

Aegispak INNO Column INNO-P Column

High Performance Liquid Chromatography Column



Young Jin Biochrom Co., Ltd
www.yjbiochrom.com

Product Group

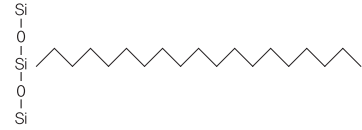
Aegispak Columns

High purified silica gel surface was coated with silicone polymer by chemical vapor deposition (CVD), and the functional group was directly bonded from coated silica gel.

(Gas phase reaction synthesis method)

After the resin synthesis, End-capping was performed at high temperature and high pressure to remove the remaining silanol groups. This minimizes the effect of residual silanol groups to the extreme.

This resin is functional group directly bonded to a silicone polymer(-Si-R). There is a slight difference in the separation pattern from ordinary resin (-Si-O-Si-R).



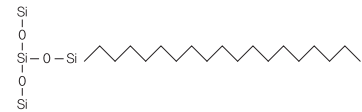
INNO Columns

This resin was synthesized by directly bonding the functional group to the silanol group of refined high purity silica gel. (-Si-O-Si-R)

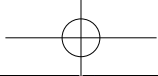
(liquid phase reaction synthesis method)

End-capping was performed 3 times at a high temperature to remove the remaining silanol groups after the resin synthesis.

Since all manufacturing processes are carried out in solution, it is possible to bulk production.

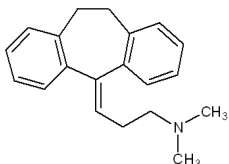


Classify	C18	C18-SB	C18-NE	C8	C8-NE	C4	CN	Phenyl	NH2	SCX	Diol	Silica
Aegispak Column	●			●								●
INNO Column	●	●	●	●	●	●	●	●	●	●	●	●
INNO-P Column	●			●		●						



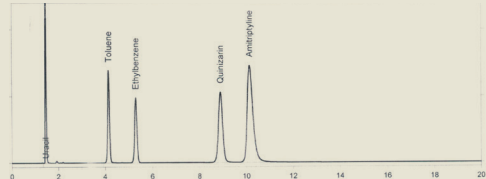
Evaluation of C18 Resin

■ Amitriptyline

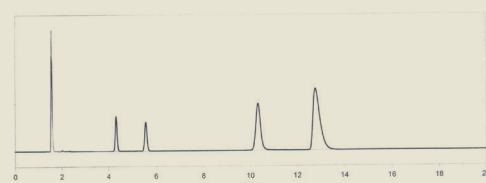


- Amitriptyline is a strong basic compound
- Our columns have less tailing and good shape.

Aegispak C18-L



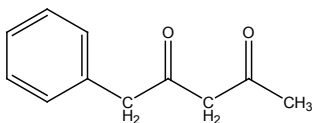
INNO Column C18



(HPLC Condition)

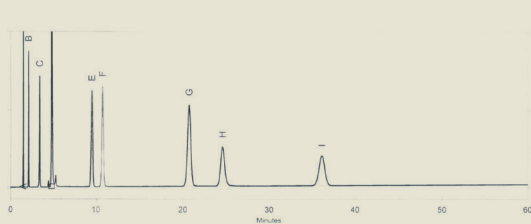
- Column Size : 4.6 X 150mm, 5 μ m
- Flow Rate : 1.0ml/min
- Temperature : 35 $^{\circ}$ C
- Mobile Phase : Methanol / 20mM Potassium Phosphate (Mono + Dibasic), pH 7.0 = 8 : 2
- Samples : A) Uracil
B) Toluene
C) Ethylbenzene
D) Quinizarin
E) Amitriptyline

■ Phenylacetylacetone



- Phenylacetylacetone is a coordination compound.
- Our columns have less tailing and good shape.

Aegispak C18-L

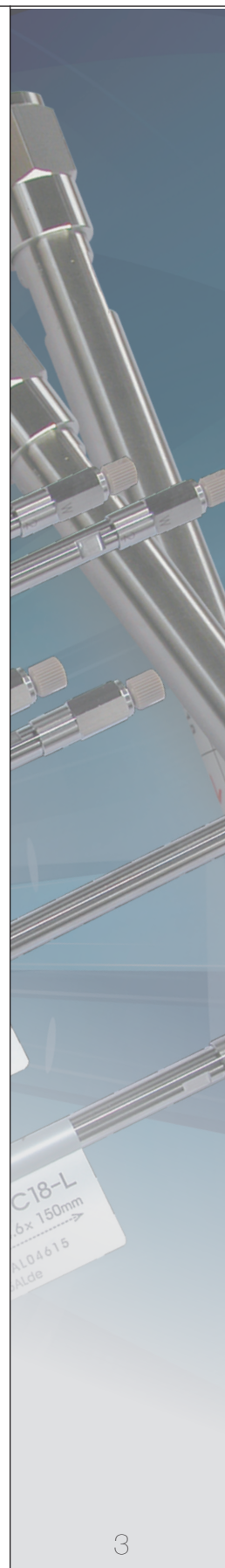


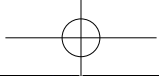
INNO Column C18



(HPLC Condition)

- Column Size : 4.6 X 150mm, 5 μ m
- Flow Rate : 1.0ml/min
- Detection : PDA 254nm
- Temperature : 40 $^{\circ}$ C
- Mobile Phase : Methanol / DW = 5:5
- Samples : A) Uracil
B) Caffein
C) Phenol
D) 2-Ethyl Pyridine
E) Methyl Benzoate
F) Benzene
G) Toluene
H) Phenylacetylacetone
I) Naphthalene

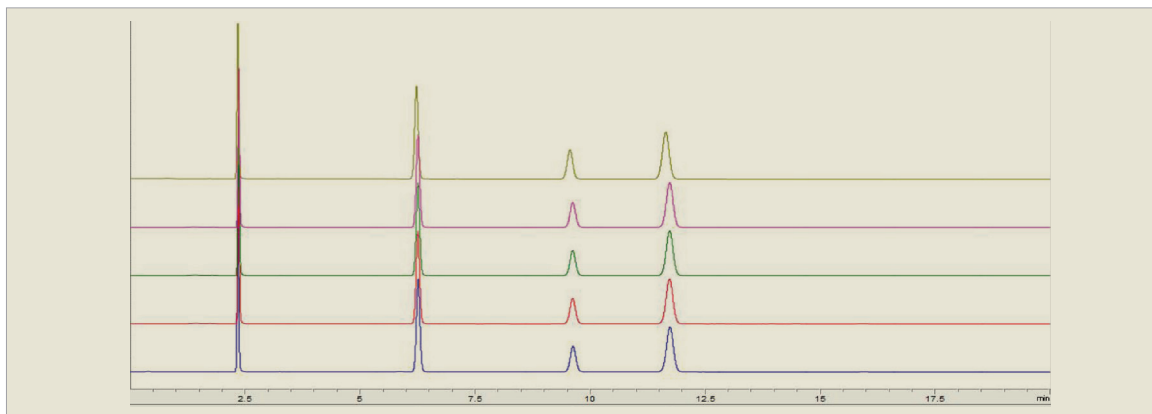




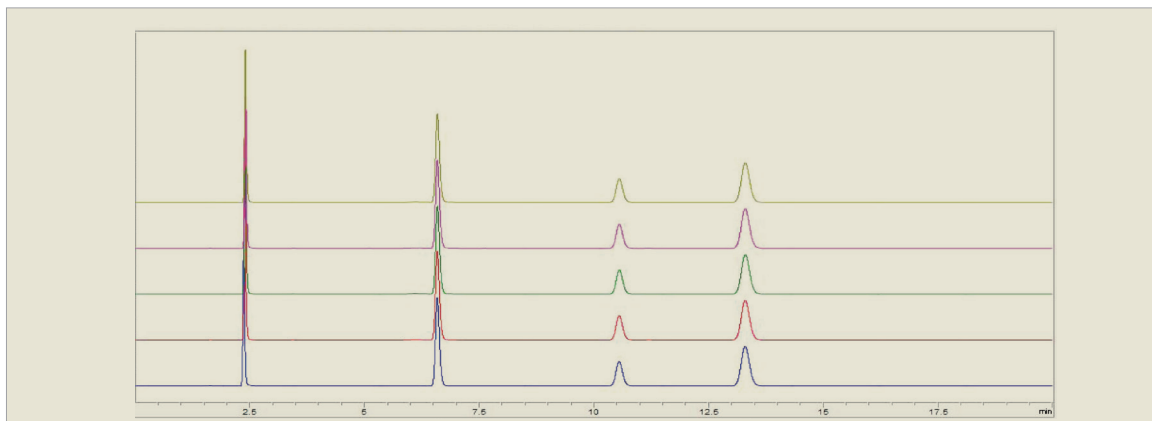
Reproducibility test

Our columns are excellent in lot and charge reproducibility due to strict application of evaluation criteria.

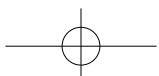
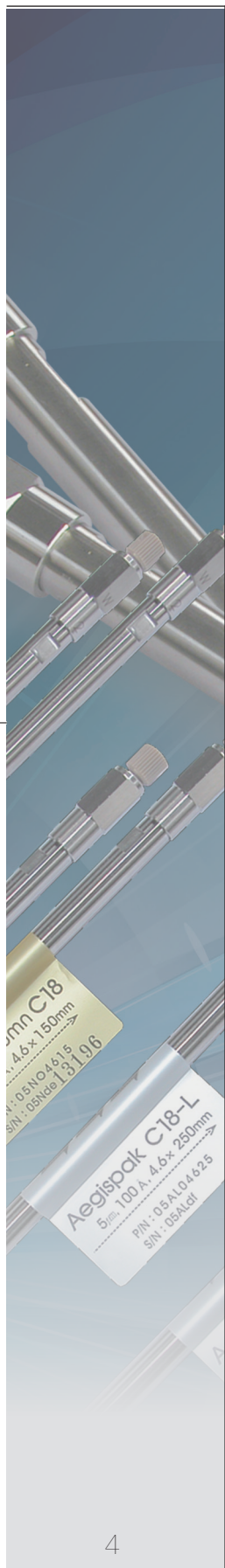
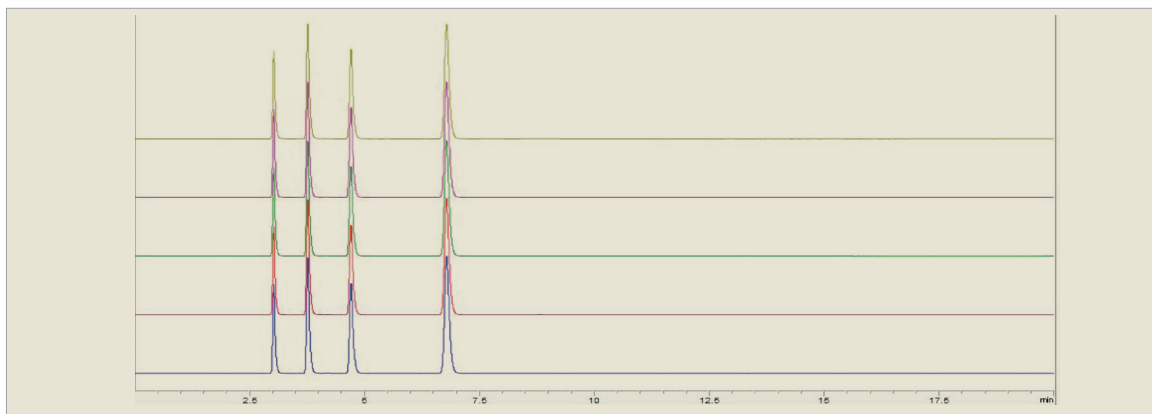
■ Aegispak C18-L 5um 4.6 × 250mm

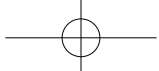


■ INNO Column C18 5um 4.6 × 250mm



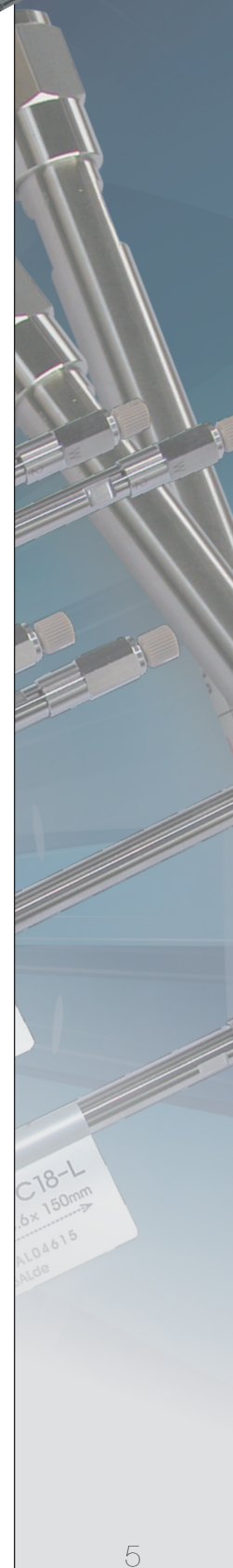
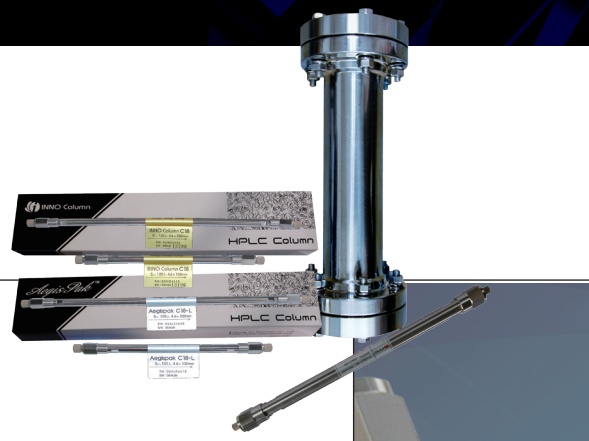
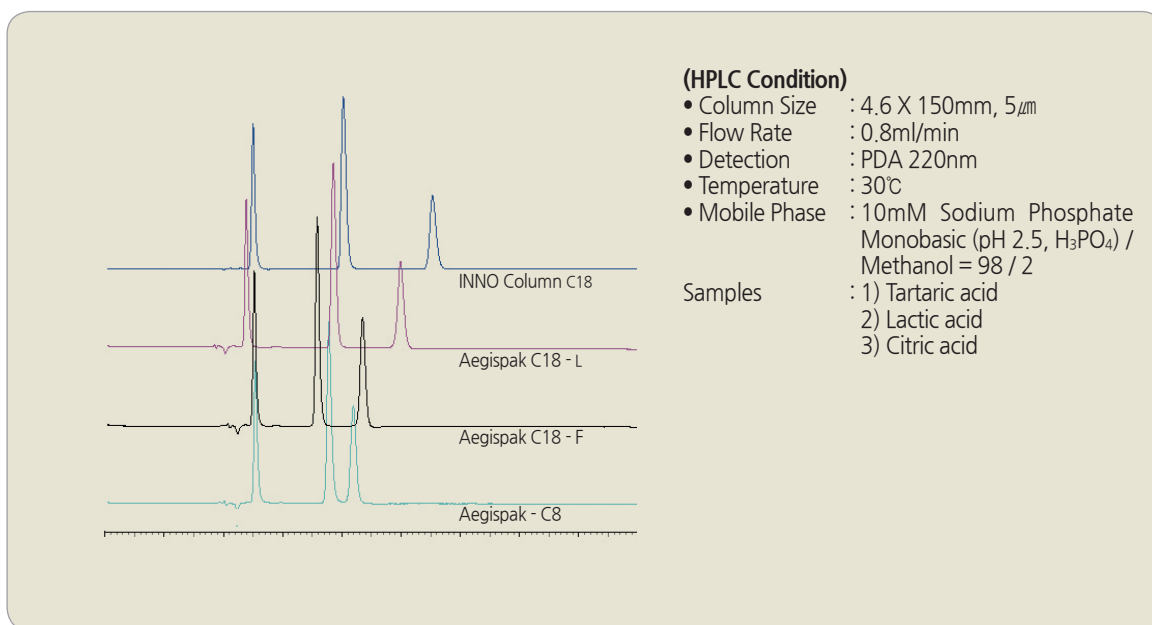
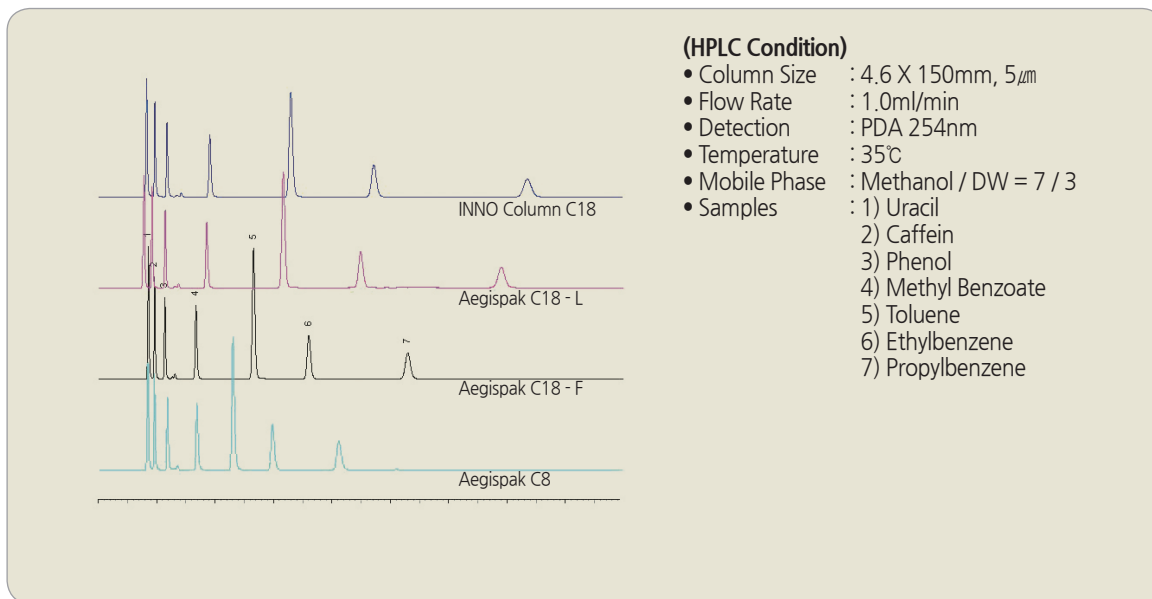
■ INNO-P Column C18 5um 4.6 × 250mm

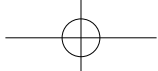




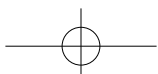
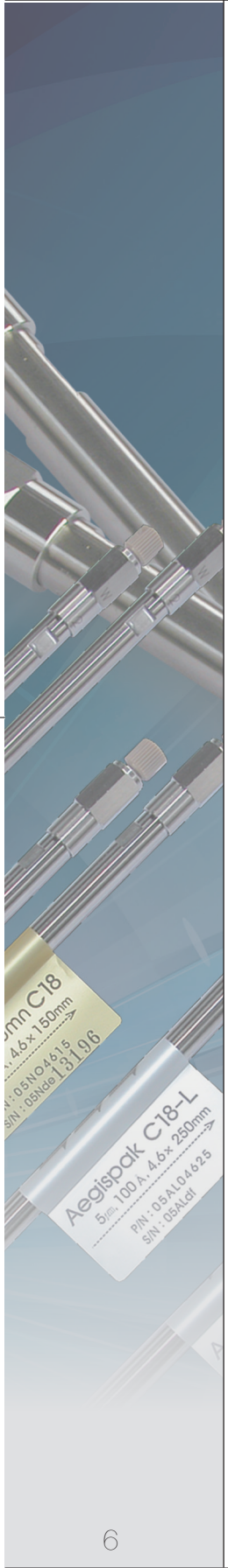
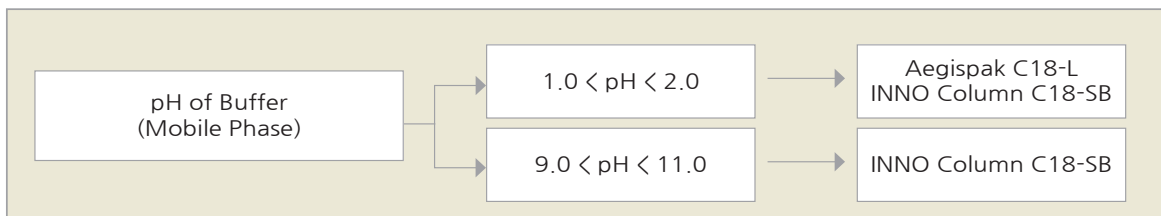
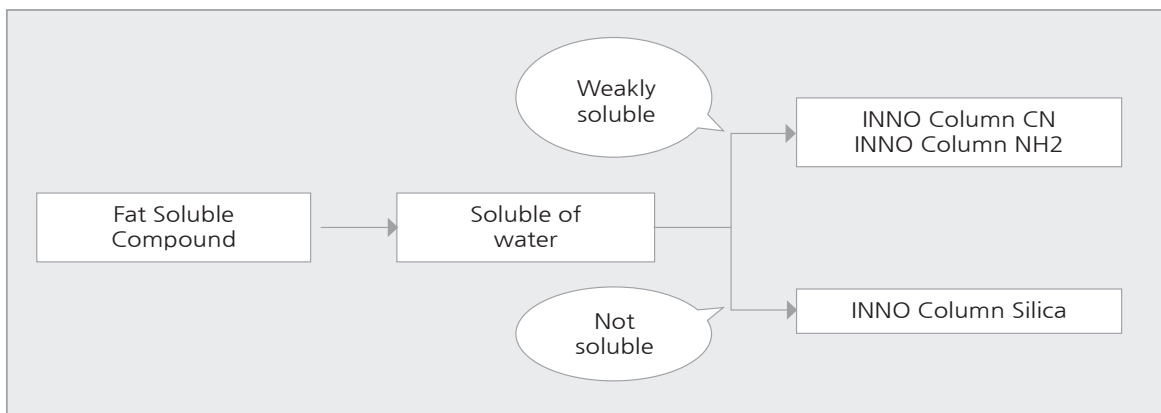
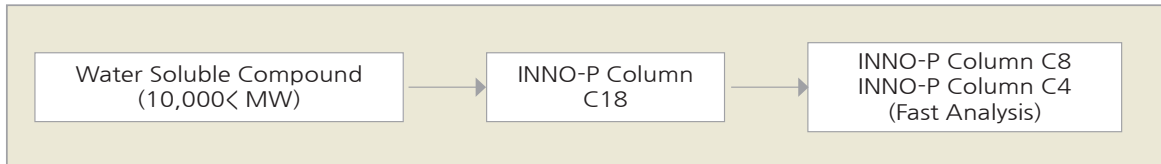
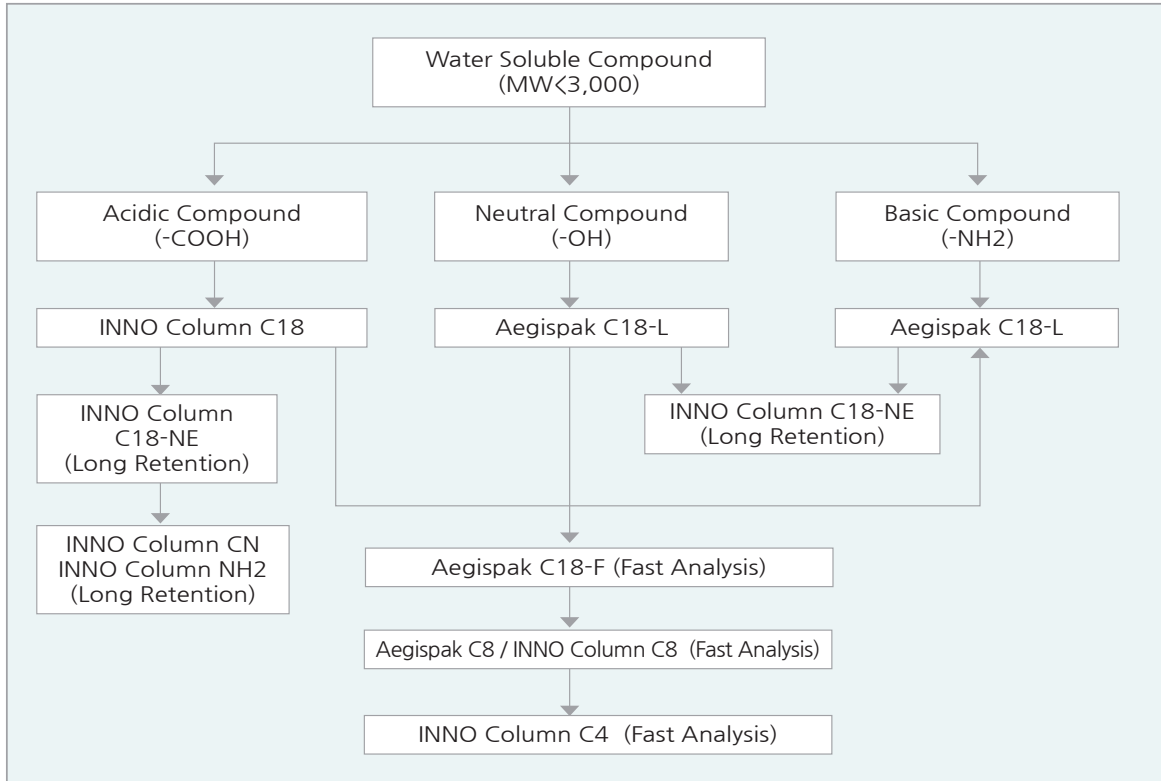
Column selection Guide

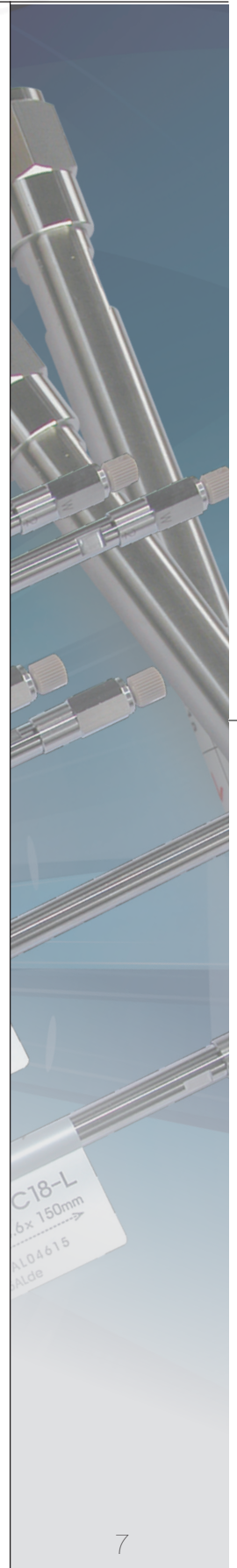
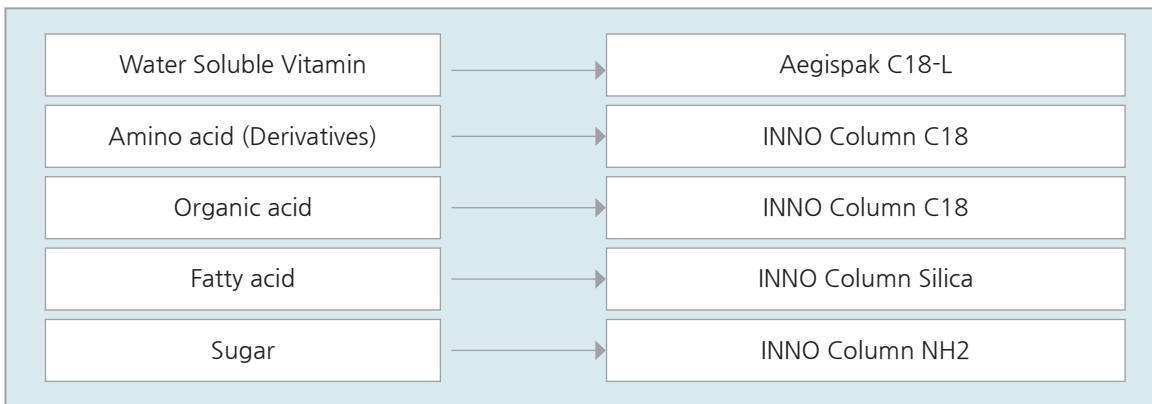
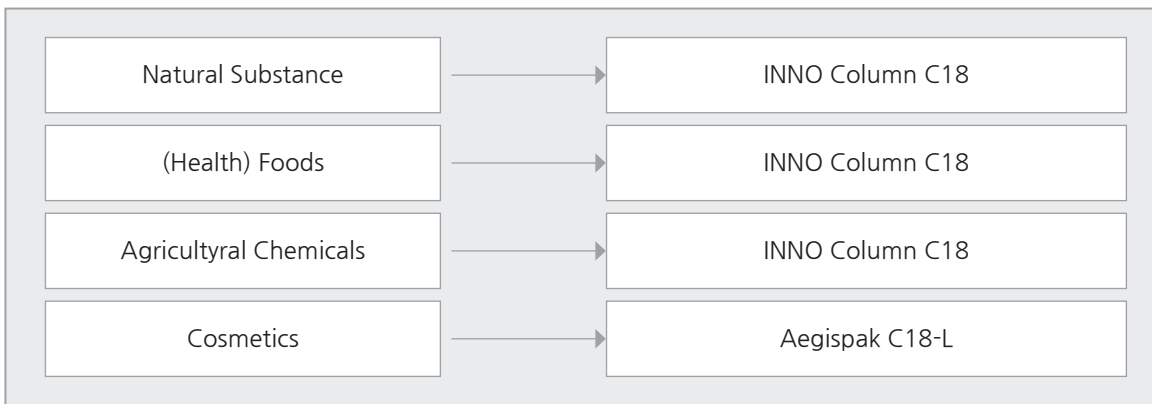
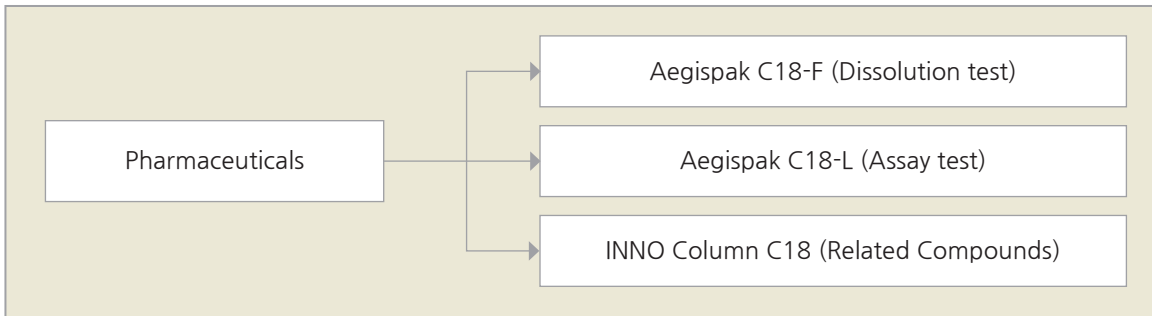
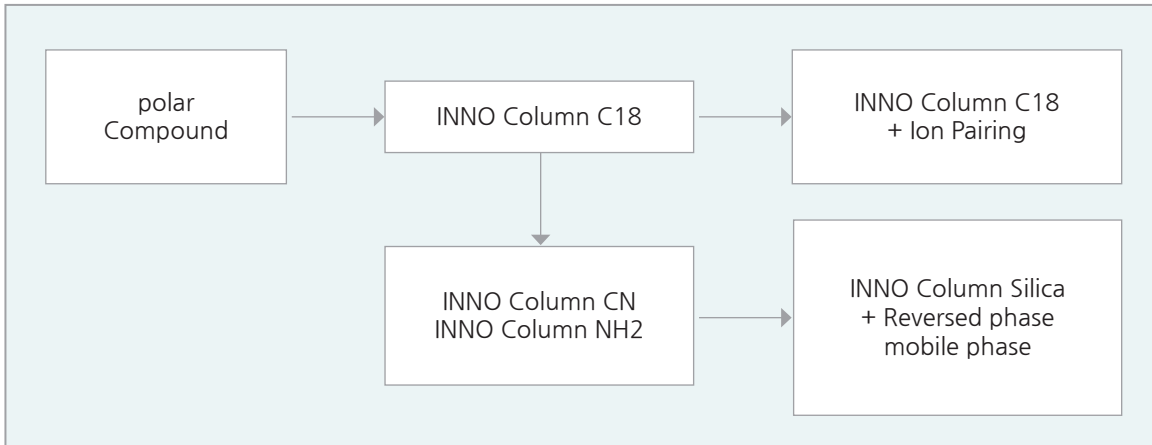
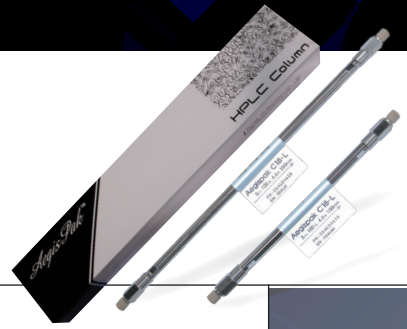
■ Retention Time Property

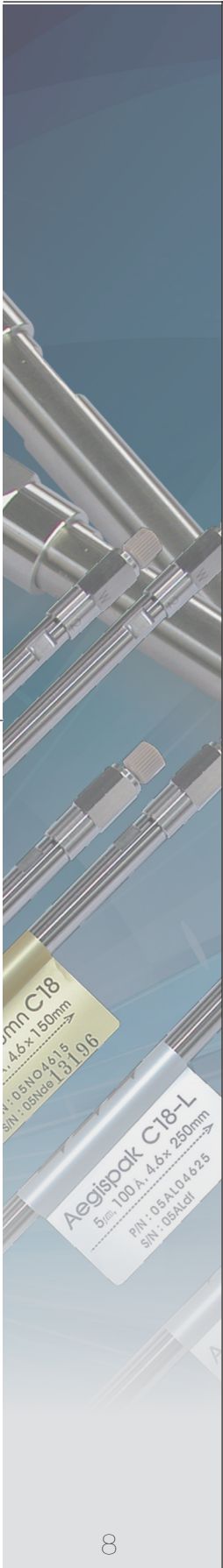
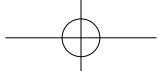




Column Selection

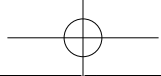






■ USP L Code

L Code		Columns
L1	Octadecyl silane chemically bonded to porous or non-porous silica or ceramic micro-particles, 1.5 to 10 µm in diameter, or a monolithic rod	Aegispak C18-F
		Aegispak C18-L
		INNO Column C18
		INNO Column C18-SB
		INNO Column C18-NE
		INNO-P Column C18
L3	Porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod.	Aegispak Silica
		INNO Column Silica
L7	Octylsilane chemically bonded to totally or superficially porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod.	Aegispak C8
		INNO Column C8
		INNO Column C8-NE
L7	Octylsilane chemically bonded to totally or superficially porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod.	INNO-P Column C8
		INNO Column NH2
		INNO Column SCX
L8	An essentially monomolecular layer of aminopropylsilane chemically bonded to totally porous silica gel support, 1.5 to 10 µm in diameter, or a monolithic silica rod.	INNO Column NH2
L9	Irregular or spherical, totally porous silica gel having a chemically bonded, strongly acidic cation-exchange coating, 3 to 10 µm in diameter.	INNO Column SCX
L10	Nitrile groups chemically bonded to porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod.	INNO Column CN
L11	Phenyl groups chemically bonded to porous silica particles, 1.5 to 10 µm in diameter, or a monolithic silica rod.	INNO Column Phenyl
L20	Dihydroxypropane groups chemically bonded to porous silica or hybrid particles, 1.5 to 10 µm in diameter.	INNO Column Diol
L26	Butyl silane chemically bonded to totally porous silica particles, 1.5 to 10 µm in diameter	INNO Column C4
		INNO-P Column C4



■ Characteristics and parameter

< Aegispak Column Series >

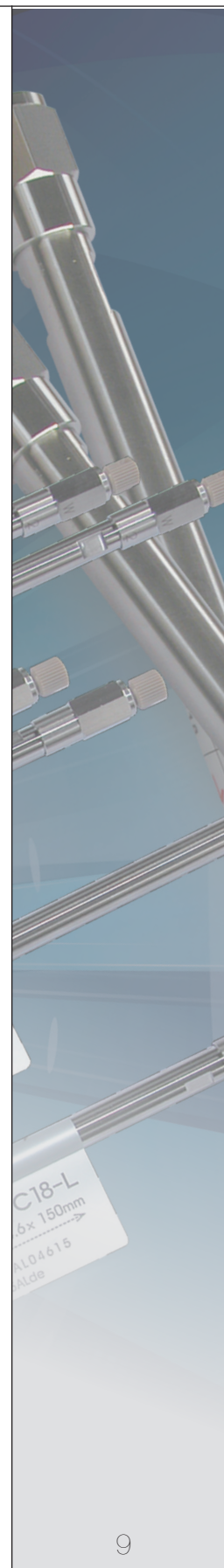
Column	Particle Size (μm)	Pore Size (Å)	Surface Area (m ² /g)	C (%)	pH Range	End Capping	USP
Aegispak C18-F	3, 5	120	320	13	1.0~9.0	o	L1
Aegispak C18-L	3, 5	100	330	14	1.0~9.0	o	L1
Aegispak C8	3, 5	100	330	8	1.0~9.0	o	L7
Aegispak Silica	5, 10	100	330	-	2.0~8.0	x	L3

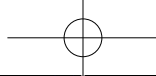
< INNO Column Series >

Column	Particle Size (μm)	Pore Size (Å)	Surface Area (m ² /g)	C (%)	pH Range	End Capping	USP
INNO Column C18	3, 5, 10	120	320	18	2.0~8.0	o	L1
INNO Column C18-SB	5	120	320	17	1.0~11.0	o	L1
INNO Column C18-NE	5	120	320	17	2.0~7.5	x	L1
INNO Column C8	5	120	320	12	2.0~8.0	o	L7
INNO Column C8-NE	5	120	320	11	2.0~7.5	x	L7
INNO Column C4	5	120	320	8	2.0~8.0	o	L26
INNO Column Silica	5, 10	120	320	-	2.0~8.0	x	L3
INNO Column Diol	5	120	320	-	2.0~8.0	x	L20
INNO Column NH2	3, 5	120	320	6	2.0~8.0	x	L8
INNO Column SCX	5	120	320	7	2.0~8.0	o	L9
INNO Column CN	5	120	320	8	2.0~8.0	o	L10
INNO Column Phenyl	5	120	320	11	2.0~8.0	o	L11

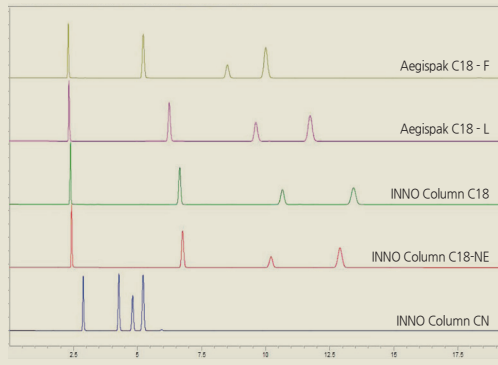
< INNO-P Column Series >

Column	Particle Size (μm)	Pore Size (Å)	Surface Area (m ² /g)	C (%)	pH Range	End Capping	USP
INNO-P Column C18	5	300	110	8	1.0~9.0	o	L1
INNO-P Column C8	5	300	110	5	1.0~9.0	o	L7
INNO-P Column C4	5	300	110	3	1.0~9.0	o	L26



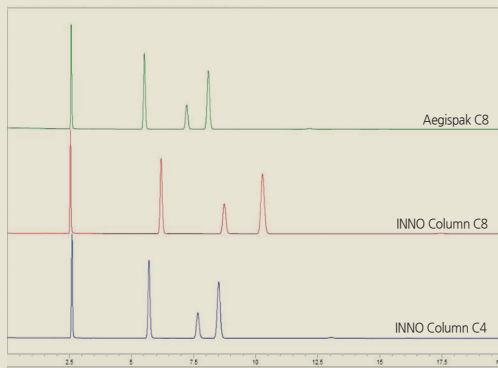


■ Retention Time Character



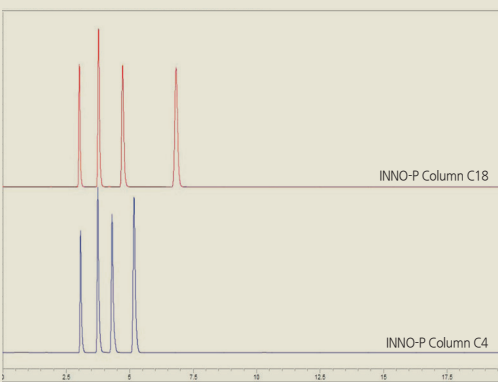
(HPLC Condition)

- Column Size : 4.6 X 250mm, 5 μ m
- Flow Rate : 1.0ml/min
- Detection : PDA 254nm
- Temperature : 35 $^{\circ}$ C
- Mobile Phase : ACN / DW = 60 / 40
- Samples : 1) Uracil : 0.1mg/ml
2) Methyl benzoate : 2.2mg/ml
3) Toluene : 8.7mg/ml
4) Naphtalene : 0.9mg/ml



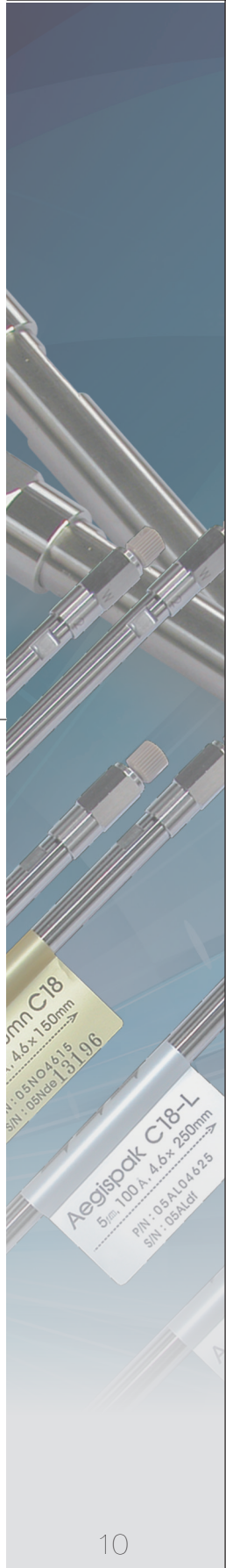
(HPLC Condition)

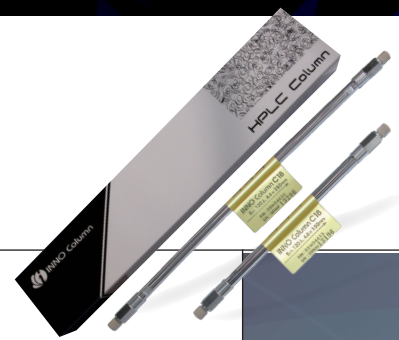
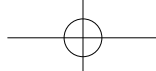
- Column Size : 4.6 X 250mm, 5 μ m
- Flow Rate : 1.0ml/min
- Detection : PDA 254nm
- Temperature : 35 $^{\circ}$ C
- Mobile Phase : ACN / DW = 60 / 40
- Samples : 1) Uracil : 0.1mg/ml
2) Methyl benzoate : 2.2mg/ml
3) Toluene : 8.7mg/ml
4) Naphtalene : 0.9mg/ml



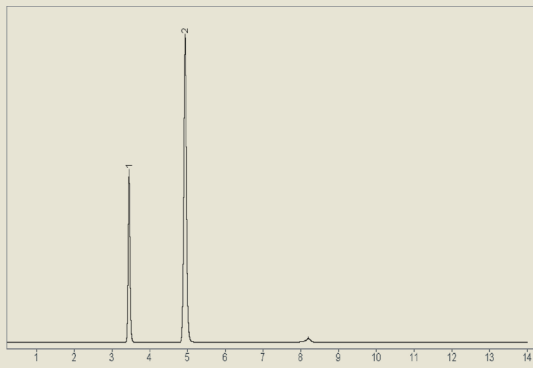
(HPLC Condition)

- Column Size : 4.6 X 250mm, 5 μ m
- Flow Rate : 1.0ml/min
- Detection : PDA 254nm
- Temperature : 35 $^{\circ}$ C
- Mobile Phase : ACN / DW = 58 / 42
- Samples : 1) Uracil : 0.015mg/ml
2) Phenol : 0.7mg/ml
3) N,N-Diethyl-m-Toluamide : 0.6mg/ml
4) Toluene : 4mg/ml





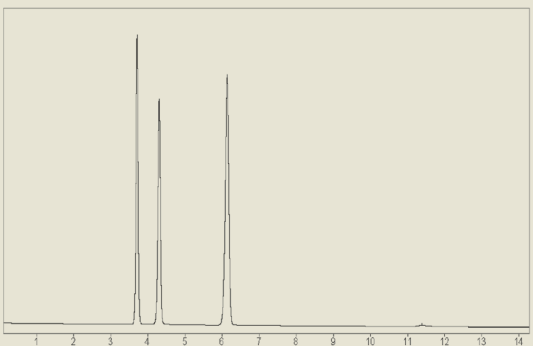
INNO Column Silica 100Å



(HPLC Condition)

- Column Size : 4.6 X 250mm, 5 μ m
- Flow Rate : 1.0ml/min
- Detection : PDA 254nm
- Temperature : 35 $^{\circ}$ C
- Mobile Phase : n-Hexane / Ethyl alcohol = 98 / 2
- Samples : 1) Toluene : 8.8mg/ml
2) p-Dinitrobenzene : 2.2mg/ml

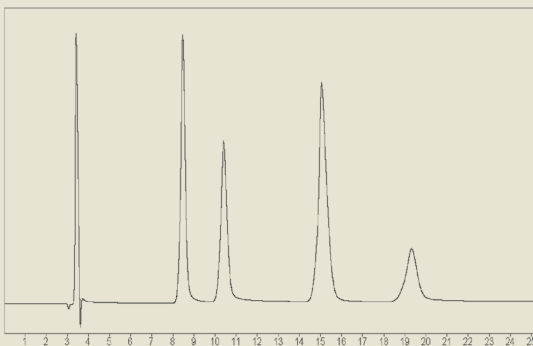
INNO Column SCX



(HPLC Condition)

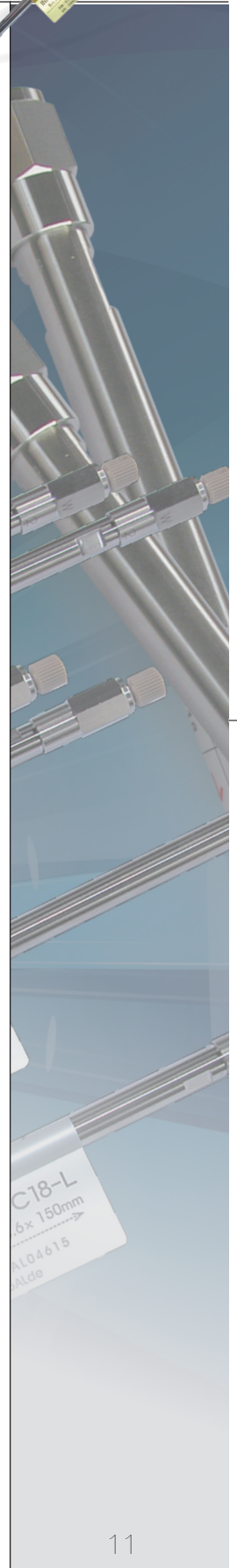
- Column Size : 4.6 X 250mm, 5 μ m
- Flow Rate : 1.0ml/min
- Detection : PDA 254nm
- Temperature : 35 $^{\circ}$ C
- Mobile Phase : 0.2M (NH₄)H₂PO₄(pH 3.5)
- Samples : 1) Uracil : 0.2mg/mL
2) Thymin : 0.3mg/mL
3) Cytosine : 0.6mg/mL

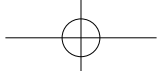
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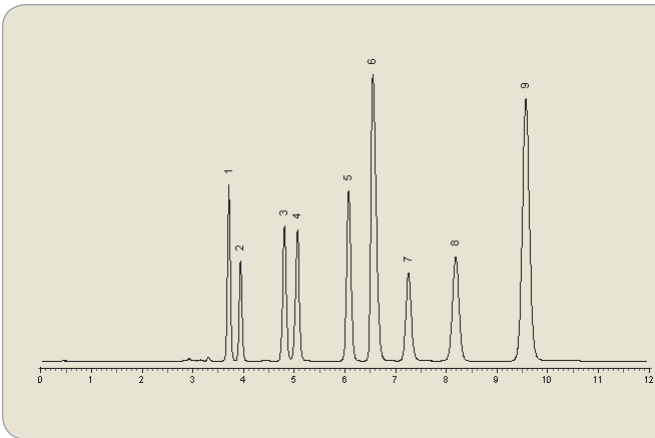
(HPLC Condition)

- Column Size : 4.6 X 250mm, 5 μ m
- Flow Rate : 1.0ml/min
- Detection : RID
- Temperature : 35 $^{\circ}$ C
- Mobile Phase : ACN / DW = 75 / 25
- Samples : 1) Fructose : 7.92mg/ml
2) Glucose : 15.3mg/ml
3) Saccharose : 10.4mg/ml
4) Maltose : 20.48mg/ml in acetonitrile 60(Vol)%





Analysis of 9 kinds of Organic Acids



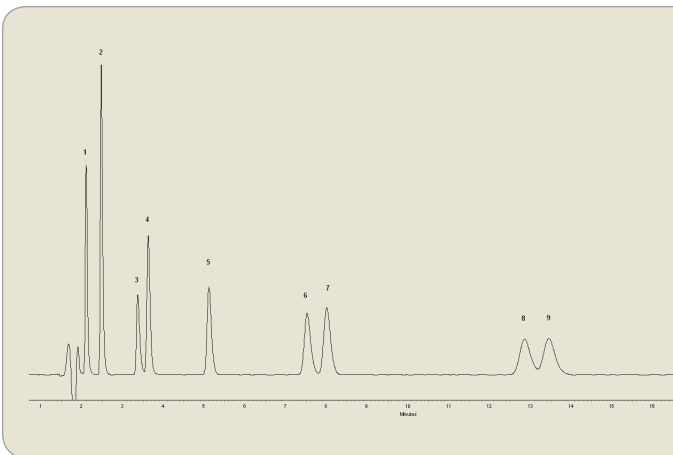
(HPLC Condition)

- Column : Aegispak C18-L 5um 4.6x250mm
- Flow Rate : 0.8ml/min
- Detection : PDA 220nm
- Temperature : 30°C
- Mobile Phase : 10mM Potassium Phosphate Monobasic (pH 2.5, H₃PO₄) / Methanol = 98 / 2

• Samples :

- | | |
|------------------|------------------|
| 1) Tartaric Acid | 2) Glycolic Acid |
| 3) Malic Acid | 4) Malonic acid |
| 5) Lactic Acid | 6) Acetic Acid |
| 7) Maleic Acid | 8) Citric Acid |
| 9) Fumaric Acid | |

Preservatives



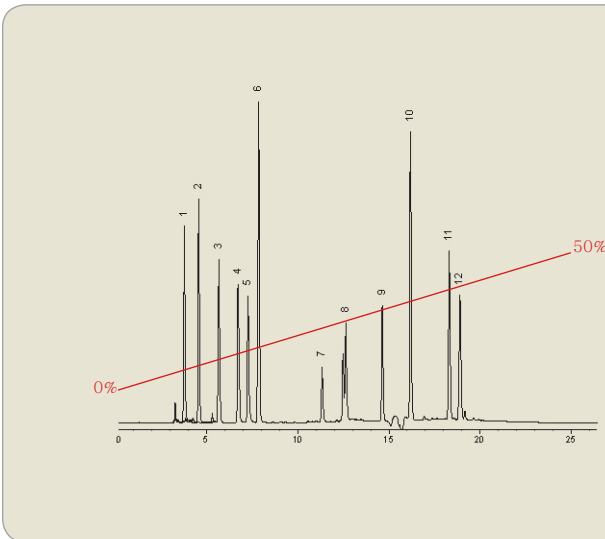
(HPLC Condition)

- Column : Aegispak C18-F 5um 4.6x150mm
- Mobile Phase : A/B = 35/65
A : Acetonitrile
B : 50mM Ammonium Acetate Buffer Soln. (pH 4.6)
- Flow Rate : 1.0 ml/min
- Wavelength : PDA 235nm
- Oven Temp : 40°C

• Samples :

- | | |
|-----------------------|-----------------------|
| 1. Benzoic acid | 2. Sorbic acid |
| 3. Dehydroacetic Acid | 4. Methyl Parabene |
| 5. Ethyl Parabene | 6. Isopropyl Parabene |
| 7. Propyl Parabene | 8. Isobutyl Parabene |
| 9. Butyl Parabene | |

Water Soluble Vitamins

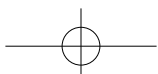
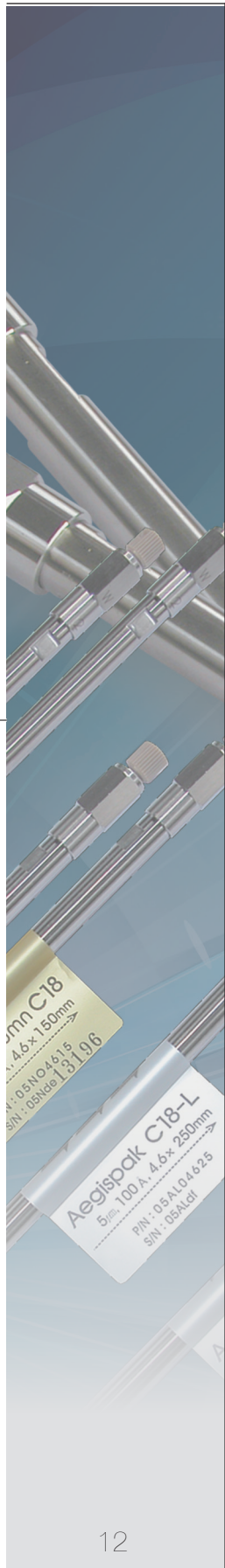


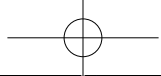
(HPLC Condition)

- Column Size : INNO Column C18 5um 4.6 X 250mm
- Flow Rate : 0.8ml/min
- Detection : PDA 220nm
- Temperature : 35°C
- Mobile Phase : A) 10mM KH₂PO₄ Buffer (pH 3.0, H₃PO₄) / Acetonitrile = 98 / 2
B) 10mM KH₂PO₄ (pH 3.0, H₃PO₄) / Acetonitrile = 40 / 60

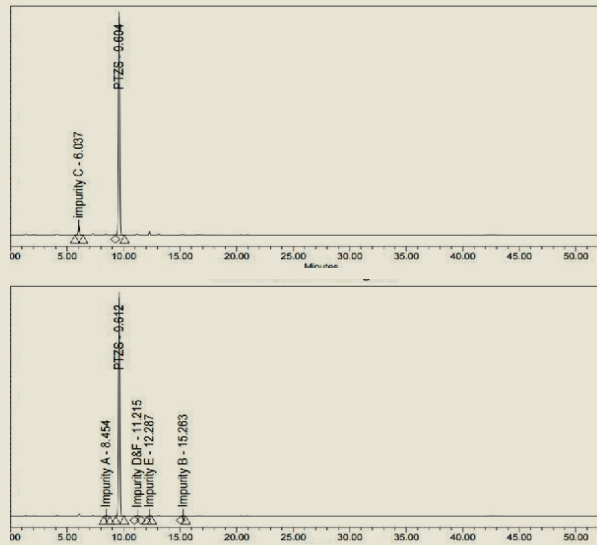
• Samples :

- | | |
|---------------------|---------------------|
| 1) Thiamine | 2) Ascorbic acid, |
| 3) Nicotinic acid | 4) Pyridoxine |
| 5) Pyridoxal | 6) Nicotinamide |
| 7) Pantothenic acid | 8) Hydroxocobalamin |
| 9) Cyanocobalamin | 10) Folic acid |
| 11) Riboflavin | 12) Biotin |





Pantoprazole Sodium - USP Method



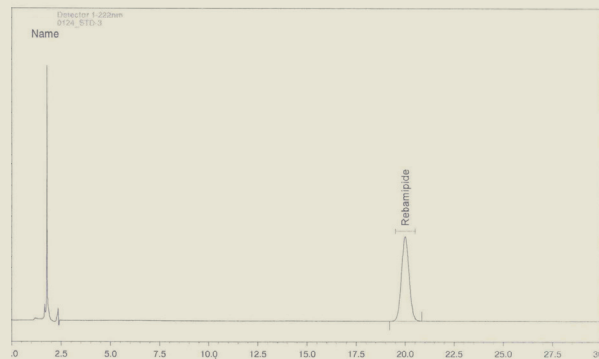
(HPLC Condition)

- Column Size : Aegispak C18-L 4.0 X 125mm, 5 μ m
- Flow Rate : 1.0ml/min
- Detection : UVD 290nm and 305nm
- Temperature : 40 $^{\circ}$ C
- Mobile Phase : A) Prepare a Solution of dibasic potassium phosphate (1.74g/L) adjusted with a solution of phosphoric acid (330g/L) to a pH of 7.00 \pm 0.05
B) 100% ACN

Time(minutes)	A	B
0 - 40	80 \rightarrow 20	20 \rightarrow 80
40 - 45	20 \rightarrow 80	80 \rightarrow 20
45 - 55	80	20

- Samples : Pantoprazole Sodium
Related substances test

Rebamipide - JP Method

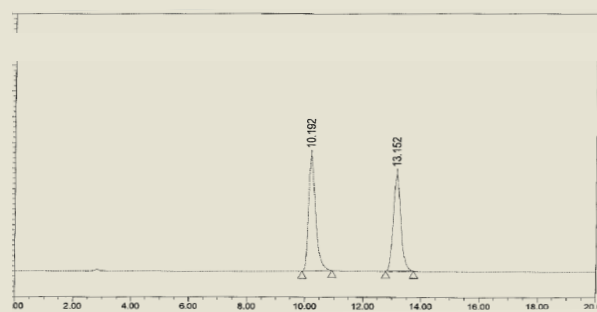


(HPLC Condition)

- Column Size : Aegispak C18-L 4.6 X 150mm, 5 μ m
- Flow Rate : Adjust so that the retention time of rebamipide is about 20minutes
- Detection : UVD 222nm
- Temperature : 25 $^{\circ}$ C
- Mobile Phase : To 300 mL of phosphate buffer solution (pH 6.2) add 750 mL of water. To 830 mL of this solution add 170 mL of acetonitrile

- Samples : Rebamipide
m-Chloro isomer test

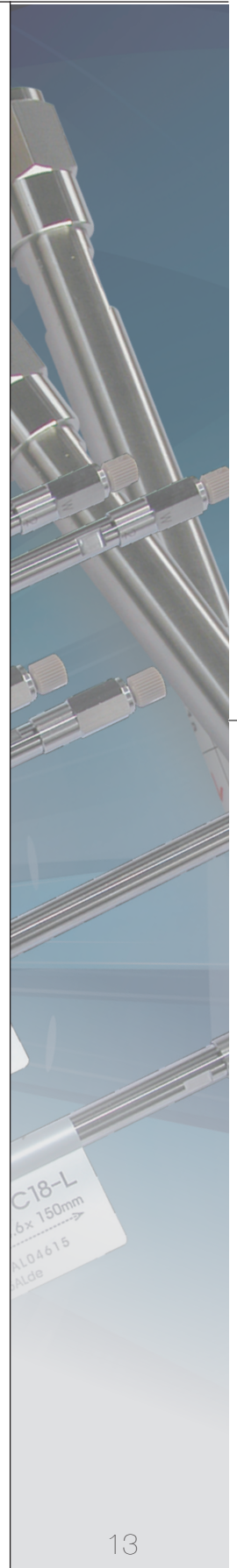
Pranlukast Hydrate - JP Method

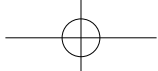


(HPLC Condition)

- Column Size : Aegispak C8 6.0 X 150mm, 5 μ m
- Flow Rate : Adjust so that the retention time of pranlukast is about 10 minutes
- Detection : UVD 260nm
- Temperature : 25 $^{\circ}$ C
- Mobile Phase : A mixture of 0.02 mol/L potassium dihydrogen phosphate TS, acetonitrile and methanol (5:5:1).

- Samples : Pranlukast Hydrate
Assay test





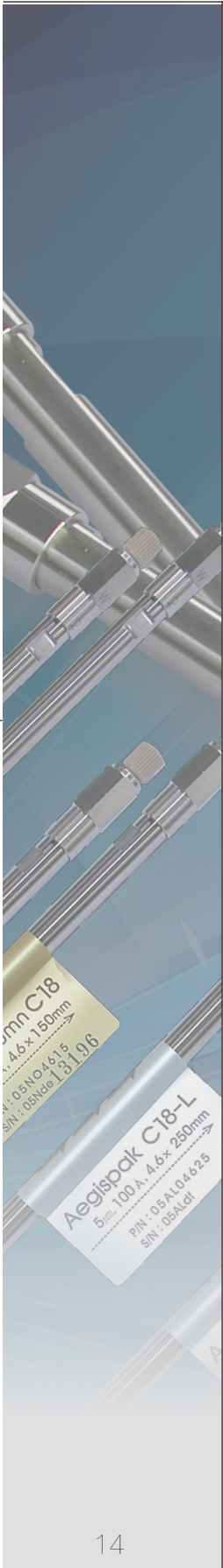
Product List

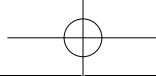
Available particle size

Available Particle Size		3um	5um	10um (100Å)	10um (120Å)
Aegispak C18-F	AF	●	●		
Aegispak C18-L	AL	●	●		
Aegispak C8	A8	●	●		
Aegispak Silica	AS		●	●	
INNO Column C18	N	●	●	●	●
INNO Column C18-SB	NSB		●		
INNO Column C18-NE	NE		●		
INNO Column C8	N8		●		
INNO Column C8-NE	N8E		●		
INNO Column C4	N4		●		
INNO Column CN	CN		●		
INNO Column NH2	NH		●		
INNO Column Phenyl	PH		●		
INNO Column SCX	SCX		●		
INNO Column Diol	DL		●		
INNO Column Silica	S		●	●	●
INNO-P Column C18	NP		●		
INNO-P Column C8	NP8		●		
INNO-P Column C4	NP4		●		

Available Standard (Horizontal = Inner Diameter (mm) / Vertical = Length (mm))

Classify	1.5	2.0	3.0	3.9	4.0	4.6	6.0	8.0	10	20
30	●	●	●	●	●	●				
33	●	●	●	●	●	●				
40	●	●	●	●	●	●				
45	●	●	●	●	●	●				
50	●	●	●	●	●	●				
55	●	●	●	●	●	●				
60	●	●	●	●	●	●				
75	●	●	●	●	●	●				
80	●	●	●	●	●	●				
100	●	●	●	●	●	●	●	●		
110	●	●	●	●	●	●				
120	●	●	●	●	●	●				
125	●	●	●	●	●	●				
150	●	●	●	●	●	●	●	●		
200	●	●	●	●	●	●	●	●		
250	●	●	●	●	●	●	●	●	●	●
300				●	●	●	●	●		



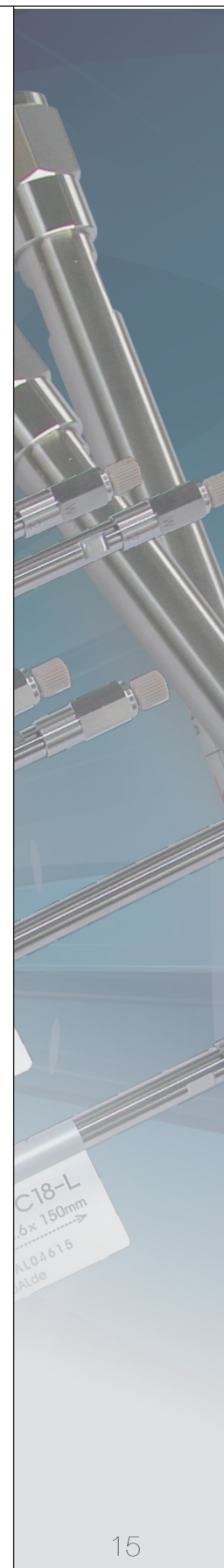


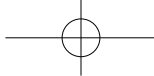
Product numbering method

Particle size (um)	Product Name (Abbreviation)	Inner Diameter (mm)	Length (cm)
03	AL	015	03
3um = 03 3.5um = 035 5um = 05 10um = 10 (P/S = 120A) 10um = 010 (P/S = 100A)	Aegispak C18-L = AL Aegispak C18-F = AF Aegispak C8 = A8 Aegispak Silica = AS INNO Column C18 = N INNO Column C18-SB = NSB INNO Column C18-NE = NE INNO Column C8 = N8 INNO Column C8-NE = N8E INNO Column C4 = N4 INNO Column Silica = S INNO Column Diol = DL INNO Column CN = CN INNO Column NH2 = NH INNO Column Phenyl = PH INNO Column SCX = SCX INNO-P Column C18 = NP INNO-P Column C8 = NP8 INNO-P Column C4 = NP4	1.5mm = 015 2.0mm = 020 3.0mm = 030 3.9mm = 039 4.0mm = 040 4.6mm = 046 6.0mm = 060 8.0mm = 080 10.0mm = 100 20.0mm = 200 30.0mm = 300	30mm = 03 33mm = 033 35mm = 035 40mm = 04 45mm = 045 50mm = 05 55mm = 055 75mm = 075 80mm = 08 100mm = 10 110mm = 11 120mm = 12 125mm = 125 150mm = 15 200mm = 20 250mm = 25 300mm = 30

Examples

Columns	Particle size (um)	Product Name (Abbreviation)	Inner Diameter (mm)	Length (cm)	Product NO.
Aegispak C18-L 5um 3.9 x 150mm	05	AL	039	15	05AL03915
Aegispak C18-F 3um 4.6 x 150mm	03	AF	046	15	03AF04615
Aegispak C8 5um 4.6 x 250mm	05	A8	046	25	05A804625
INNO Column C18-SB 5um 4.6 x 125mm	05	NSB	046	125	05NSB046125
INNO Column NH2 5um 4.6 x 250mm	05	NH	046	25	05NH04625
INNO Column SCX 5um 4.6 x 250mm	05	SCX	046	25	05SCX04625
INNO-P Column C4 5um 4.6 x 250mm	05	NP4	046	25	05NP404625





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