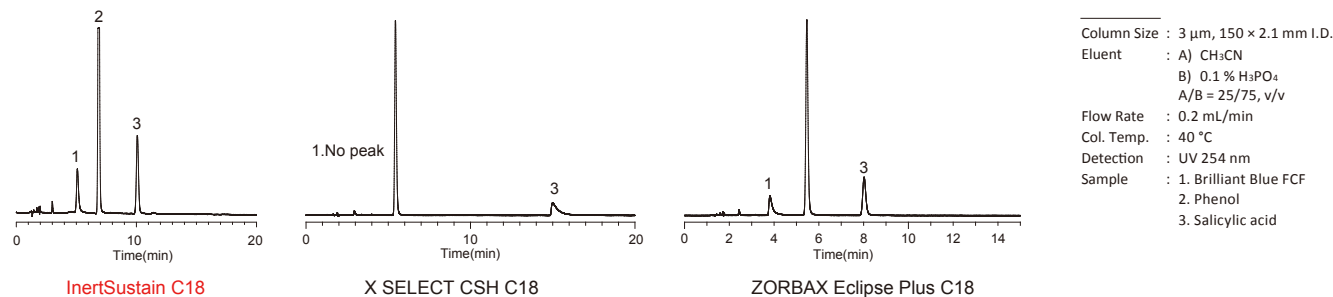
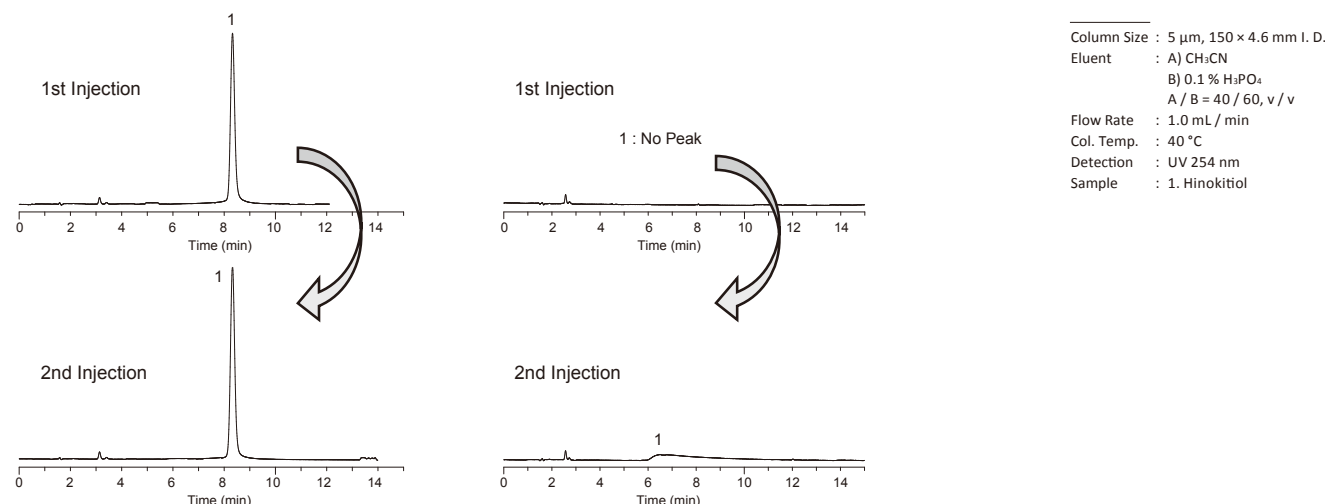


Figure 3 : Chelating Compounds



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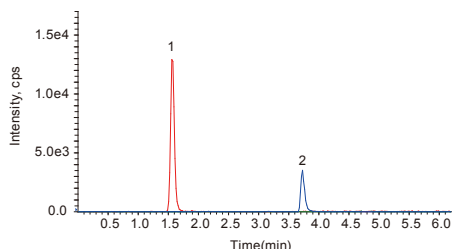
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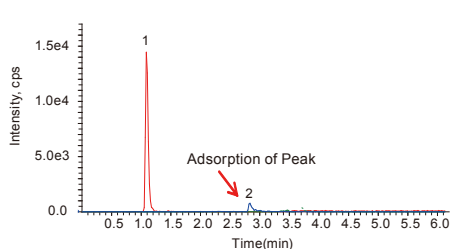
Comparison of Performance to Core-Shell Columns

As shown below, core-shell columns show peak tailing due to the presence of trace metals or silanol groups in their silica gel. Quantitative and qualitative analysis will be a source of concern since the adsorption of compounds can be expected.

InertSustain C18 (3 μm)



Kinetex C18 (1.7 μm)

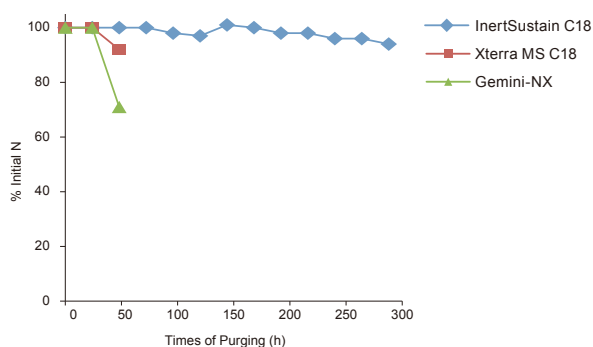


Conditions

Column : ODS Column(100 × 2.1 mm I.D.)
 Eluent : A) 2 mM CH₃COONH₄ in 95 % CH₃CN
 B) 2 mM CH₃COONH₄ in 10 % CH₃CN
 A / B = 20 / 80 - 2 min - 100 / 0 - 2.5 min
 - 100 / 0 - 0.01 min - 20 / 80, v / v
 (Mixed by a gradient mixer)
 Flow Rate : 0.3 mL / min
 Col. Temp. : 40 °C
 Detection : LC / MS / MS
 (4000 QTRAP® : ESI, Positive, MRM)
 Injection Vol. : 10 μL
 Sample : 1. Nitrofurazone (100 μg / L)
 2. Lasalocid A (100 μg / L)

Wide pH Compatibility with Long Column Lifetime

As shown in the experiment below, due to the introduction of Evolved Surface Silica, InertSustain C18 maintained high efficiency and peak shape for 300 hours while other "wide pH" column brands failed.



Purging Conditions

Column Size : 5 μm, 150 × 4.6 mm I.D.
 Eluent : A) CH₃OH
 B) 50 mM Triethylamine (pH 10.0)
 A/B = 30/70, v/v
 Flow Rate : 1.0 mL/min
 Col. Temp. : 50 °C

Analytical Conditions

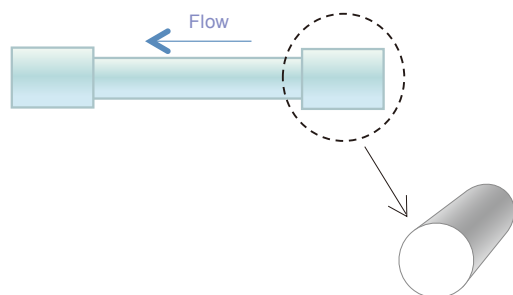
Eluent : A) CH₃CN
 B) H₂O
 A/B = 65/35, v/v
 Flow Rate : 1.0 mL/min
 Col. Temp. : 40 °C
 Detection : UV 254 nm
 Sample : Naphthalene

Experience the InertSustain! (Inertness and Sustainability)

Highly end-capped ODS column such as InertSustain C18 offers an opportunity to flush out contaminants from the column surface easily using an organic solvent. Coffee melanoidins are brown heterogeneous polymers contained in coffee. Its components are not clarified yet, but it is considered to contain several ionic compounds, which a poorly end-capped column will adsorb those ionic compounds leading to short column lifetime.

As for ODS column, which is commonly used for HPLC and LC/MS/MS, its inertness has an influence not only on peak shape but also detection sensitivity and durability. It is highly recommended to use highly end-capped column which provides good peak shape for both basic and acidic compounds such as InertSustain C18.

The packing material was visually confirmed by removing the column



Comparison of Brand A and InertSustain C18 columns before, after coffee injection, and after washing. The columns are shown in three rows: "Before Experiment", "Injection of Coffee", and "Washing the column with CH₃CN 100 %, 10 min.". Brand A shows significant contamination (brown residue) after coffee injection, while InertSustain C18 remains clean. After washing, Brand A is still contaminated (brown residue), while InertSustain C18 is clean (white residue).

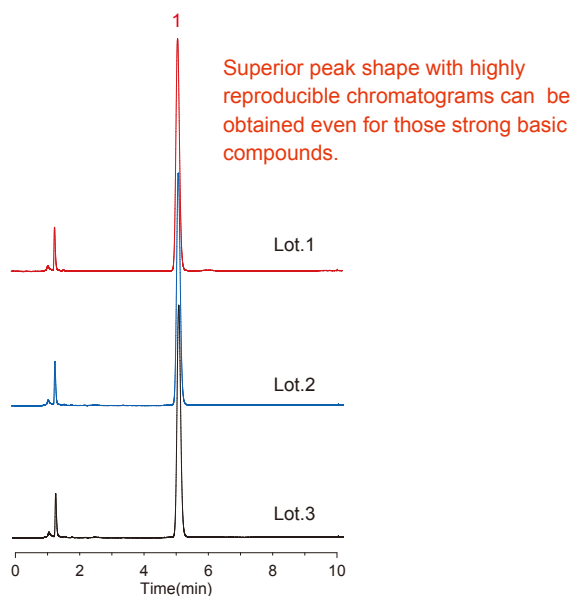
Ionic contaminants were hard to be washed out from the Column

InertSustain C18

Reliable Reproducibility, Performance and Quality

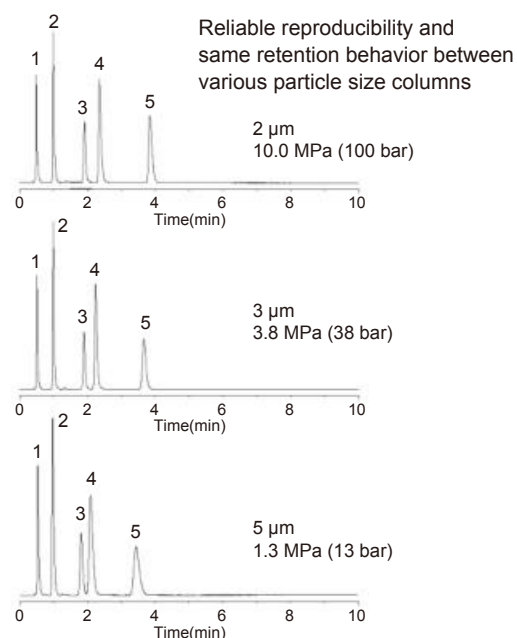
Rigorous quality control of physical properties and strict chromatographic tests for inertness and selectivity, contribute to the production of InertSustain C18 with an outstanding reproducibility and long column lifetime.

Figure 1 : Strong Basic Compound Test



Conditions
 Column Size : 5 μ m, 250 \times 4.6 mm I.D.
 Eluent : A) CH₃CN
 B) 25 mM phosphate buffer (pH 7.0)
 A / B = 40 / 60, v / v
 Flow Rate : 1.0 mL / min
 Col. Temp. : 40 °C
 Detection : UV 220 nm
 Sample : 1. Dextromethorphan

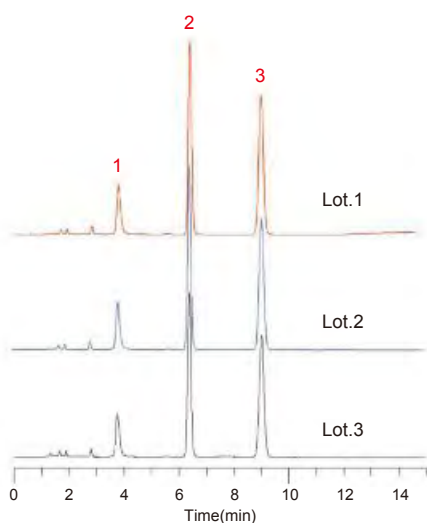
Same Retention Behavior between Various Particle Sizes



Conditions
 Column Size : 50 \times 2.1 mm I.D.
 Eluent : A) CH₃OH
 B) 25 mM phosphate buffer (pH 7.0)
 A / B = 30 / 70, v / v
 Flow Rate : 0.2 mL / min
 Col. Temp. : 40 °C
 Detection : UV 230 nm

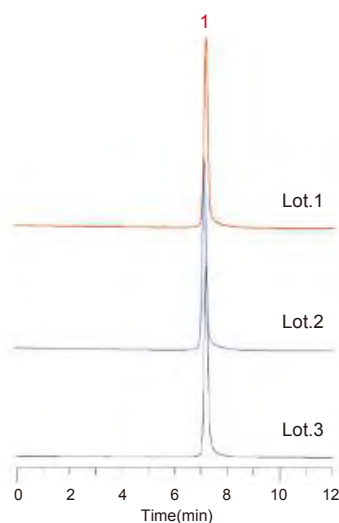
Sample : 1. Uracil
 2. Pyridine
 3. Phenol
 4. Berberine chloride
 5. Dextromethorphan

Figure 2 : Strong Acidic Compound Test



Conditions
 Column Size : 5 μ m, 150 \times 4.6 mm I.D.
 Eluent : A) CH₃CN
 B) 0.1 % H₃PO₄
 A / B = 25 / 75, v / v
 Flow Rate : 1.0 mL / min
 Col. Temp. : 40 °C
 Detection : UV 254 nm
 Sample : 1. Brilliant Blue FCF
 2. Phenol
 3. Salicylic acid

Figure 3 : Strong Chelating Compound Test



Conditions
 Column Size : 5 μ m, 150 \times 4.6 mm I.D.
 Eluent : A) CH₃CN
 B) 0.1 % H₃PO₄
 A / B = 40 / 60, v / v
 Flow Rate : 1.0 mL / min
 Col. Temp. : 40 °C
 Detection : UV 254 nm
 Sample : 1. Hinokitiol

Analytical Columns

Particle Size: 2 µm	Length \ I.D. (mm)	2.1	3.0		
	30	5020-14351	5020-14361		
	50	5020-14352	5020-14362		
	75	5020-14353	5020-14363		
	100	5020-14354	5020-14364		
	150	5020-14355	5020-14365		
HP Series Particle Size: 3 µm 50 MPa (500 bar)	Length \ I.D. (mm)	2.1	3.0	4.6	
	30	5020-14411	5020-14421	5020-14441	
	50	5020-14412	5020-14422	5020-14442	
	75	5020-14413	5020-14423	5020-14443	
	100	5020-14414	5020-14424	5020-14444	
	150	5020-14415	5020-14425	5020-14445	
	250	5020-14416	5020-14426	5020-14446	
Particle Size: 3 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-14301	5020-14311		
	50	5020-14302	5020-14312		
	75	5020-14303	5020-14313		
	100	5020-14304	5020-14314		
	150	5020-14305	5020-14315		
	250	5020-14306	5020-14316		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-07411	5020-07421	5020-07431	5020-07441
	50	5020-07412	5020-07422	5020-07432	5020-07442
	75	5020-07413	5020-07423	5020-07433	5020-07443
	100	5020-07414	5020-07424	5020-07434	5020-07444
	125	5020-07417	5020-07427	5020-07437	5020-07447
	150	5020-07415	5020-07425	5020-07435	5020-07445
	250	5020-07416	5020-07426	5020-07436	5020-07446
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-14201	5020-14211		
	50	5020-14202	5020-14212		
	75	5020-14203	5020-14213		
	100	5020-14204	5020-14214		
	150	5020-14205	5020-14215		
	250	5020-14206	5020-14216		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-07311	5020-07321	5020-07331	5020-07341
	50	5020-07312	5020-07322	5020-07332	5020-07342
	75	5020-07313	5020-07323	5020-07333	5020-07343
	100	5020-07314	5020-07324	5020-07334	5020-07344
	125	5020-07317	5020-07327	5020-07337	5020-07348
	150	5020-07315	5020-07325	5020-07335	5020-07345
	250	5020-07316	5020-07326	5020-07336	5020-07346
Particle Size: 10 µm	Length \ I.D. (mm)	3.9	4.0	4.6	
	100	-	5020-90557	-	
	150	-	5020-90622	5020-90623	
	200	-	-	5020-90532	
	250	5020-90621	5020-90522	5020-90624	
	300	5020-90556	5020-90558	5020-90625	

Cartridge Guard Column E

I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)			Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)		
			Particle Size			Particle Size		
			3 µm	5 µm	10 µm	3 µm	5 µm	10 µm
1.0	10	1.0	5020-19250	5020-19249	-	5020-19300	5020-19299	-
1.5, 2.1		1.5	5020-19350	5020-19349	-	5020-19400	5020-19399	-
2.1, 3.0		3.0	5020-19150	5020-19149	-	5020-19200	5020-19199	-
4.0, 4.6		4.0	5020-19050	5020-19049	5020-90626	5020-19100	5020-19099	5020-90627
2.1, 3.0	20	3.0	5020-19550	5020-19549	-	5020-19600	5020-19599	-
4.0, 4.6		4.0	5020-19450	5020-19449	5020-90628	5020-19500	5020-19499	5020-90629
Holder for Cartridge Guard Column E					For 10 mm Length			5020-08500
					For 20 mm Length			5020-08550

Reversed Phase Columns

HILIC Columns

Normal Phase Columns

SFC Columns

Ion Exchange Columns

Application Specific Columns

Guard Columns

Preparative Columns

Capillary Columns

Applications

Cat. No. Index

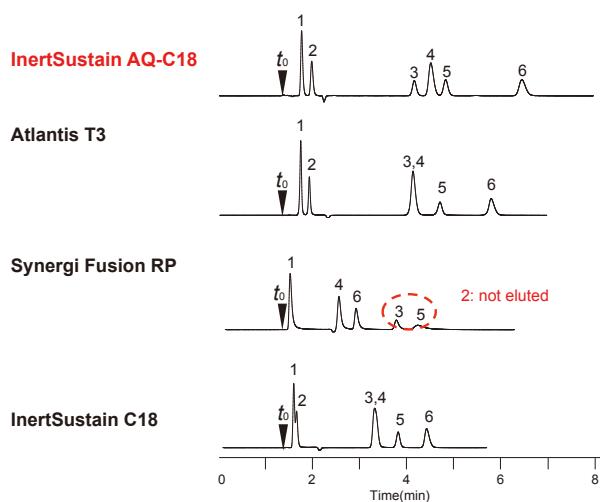
InertSustain AQ-C18

- Base Material : High Purity ES Silica Gel
- Particle Size : 1.9 μm , 3 μm , 5 μm
- Surface Area : 350 m^2/g
- Pore Size : 100 \AA (10 nm)
- Pore Volume : 0.85 mL/g
- Functional Group : Octadecyl
- End-capping : Yes
- Carbon Loading : 13%
- USP Code : L1, L96
- pH Range : 1 - 10



InertSustain AQ-C18 column is designed to achieve strong retention for highly polar compounds, which is the most challenging goal in developing reversed phase methods. The optimization of bonding of the C18 groups at equal distance to the silica gel enables InertSustain AQ-C18 to offer considerable retention for highly polar compounds even under water-rich mobile phases.

Figure 1 : Superior Retention for Highly Polar Compound



Conditions

Column : 5 μm , 150 \times 4.6 mm I.D.
 Eluent : 0.1% HCOOH in H₂O
 Flow Rate : 1.0 mL/min
 Col. Temp. : 40 $^{\circ}\text{C}$
 Detection : UV 210 nm

Sample :

1. Pyridoxamine (Vitamin B6)
2. Thiamin (Vitamin B1)
3. Nicotinic acid (Vitamin B3)
4. Pyridoxal (Vitamin B6)
5. Nicotinamide (Vitamin B3)
6. Pyridoxine (Vitamin B6)

Figure 2: InertSustain AQ-C18 Provided Strong Retention for all Basic, Neutral and Acidic Compounds under 100% Water Mobile Phase

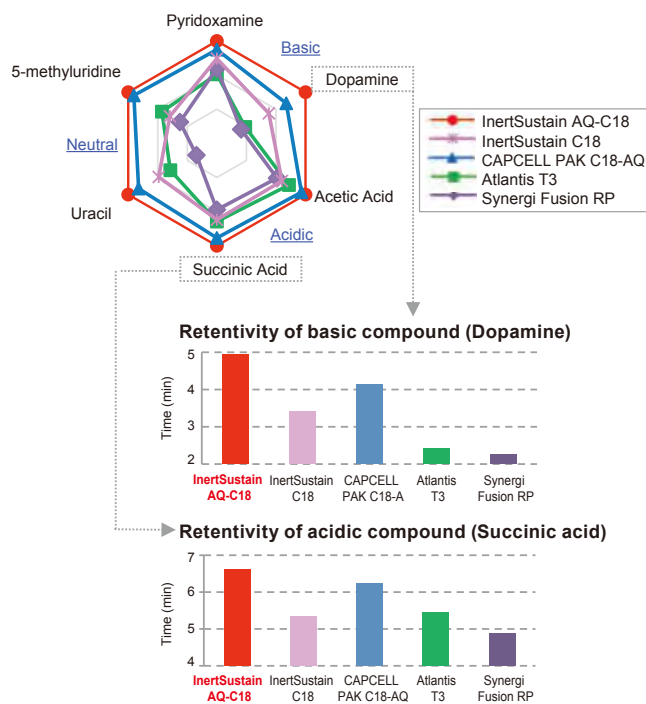
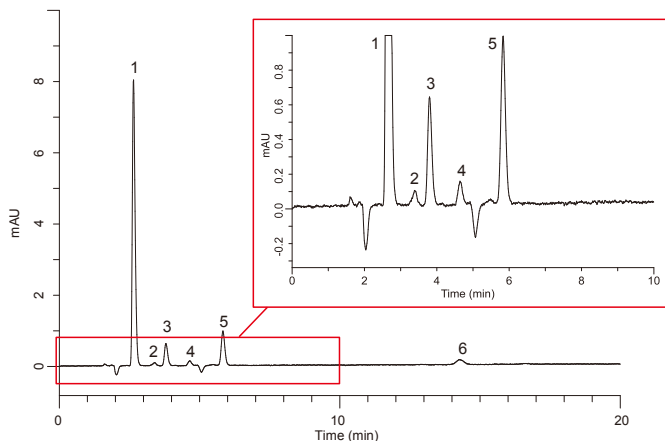


Figure 3 : Analysis of Nucleotide in Fish Meat



Conditions

Column : InertSustain AQ-C18 (5 μm , 150 \times 4.6 mm I.D.)
 Eluent : 50 mM K₂HPO₄ in H₂O (pH 7.0, H₂PO₄)*
 Flow Rate : 1.0 mL/min
 Col.Temp. : 40 $^{\circ}\text{C}$
 Detection : UV 260 nm
 Injection Vol. : 1 μL

Sample :

1. IMP
2. ATP
3. ADP
4. AMP
5. Hyp
6. Ino

(each 5 mg/L)

* Wash the column with CH₃CN/H₂O=1/1,v/v after the analysis.
 When storing the column for a long period of time, store it with 100% CH₃CN 100%.

Analytical Columns

Particle Size: 1.9 µm	Length \ I.D. (mm)	2.1	3.0		
	50	5020-89938	5020-89941		
	100	5020-89939	5020-89942		
	150	5020-89940	5020-89943		
HP Series Particle Size: 3 µm 50 MPa (500 bar)	Length \ I.D. (mm)	2.1	3.0	4.6	
	30	5020-89920	5020-89926	5020-89932	
	50	5020-89921	5020-89927	5020-89933	
	75	5020-89922	5020-89928	5020-89934	
	100	5020-89923	5020-89929	5020-89935	
	150	5020-89924	5020-89930	5020-89936	
Particle Size: 3 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-89871	5020-89877		
	50	5020-89872	5020-89878		
	75	5020-89873	5020-89879		
	100	5020-89874	5020-89880		
	150	5020-89875	5020-89881		
	250	5020-89876	5020-89882		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-89831	5020-89839	5020-89847	5020-89855
	50	5020-89832	5020-89840	5020-89848	5020-89856
	75	5020-89833	5020-89841	5020-89849	5020-89857
	100	5020-89834	5020-89842	5020-89850	5020-89858
125	5020-89835	5020-89843	5020-89851	5020-89859	
150	5020-89836	5020-89844	5020-89852	5020-89860	
250	5020-89837	5020-89845	5020-89853	5020-89861	
Particle Size: 5 µm	Length \ I.D. (mm)	1.0	1.5		
	30	5020-89741	5020-89747		
	50	5020-89742	5020-89748		
	75	5020-89743	5020-89749		
	100	5020-89744	5020-89750		
	150	5020-89745	5020-89751		
	250	5020-89746	5020-89752		
	Length \ I.D. (mm)	2.1	3.0	4.0	4.6
	30	5020-89701	5020-89709	5020-89717	5020-89725
	50	5020-89702	5020-89710	5020-89718	5020-89726
	75	5020-89703	5020-89711	5020-89719	5020-89727
	100	5020-89704	5020-89712	5020-89720	5020-89728
125	5020-89705	5020-89713	5020-89721	5020-89729	
150	5020-89706	5020-89714	5020-89722	5020-89730	
250	5020-89707	5020-89715	5020-89723	5020-89731	

Cartridge Guard Column E

I.D. of the Analytical Column Applicable (mm)	Length (mm)	I.D. (mm)	Replacement Cartridge E Guard Column (2 pcs)			Cartridge E Holder / Cartridge Set (2 Cartridge E Guard Columns & 1 Holder)		
			Particle Size			Particle Size		
			3 µm	5 µm	10 µm	3 µm	5 µm	10 µm
1.0	10	1.0	5020-89910	5020-89808	-	5020-89911	5020-89809	-
1.5, 2.1		1.5	5020-89912	5020-89810	-	5020-89913	5020-89811	-
2.1, 3.0		3.0	5020-89908	5020-89806	-	5020-89909	5020-89807	-
4.0, 4.6		4.0	5020-89906	5020-89804	5020-90626	5020-89907	5020-89805	5020-90627
2.1, 3.0	20	3.0	5020-89916	5020-89814	-	5020-89917	5020-89815	-
4.0, 4.6		4.0	5020-89914	5020-89812	5020-90628	5020-89915	5020-89813	5020-90629
Holder for Cartridge Guard Column E			For 10 mm Length			5020-08500	5020-08500	
			For 20 mm Length			5020-08550	5020-08550	



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Reversed Phase Columns

HILIC Columns

Normal Phase Columns

SFC Columns

Ion Exchange Columns

Application Specific Columns

Guard Columns

Preparative Columns

Capillary Columns

Applications

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