Aegispak
INNO Column
INNO-P Column
INNO-Core Column

High Performance Liquid Chromatography Column

Ghost Zero Column

Solvent Filter

YJ BIOCHROM

http://www.yjbiochrom.com

Product Group

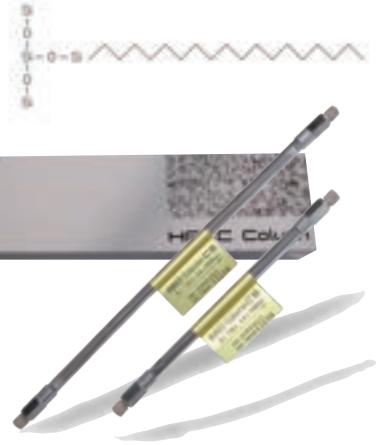
Aegispak Columns

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-0-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-0-Si-R) (liquid phase reaction synthesis method)

End -capping was performed 2 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.

INNO-P Columns

This resin was synthesized by directly bonding the functional group to the silanol group of refined high purity silica gel with pore size of 300Å. (-Si-0-Si-R) (liquid phase reaction synthesis method)

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

INNO-Core Columns

This column contains a non-porous solid core in porous silica gel. This column is capable of higher-speed analysis than common silica gel-based columns.

Ghost Zero Column

This Column is a filter that removes unknown peaks or ghost peaks generated in the mobile phase.

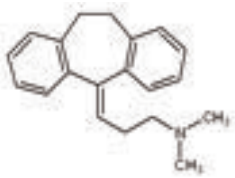
This Column is used by connecting between the pump and the auto-sampler.

Classify	Aegispak Column	INNO Column	INNO-P Column	INNO-Core Column
C18	●	●	●	●
C18-F	●			
C18-FA	●			
C18-L	●			
C18-LA	●			
C18-SB		●		
C18-SSB		●		
C18-SBA		●		
C18-HC		●		
C18-NE		●		
C18-PE				●
C8	●	●	●	●
C8-SB		●		
C8-HC		●		
C8-NE		●		
C4		●	●	
C1		●		
Phenyl		●		
Phenyl-Hexyl				●
PFP				●
NH2		●		
CN		●		
Silica		●		
Diol		●		
SCX		●		
SCX-L		●		
SAX		●		
C18/SCX (1/1)		●		
C18/SCX (5/1)		●		
C18/SAX (1/1)		●		
C18/SAX (5/1)		●		

Classify	HPLC	UPLC
Ghost Zero Column	●	●

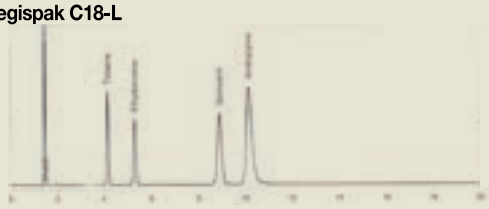
Evaluation of C18 Resin

■ Amitriptyline



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

Aegispak C18-L

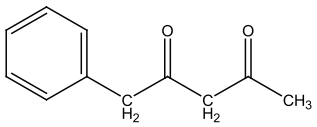


INNO Column C18

(HPLC Condition)

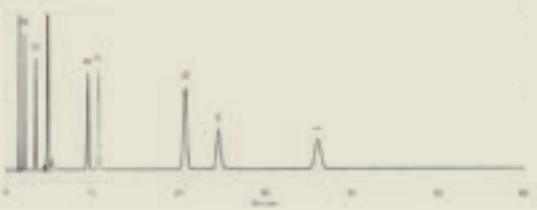
- **Column Size** : 4.6 X 150mm, 5μm
- **Flow Rate** : 1.0 ml/min
- **Temperature** : 35℃
- **Mobile Phase** : Methanol / 20mM Potassium Phosphate (Mono + Dibasic), pH 7.0 = 8:2
- **Samples** : A) Uracil
  B) Toluene
  C) Ethylbenzene
  D) Quinizarin
  E) Amitryptyline

■ Phenylacetylacetone



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

Aegispak C18-L

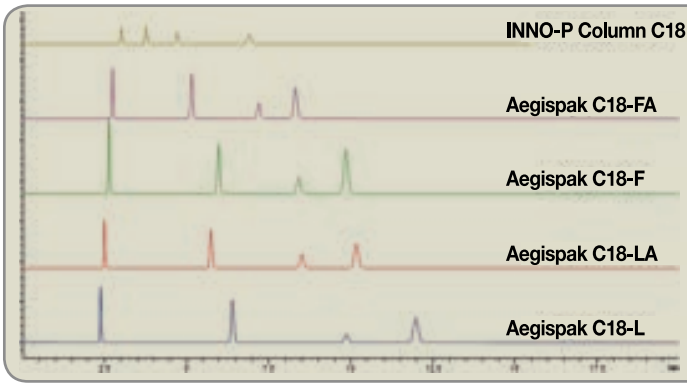


INNO Column C18

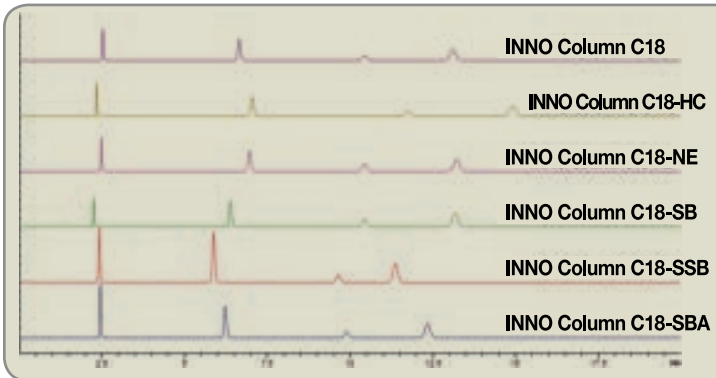
(HPLC Condition)

- **Column Size** : 4.6 X 150mm, 5㎛
- **Flow Rate** : 1.0ml/min
- **Detection** : PDA 254nm
- **Temperature** : 40℃
- **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

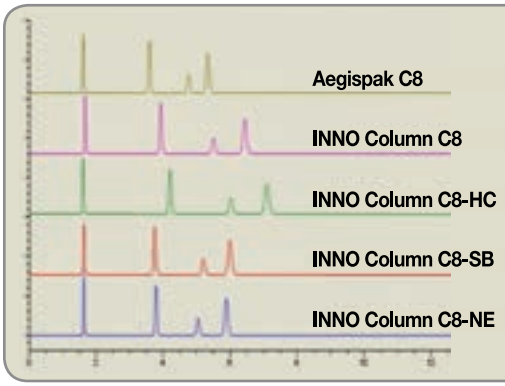
■ Retention Time Character



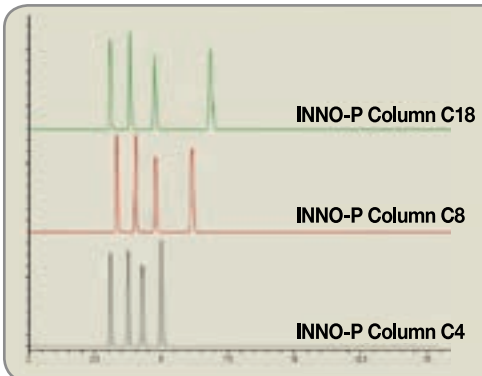
(HPLC Condition)
- **Column Size** : 4.6 x 250mm, 5㎛
- **Flow Rate** : 1.0mL/min
- **Detection** : UVD 254nm
- **Temperature** : 35℃
- **Mobile Phase** : Acetonitrile/DW = 60/40
- **Samples** : 1) Uracil : 0.1mg/mL
  2) Methyl benzoate : 2.2mg/mL
  3) Toluene : 8.7mg/mL
  4) Naphthalene : 0.9mg/mL



(HPLC Condition)
- **Column Size** : 4.6 x 250mm, 5㎛
- **Flow Rate** : 1.0mL/min
- **Detection** : UVD 254nm
- **Temperature** : 35℃
- **Mobile Phase** : Acetonitrile/DW = 60/40
- **Samples** : 1) Uracil : 0.1mg/mL
  2) Methyl benzoate : 2.2mg/mL
  3) Toluene : 8.7mg/mL
  4) Naphthalene : 0.9mg/mL

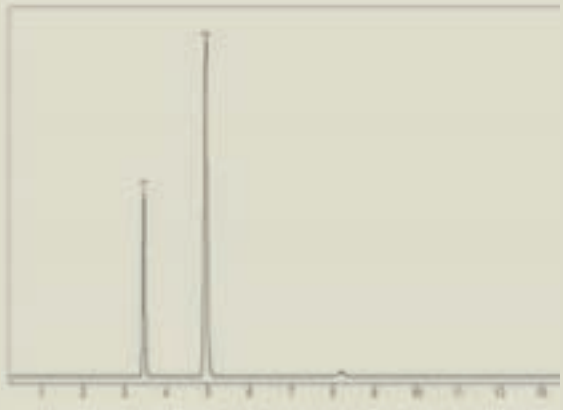


(HPLC Condition)
- **Column Size** : 4.6 X 150mm, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : PDA 254 nm
- **Temperature** : 35℃
- **Mobile Phase** : Acetonitrile / DW = 60 / 40
- **Samples** : 1) Uracil : 0.1 mg/mL
  2) Methyl benzoate : 2.2 mg/mL
  3) Toluene : 8.7 mg/mL
  4) Naphthalene : 0.9 mg/mL



(HPLC Condition)
- **Column Size** : 4.6 X 250mm, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : PDA 254 nm
- **Temperature** : 35℃
- **Mobile Phase** : Acetonitrile / DW = 58 / 42
- **Samples** : 1) Uracil : 0.015 mg/mL
  2) Phenol : 0.7 mg/mL
  3) N,N-Dimethyl-m-Toluamide : 0.6 mg/mL
  4) Toluene : 4 mg/mL

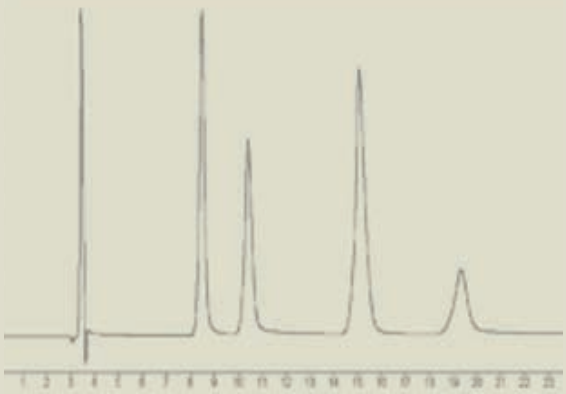
INNO Column Silica 100Å



(HPLC Condition)

- **Column Size** : INNO Column Silica 4.6 x 250mm 5µm
- **Flow Rate** : 1.0 mL/min
- **Detection** : PDA 254 nm
- **Temperature** : 35℃
- **Mobile Phase** : n-Hexane / Ethyl alcohol = 98 / 2
- **Samples** : 1) Toluene : 8.8mg/ml
  2) p-Dinitrobenzene : 2.2mg/ml

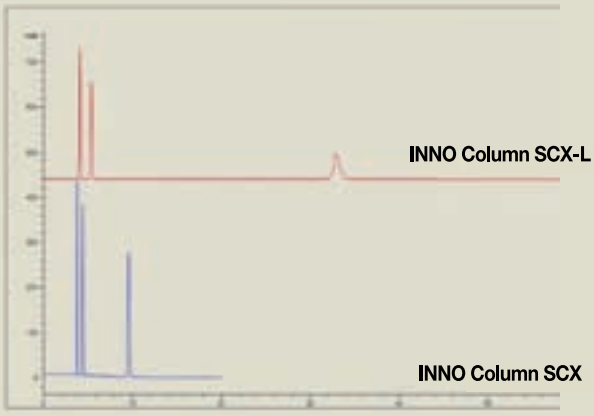
INNO Column NH2



(HPLC Condition)

- **Column Size** : INNO Column NH2 4.6 x 250mm 5µm
- **Flow Rate** : 1.0 mL/min
- **Detection** : RID
- **Temperature** : 35℃
- **Mobile Phase** : Acetonitrile / DW = 75 / 25
- **Samples** : 1) Fructose : 12 mg/mL
  2) Glucose : 20 mg/mL
  3) Saccharose : 20 mg/mL
  4) Maltose : 30 mg/mL
  in acetonitrile 50(Vol)%
- **Shipping Solvent** = 100% Acetonitrile

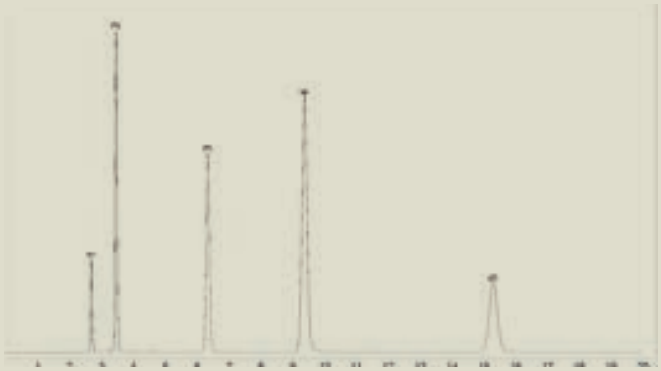
INNO Coulmn SCX / INNO Coulmn SCX-L



(HPLC Condition)

- **Column Size** : 4.6 X 250mm, 5µm
- **Flow Rate** : 1.0 mL/min
- **Detection** : PDA 254 nm
- **Temperature** : 35℃
- **Mobile Phase** : 0.2 M (NH4)H2PO4 (pH 3.5)
- **Samples** : 1) Uracil : 0.2mg/mL
  2) Thymin : 0.3mg/mL
  3) Cytosine : 0.6mg/mL

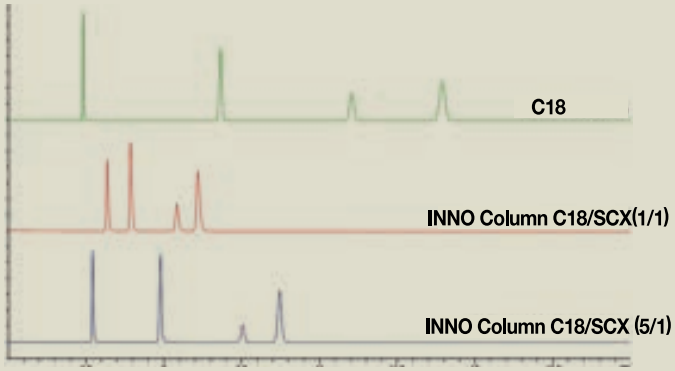
INNO Column SAX



(HPLC Condition)

- **Column Size** : INNO Column SAX 4.6 x 250mm, 5㎛
- **Flow Rate** : 1.25mL/min
- **Detection** : UVD 254nm
- **Temperature** : 35℃
- **Mobile Phase** : Isooctane /Ethanol /DW = 85 / 14.7 / 0.3
- **Samples** : 1) Toluene : 6.25mg/mL
  2) Nitrobenzene : 0.63mg/mL
  3) 2-Nitroaniline : 1.25mg/mL
  4) 3-Nitroaniline : 1.25mg/mL
  5) 4-Nitroaniline : 2.5mg/mL
- **Shipping Solvent** : 100% Ethanol

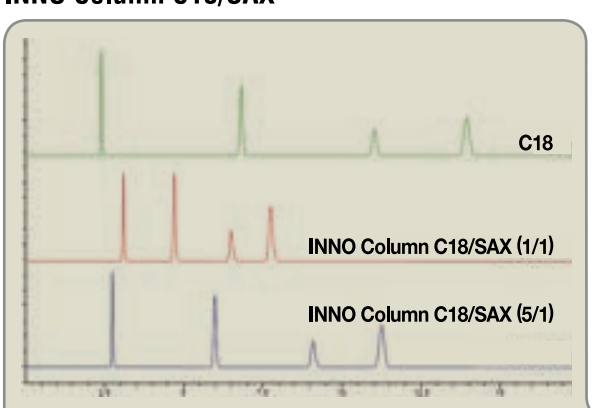
INNO Column C18/SCX

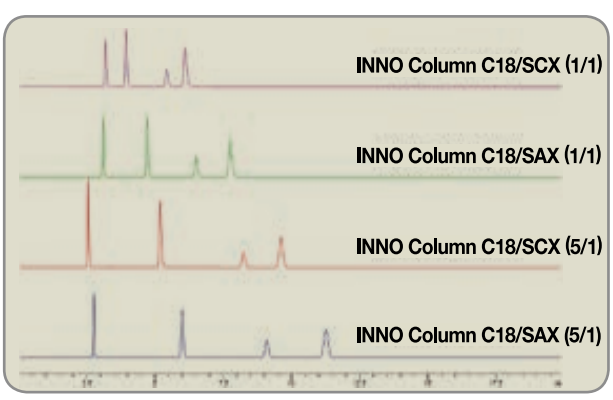


(HPLC Condition)

- **Column Size** : 4.6 x 250mm, 5㎛
- **Flow Rate** : 1.0mL/min
- **Detection** : UVD 254nm
- **Temperature** : 35℃
- **Mobile Phase** : Acetonitrile /DW = 60 / 40
- **Samples** : 1) Uracil : 0.1mg/mL
  2) Methyl benzoate : 2.2mg/mL
  3) Toluene : 8.7mg/mL
  4) Naphthalene : 0.9mg/mL
- **Shipping Solvent** : 60% Acetonitrile

INNO Column C18/SAX

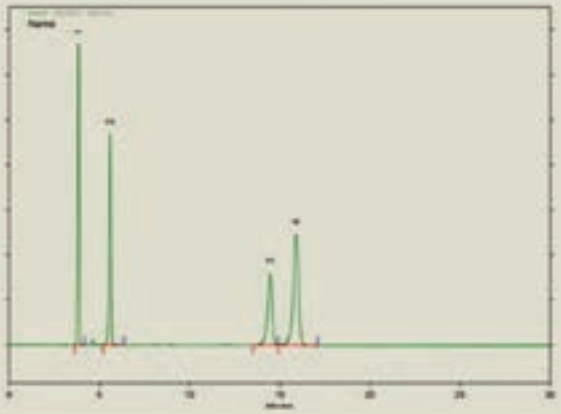




(HPLC Condition)

- **Column Size** : 4.6 X 250mm, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : UVD 254nm
- **Temperature** : 35℃
- **Mobile Phase** : Acetonitrile /DW = 60 / 40
- **Samples** : 1) Uracil : 0.1 mg/mL 2) Methyl benzoate : 2.2 mg/mL 3) Toluene : 8.7 mg/mL 4) Naphthalene : 0.9 mg/mL
- **Shipping Solvent** : 60% Acetonitrile

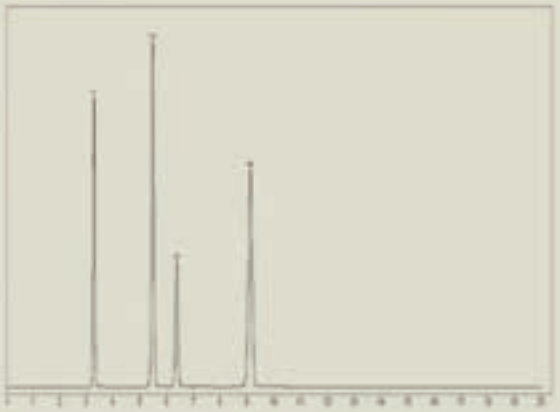
INNO Column Diol



(HPLC Condition)

- **Column Size** : INNO Column Diol 4.6 X 250mm, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : PDA 254 nm
- **Temperature** : 35℃
- **Mobile Phase** : n-Hexane / Ethyl alcohol = 85 / 15
- **Samples** : 1) 2-nitrotoluene 0.2mg/mL
  2) Phenol : 1.0mg/mL
  3) Resorcinol 2.5 mg/mL
  4) hydroquinone 10mg/mL

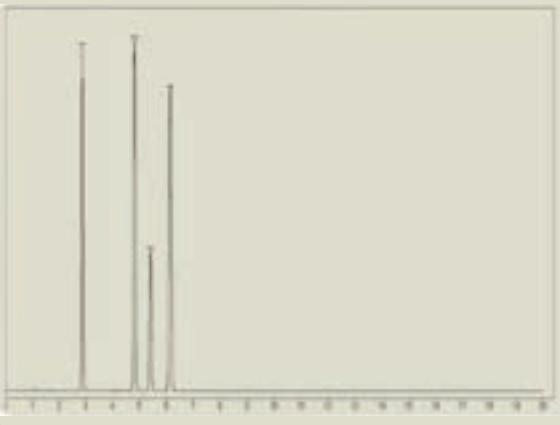
INNO Column CN



(HPLC Condition)

- **Column Size** : INNO Column CN 4.6 X 250mm, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : PDA 254 nm
- **Temperature** : 35℃
- **Mobile Phase** : Methanol / DW = 50 / 50
- **Samples** : 1) Uracil : 0.1mg/mL
  2) Methyl benzoate : 2.2mg/mL
  3) Toluene : 8.7mg/mL
  4) Naphthalene : 0.9mg/mL

INNO Column Phenyl

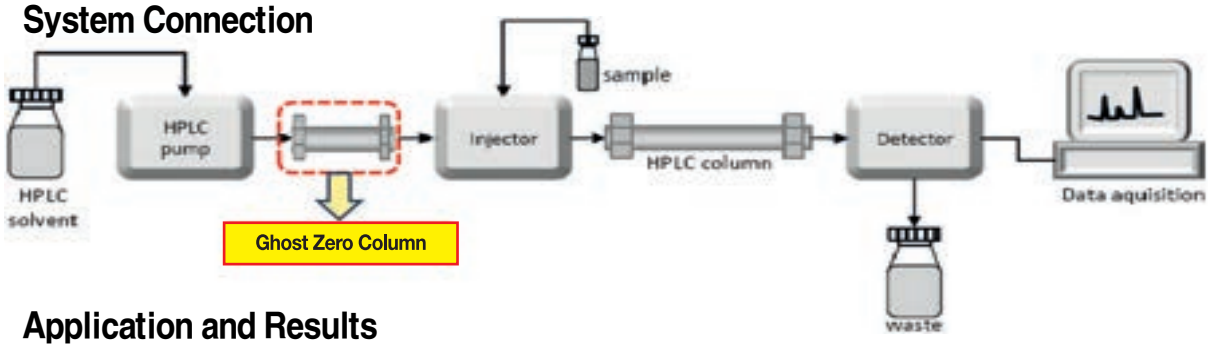


(HPLC Condition)

- **Column Size** : INNO Column Phenyl 4.6 X 250mm, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : PDA 254 nm
- **Temperature** : 35℃
- **Mobile Phase** : Acetonitrile / DW = 60 / 40
- **Samples** : 1) Uracil : 0.1mg/mL
  2) Methyl benzoate : 2.2mg/mL
  3) Toluene : 8.7mg/mL
  4) Naphthalene : 0.9mg/mL

Ghost Peak Removal : Ghost Zero Column

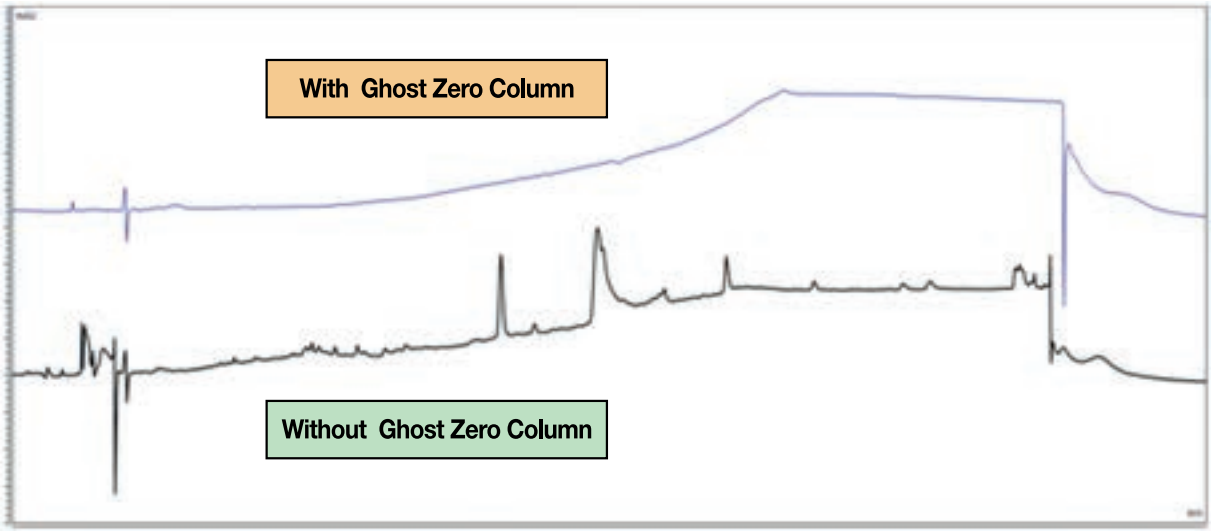
System Connection



Application and Results

Mobile Phase A	Ultra-pure water
Mobile Phase B	Acetonitrile
Flow Rate	1.0 mL/min
Temperature	40 ℃
Detector	210 nm
Injection Volume	10 µL
Sample	Ultra-pure water
Column	INNO Column C18 5um 4.6 * 250mm

Time(min)	Mobile Phase A (%)	Mobile Phase B (%)
0	90	10
20	10	90
30	10	90
30.1	90	10
38	90	10

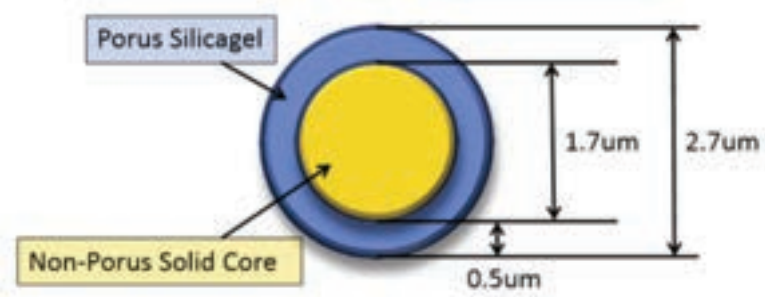


Product Information

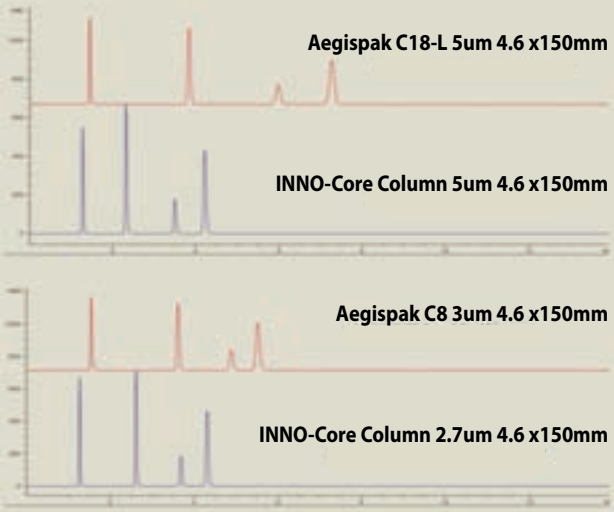
Instrument	Product Name	Column size	Product Number
HPLC	Ghost Zero Column	4.6 x 50mm	GZ04605
UPLC	Ghost Zero Column-U	2.1 x 30mm	GZ02103-U
UPLC	Ghost Zero Column-U	2.1 x 50mm	GZ02105-U

HPLC Column : INNO-Core Columns

■ Solid Core Technologies



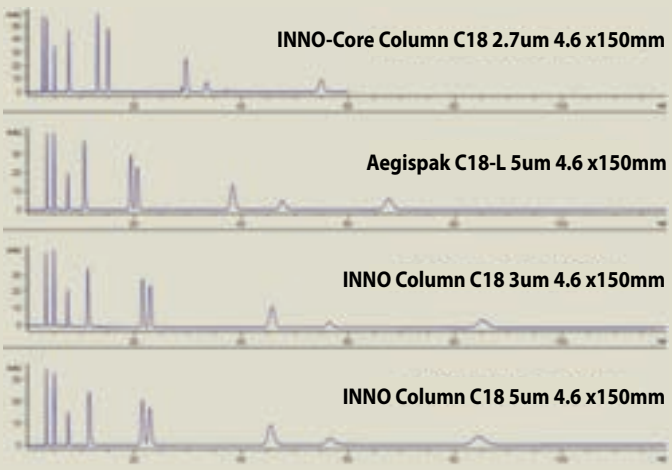
■ Fast Analysis



(HPLC Condition)

- **Column Size** : 4.6 x 150mm, 5μm
- **Flow Rate** : 1.0mL/min
- **Detection** : UVD 254nm
- **Temerature** : 35℃
- **Mobile Phase** : Acetonitrile/DW = 60/40
- **Samples**
  1) Uracil : 0.1mg/mL
  2) Methyl benzoate : 2.2mg/mL
  3) Toluene : 8.7mg/mL
  4) Naphthalene : 0.9mg/mL

■ Retention Time Character of C18 Columns



(HPLC Condition)

- **Column Size** : 4.6 x 150mm
- **Flow Rate** : 0.5mL/min
- **Detection** : UVD 254nm
- **Temerature** : 35℃
- **Mobile Phase** : Methanol/DW = 50/50
- **Samples**
  1) Uracil
  2) Caffein
  3) Phenol
  4) 2-Ethyl Pyridine
  5) Methyl benzoate
  6) Benzene
  7) Toluene
  8) Phenylacetylacetone
  9) Naphthalene

HPLC Column : INNO-Core Columns

■ Specifications

Column	Particle Size (μm)	Pore Size (Å)	Surface Area (m' /g)	C (%)	End Capping	pH Range	USP
INNO-Core Column C18	2.7, 5	100	115	7	0	2.0~8.5	L1
INNO-Core Column C18-PE	2.7, 5	100	115	5	0	2.0~8.5	L1
INNO-Core Column C8	2.7, 5	100	115	4.5	0	2.0~8.5	L7
INNO-Core Column Phenyl-Hexyl	2.7, 5	100	115	5	0	2.0~8.5	L11
INNO-Core Column PFP	2.7, 5	100	115	5	0	2.0~8.5	L43

■ Available Particle Size

Column	2.7um	5um
INNO-Core Column C18	●	●
INNO-Core Column C18-PE	●	●
INNO-Core Column C8	●	●
INNO-Core Column Phenyl-Hexyl	●	●
INNO-Core Column PFP	●	●

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

Classify	2.1	3.0	4.6
50	●	●	●
100	●	●	●
150	●	●	●
250	●	●	●

■ Product Numbering Method

Particle Size
2.7um = 027 5um = 05

Product Name (Abbreviation)	
INNO-Core Column C18	NC
INNO-Core Column C18-PE	NCPE
INNO-Core Column C8	NC8
INNO-Core Column Phenyl-Hexyl	NCPH
INNO-Core Column PFP	NCPFP

Inner Diameter (mm)
2.1mm = 021 3.0mm = 030 4.6mm = 046

Length (mm)
50mm = 05 100mm = 10 150mm = 15 250mm = 25

Columns	Particle Size (um)	Product Name (Abbreviation)	Inner Diameter (mm)	Length (mm)	Product Number
INNO-Core Column C18 2.7um 4.6 x 150mm	027	NC	046	15	027NC04615
INNO-Core Column C18-PE 2.7um 3.0 x 250mm	027	NCPE	030	25	027NCPE03025
INNO-Core Column C8 5um 4.6 x 150mm	05	NC8	046	15	05NC804615
INNO-Core Column PFP 2.7um 2.1 x 100mm	027	NCPFP	021	10	027NCPFP02110

■ Characteristics and parameter

< Aegispak Column Series >

Column	Particle Size (μm)	Pore Size (Å)	Surface Area (㎡/g)	C(%)	End Capping	pH Range	USP
Aegispak C18-F	3,5	120	320	13	0	1.0~9.0	L1
Aegispak C18-FA	3,5	120	320	11	0	1.0~9.0	L1
Aegispak C18-L	3,5	100	330	14	0	1.0~9.0	L1
Aegispak C18-LA	3,5	100	330	13	0	1.0~9.0	L1
Aegispak C8	3,5	100	330	8	0	1.0~9.0	L7

< INNO Column Series >

Column	Particle Size (μm)	Pore Size (Å)	Surface Area (㎡/g)	C(%)	End Capping	pH Range	USP
INNO Column C18	3, 3.5, 5, 10	120	320	18	0	2.0~8.0	L1
INNO Column C18-HC	5	100	430	20	0	2.0~8.0	L1
INNO Column C18-SB	3,5	120	320	17	0	1.0~11.0	L1
INNO Column C18-SSB	5	120	320	18	0	1.0~11.0	L1
INNO Column C18-SBA	3,5	120	320	16	0	1.0~11.0	L1
INNO Column C18-NE	5	120	320	17	X	2.0~7.5	L1
INNO Column C8	5	120	320	12	0	2.0~8.0	L7
INNO Column C8-HC	5	100	430	12	0	2.0~8.0	L7
INNO Column C8-SB	5	120	320	11	0	1.0~11.0	L7
INNO Column C8-NE	5	120	320	11	X	2.0~7.5	L7
INNO Column C4	5	120	320	8	0	2.0~8.0	L26
INNO Column C1	5	120	320	3	X	2.0~8.0	L13
INNO Column Silica	3, 5, 10	100, 120	320	-	X	2.0~8.0	L3
INNO Column Diol	5	120	320	-	X	2.0~8.0	L20
INNO Column NH2	3, 5, 10	120	320	6	X	2.0~8.0	L8
INNO Column CN	5, 10	120	320	8	0	2.0~8.0	L10
INNO Column Phenyl	5	120	320	11	0	2.0~8.0	L11
INNO Column SCX	5	120	320	6	0	2.0~8.0	L9
INNO Column SCX-L	5	100	320	5	0	2.0~8.0	L9
INNO Column SAX	5	120	320	5	0	2.0~8.0	L14

< INNO-P Column Series >

Column	Particle Size (μm)	Pore Size (Å)	Surface Area (㎡/g)	C(%)	End Capping	pH Range	USP
INNO-P Column C18	5	300	110	8	0	1.0 ~ 9.0	L1
INNO-P Column C8	5	300	110	5	0	1.0 ~ 9.0	L7
INNO-P Column C4	5	300	110	3	0	1.0 ~ 9.0	L26

< INNO-Mixed Column Series >

Column	Particle Size (μm)	Pore Size (Å)	Surface Area (m^2/g)	C(%)	End Capping	pH Range	USP
INNO Column C18/SCX (1/1)	5	120	320	12	0	2.0~8.0	L##
INNO Column C18/SCX (5/1)	5	120	320	15	0	2.0~8.0	L##
INNO Column C18/SAX (1/1)	5	120	320	13	0	2.0~8.0	L##
INNO Column C18/SAX (5/1)	5	120	320	16	0	2.0~8.0	L##

< INNO-Core Column Series >

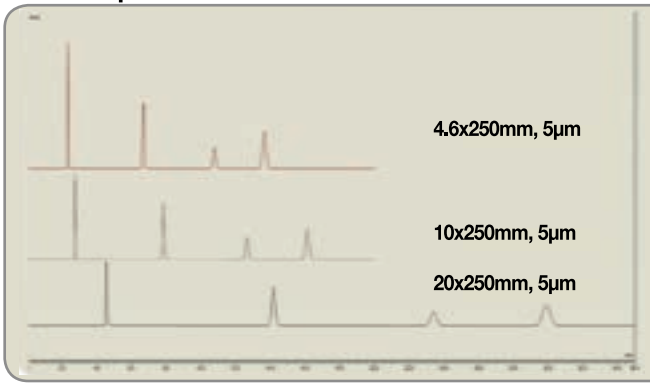
Column	Particle Size (μm)	Pore Size (Å)	Surface Area (m^2/g)	C(%)	End Capping	pH Range	USP
INNO-Core Column C18	2.7, 5	100	115	7	0	2.0~8.5	L1
INNO-Core Column C18-PE	2.7, 5	100	115	5	0	2.0~8.5	L1
INNO-Core Column C8	2.7, 5	100	115	4.5	0	2.0~8.5	L7
INNO-Core Column Phenyl-Hexyl	2.7, 5	100	115	5	0	2.0~8.5	L11
INNO-Core Column PFP	2.7, 5	100	115	5	0	2.0~8.5	L43

< Brand Meaning & Model Meaning >

Brand Name	Brand Meaning	Brand Description
Aegispak	Aegis (Shield) + Pak (Column)	Column capable of analyzing acidic, neutral and basic substances
INNO Column	INNO (Innovation)	Separation Revolution Column
INNO-P Column	P (Peptide)	Columns of Pore size 300Å
INNO-Core Column	C (Core shell)	Columns of Solid Core
Ghost Zero Column	Ghost (Peak) + Zero (No exist)	Solvent filter to remove ghosts or unknown peaks

Model Name	Model Meaning	Model Description
L	Late	Column that elutes later than the F column
F	Fast	Column that elute faster than L column
FA	Acid	F column treated with strong acid for 6 days
LA	Acid	L column treated with strong acid for 6 days
SBA	Acid	SB column treated with strong acid for 6 days
HC	High Carbon	Columns with maximal binding of C18 or C8
SB	Strong Base	Column with enhanced alkali resistance
SSB	Super Strong Base	Column with more enhanced alkali resistance
NE	No End capping	Column without end capping
PE	Polar Embeded	Column with polar embeded in the C18
PFP	PentaFluoroPhenyl	Column with Pentafluorophenyl group
SAX	Strong Anion eXchange	Strong anion exchange column
SCX	Strong Cation eXchange	Strong cation exchange column
C18/SAX	•	Column with mixed C18 resin and SAX resin
C18/SCX	•	Column with mixed C18 resin and SCX resin

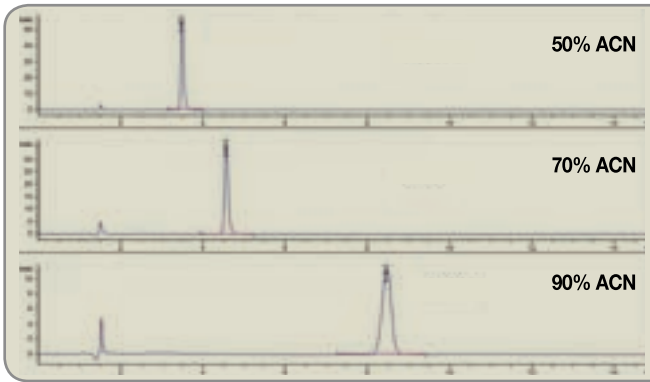
Semi-Prep Column



(HPLC Condition)

- **Column Size** : INNO Column C18
- **Flow Rate** : 1.0 mL/min
  4.0 mL/min
  9.0 mL/min
- **Detection** : PDA 254 nm
- **Temperature** : 35℃
- **Mobile Phase** : Methanol / DW = 50 / 50
- **Samples** : 1) Uracil : 0.1mg/mL
  2) Methyl benzoate : 2.2mg/mL
  3) Toluene : 8.7mg/mL
  4) Naphthalene : 0.9mg/mL

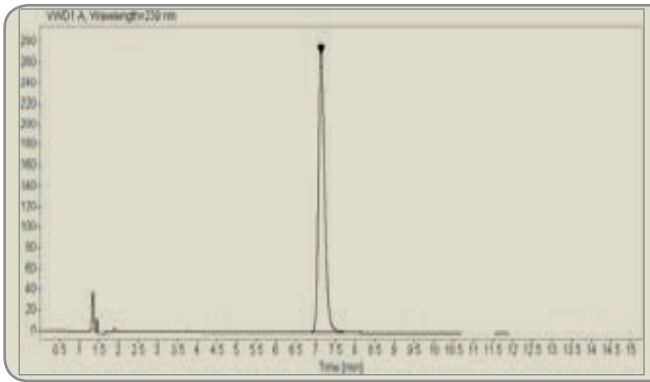
Allantoin



(HPLC Condition)

- **Column Size** : INNO Column SCX
  4.6 x 250m, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : UVD 224nm
- **Temperature** : 40℃
- **Mobile Phase** : Acetonitrile / DW
  = 50 / 50
  = 70 / 30
  = 90 / 10
- **Samples** : Allantoin

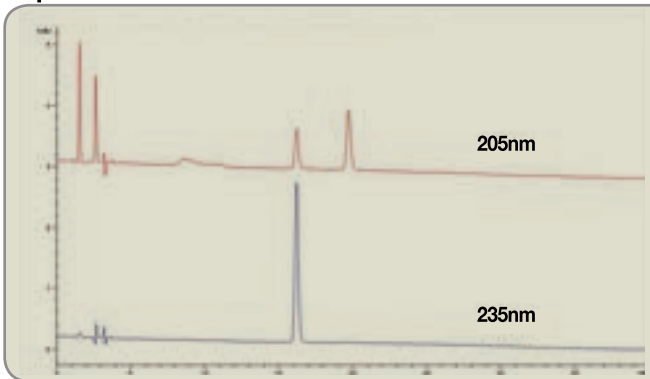
Chlorhexidine



(HPLC Condition)

- **Column Size** : INNO Column C18-HC
  4.6 x 250m, 5μm
- **Flow Rate** : 1.5 mL/min
- **Detection** : UVD 239nm
- **Temperature** : 40℃
- **Mobile Phase** : Acetonitrile / Buffer=3 / 7
  ※ Buffer : Dissolve 27.6 g of sodium hydrogen phosphate and 10 mL of triethylamine in about 1.5 L of purified water. Add phosphoric acid to pH 3.0 and adjust to 2L.
- **Injection Volume** : 10uL
- **Samples** : 1) Chlorhexidine

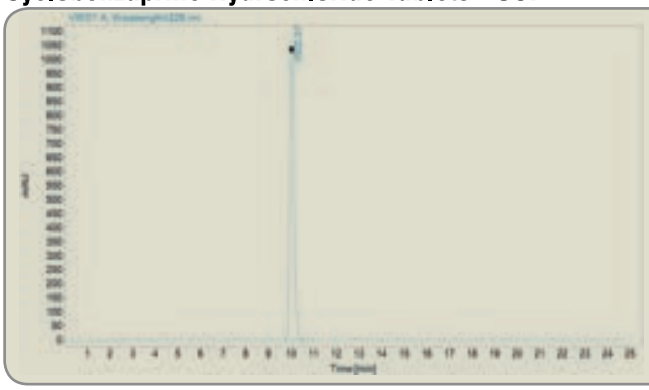
Copovidone - USP



(HPLC Condition)

- **Column Size** : Aegispak C18-L 5um 4.0 x 33mm + Aegispak C18-L 5um 4.0 x 250mm
- **Flow Rate** : 1.0 mL/min
- **Detection** : UVD 205nm, 235nm
- **Temperature** : 40℃
- **Mobile Phase** : Acetonitrile /DW = 2 / 23
- **Injection Volume** : 20uL
- **Samples** : 1) 1-Viniyl-2-pyrrolidone
  2) Viniyl acetate

Cyclobenzaprine Hydrochloride Tablets - USP



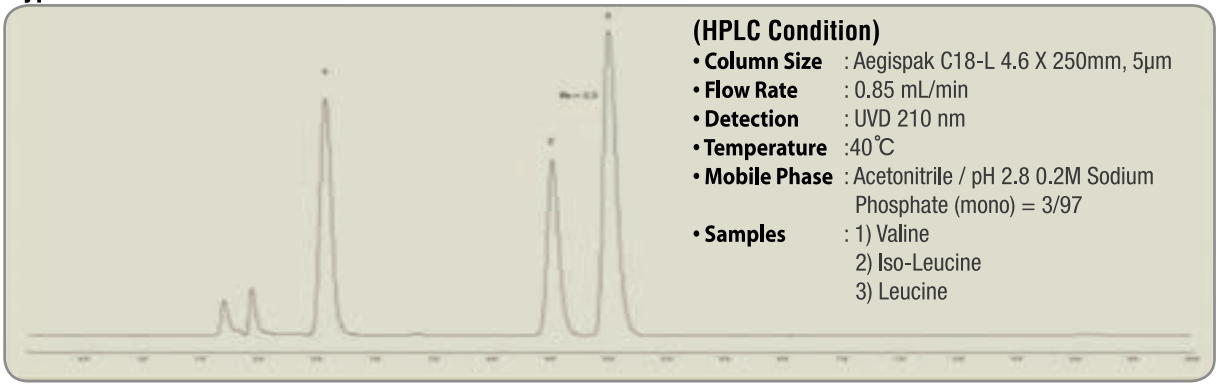
(HPLC Condition)

- **Column Size** : INNO Column C8-SB 4.6 x 250m, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : UVD 226nm
- **Temperature** : 30℃
- **Mobile Phase** : Methanol / Buffer=65 / 35

※ Buffer : 11.4g/L of ammonium acetate in water. Adjust with ammonium hydroxide to a pH of 7.2.

- **Injection Volume** : 10uL
- **Samples** : 1) Cyclobenzaprine Hydrochliride

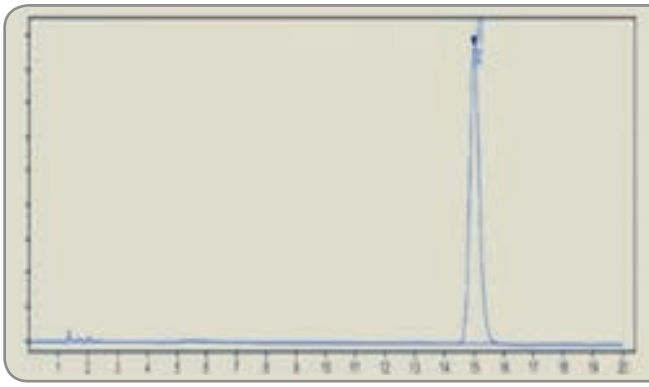
Hypoalbuminemia



(HPLC Condition)

- **Column Size** : Aegispak C18-L 4.6 X 250mm, 5μm
- **Flow Rate** : 0.85 mL/min
- **Detection** : UVD 210 nm
- **Temperature** :40℃
- **Mobile Phase** : Acetonitrile / pH 2.8 0.2M Sodium Phosphate (mono) = 3/97
- **Samples** : 1) Valine
  2) Iso-Leucine
  3) Leucine

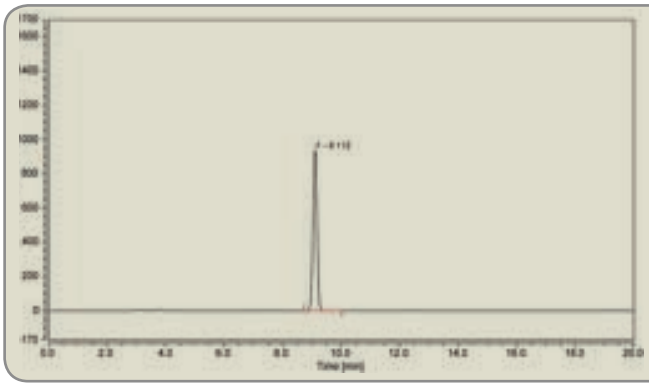
Lafutidine – JP Method



(HPLC Condition)

- **Column Size** : Aegispak C18-LA 6.0 X 150mm, 5μm
- **Flow Rate** : Adjust so that the retention time of lafutidine is about 15 minutes (About 1.75 mL/min)
- **Detection** : UVD 220 nm
- **Temperature** : 40℃
- **Mobile Phase** : Acetonitrile / Buffer = 15 / 85
- **Buffer** : Dissolve 0.87 g of sodium 1-pentanesulfonate in dilute phosphoric acid (1 in 1000)
- **Samples** : 1) Lafutidine
  ▸Theoretical Plate Number=About 10,000

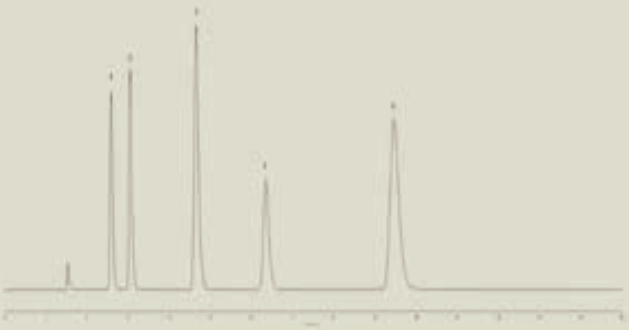
Levocetirizine - EP



(HPLC Condition)

- **Column Size** : INNO Column Silica 4.6 x 250mm, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : UVD 230nm
- **Temperature** : 30℃
- **Mobile Phase** : Acetonitrile / DW / 1M H2SO4 = 93 / 6.6 / 0.4
- **Injection Volume** : 20uL
- **Samples** : 1) Levocetirizine

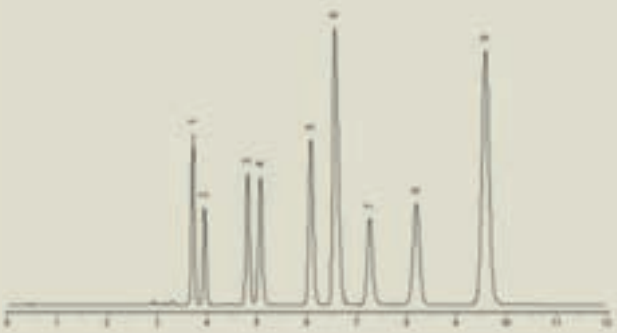
Nucleic Acids



(HPLC Condition)

- **Column Size** : Aegispak C18-L 4.6 X 250mm, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : UVD 245 nm
- **Temperature** : 40℃
- **Mobile Phase** : pH 6.4 Phosphate Buffer Solution
- **Samples** : 1) Cytocine
  2) Uracil
  3) Guanine
  4) Thymine
  5) Adenine

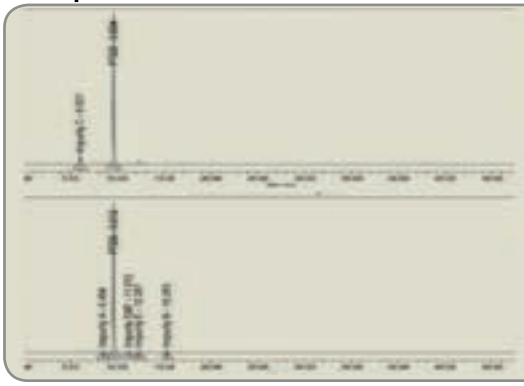
Organic Acids



(HPLC Condition)

- **Column Size** : Aegispak C18-L 5μm 4.6 X 250mm
- **Flow Rate** : 0.8 mL/min
- **Detection** : PDA 220 nm
- **Temperature** : 30℃
- **Mobile Phase** : Methanol / 10mM Potassium Phosphate Monobasic (pH 2.5, H_3PO_4) = 2 / 98
- **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

Pantoprazole Sodium – USP Method

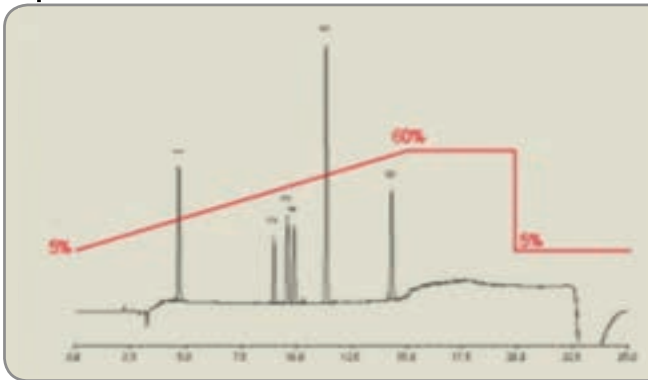


(HPLC Condition)

- **Column Size** : Aegispak C18-L 4.0 X 125mm, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : UVD 290nm and 305nm
- **Temperature** : 40℃
- **Mobile Phase** : Solution (A) = Prepare a Soultion of dibasic potassium phosphate(1.74g/L) adjusted with a solution of phosphoric acid(330g/L) to a pH of 7± 0.05
  Solution (B) = 100% Acetonitrile
- **Samples** : Pantoprazole Sodium Related substances test

Time(minutes)	A	B
0–40	80→20	20→80
40–45	20→80	80→20
45–55	80	20

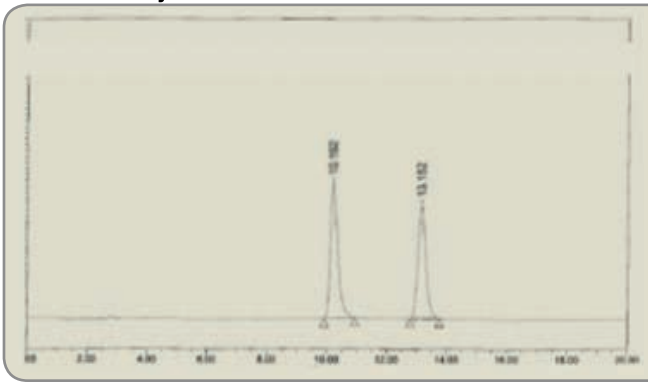
Peptide



(HPLC Condition)

- **Column Size** : Aegispak C18-L 4.6 X 250mm, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : PDA 220 nm
- **Temperature** : 40℃
- **Mobile Phase** : Solution A : 0.1 % TFA in Water
  Solution B : 0.1 % TFA in (Acetonitrile / Methanol = 50/50)
- **Samples** : 1) Pentapeptide 2) Caffein
  3) 15n-labeled amino acid
  4) 10n-labeled amino acid
  5) Coumaric acid
  6)15n-labeled amino acid + Coumaric acid

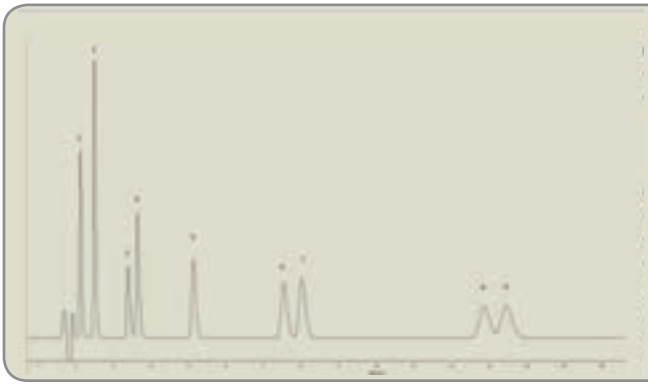
Pranlukast Hydrate - JP Method



(HPLC Condition)

- **Column Size** : Aegispak C8 6.0 X 150mm, 5μm
- **Flow Rate** : Adjust so that the retention time of pranlukast is about 10 minutes
- **Detection** : UVD 260 nm
- **Temperature** : 25℃
- **Mobile Phase** : A mixture of 0.02 mol/L potassium dihydrogen phosphate TS, acetonitrile and methanol(5:5:1)
- **Samples** : Pranlukast hydrate Assay test

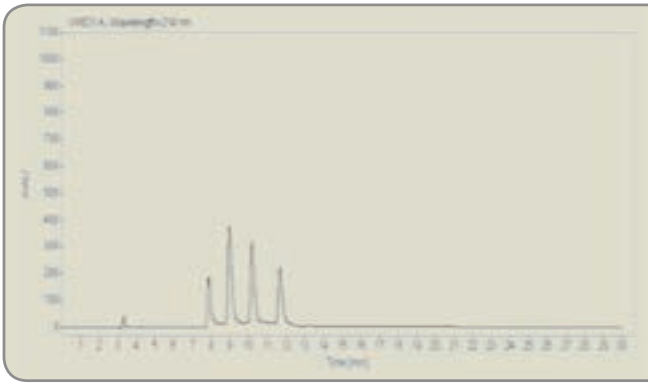
Preservatives



(HPLC Condition)

- **Column Size** : Aegispak C18-F 5um 4.6 X 150mm
- **Mobile Phase** : A/B=35/65 A : Acetonitrile B : 50mM Ammonium Acetate Buffer Soln.(pH 4.6)
- **Flow Rate** : 1.0ml/min
- **Wavelength** : PDA 235 nm
- **Oven Temp** : 40℃
- **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

Protamine Sulfate - USP Method

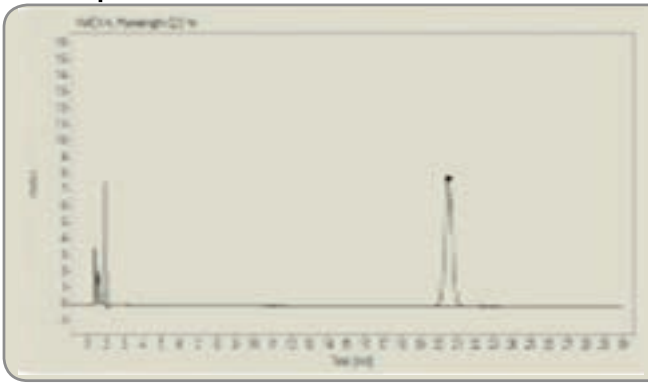


(HPLC Condition)

- **Column Size** : INNO-P Column C18 4.6 X 250mm, 5μm
- **Flow Rate** : 1.0 mL/min
- **Detection** : UVD 214 nm
- **Temperature** : 40℃
- **Mobile Phase** : Solution A :0.1 M Sodium dihydrogen phosphate solution(adjust with pH 1.8 phosphoric acid) Solution B : Solution A 467.5 mL + Acetonitrile 32.5 mL

Time(min)	Solution A	Solution B
0	85	15
15	55	45
25	55	45
30	85	15

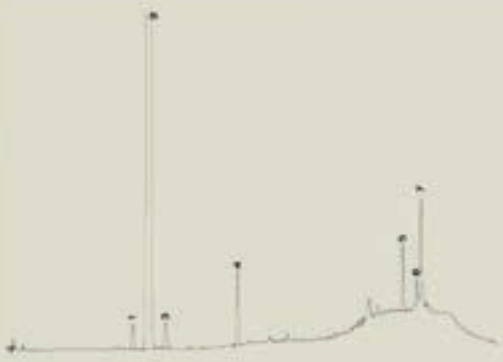
Rebamipide - JP Method



(HPLC Condition)

- **Column Size** : INNO Column C18-SB 4.6 X 150mm, 5μm
- **Flow Rate** : Adjust so that the retention time of rebamipide is about 20 minutes (about 1.1 mL/min)
- **Detection** : UVD 222 nm
- **Temperature** : 25℃
- **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
  ▸Theoretical Plate Number = About 14,000

Rosuvastatin calcium - EP Method

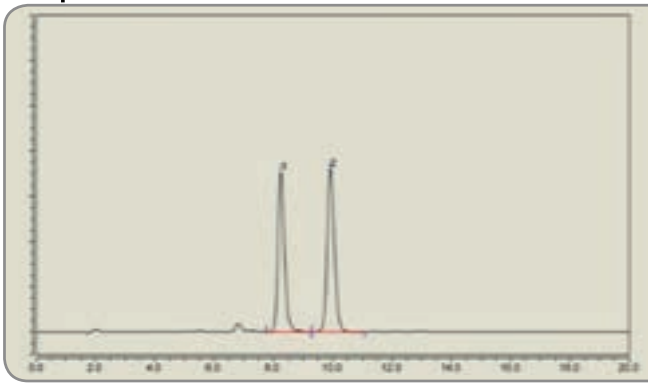


(HPLC Condition)

- **Column Size** : INNO Column C18 3.0 X 150mm, 3μm
- **Flow Rate** : 0.75 mL/min
- **Detection** : UVD 242 nm
- **Temperature** : 40℃
- **Mobile Phase** : Solution A: 1 % Trifluoroacetic acid : Acetonitrile : water (1:29:70)
  Solution B: 1 % Trifluoroacetic acid : water : Acetonitrile (1:24:75)
- **Samples** : Rosuvastatin calcium / Related substances test

Time(min)	Solution A	Solution B
0–30	100	0
30–50	100→60	0→40
50–60	60→0	40→100
60–70	0	100

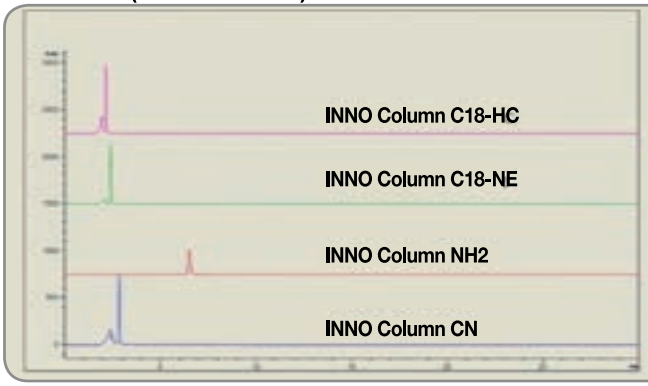
Tocopherol calcium succinate - KP Method



(HPLC Condition)

- **Column Size** : Aegispak C18-L 4.6 X 150mm, 5μm
- **Flow Rate** : Adjust so that retention time of tocopherol succinate is about 8 minutes (about 0.75 mL/min)
- **Detection** : UVD 284 nm
- **Temperature** : 25℃
- **Mobile Phase** : Methanol : water : acetic acid(100) (97:2:1)
- **Samples** : 1) Tocopherol succinate
  2) Tocopherol

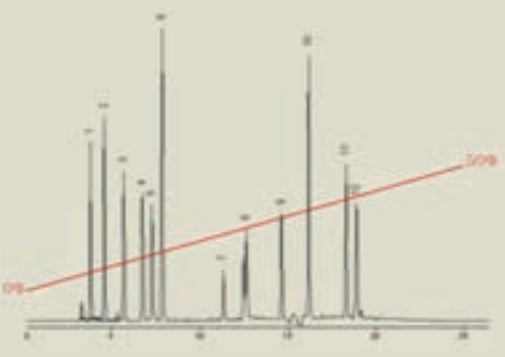
Vitamin C (Ascorbic acid)



(HPLC Condition)

- **Column Size** : INNO Column C18-HC 4.6 X 250mm, 5μm
  INNO Column C18-NE 4.6 X 250mm, 5μm
  INNO Column NH2 4.6 X 250mm, 5μm
  INNO Column C18-HC 4.0 X 250mm, 5μm
- **Flow Rate** : 1.0, 1.0, 1.0, 0.75 mL/min
- **Detection** : UVD 254 nm
- **Temperature** : 25℃
- **Mobile Phase** : Acetonitrile / 0.05M KH_2PO_4 = 40 / 60
  0.05 M KH_2PO_4 : Dissolove 6.8 g of potassium dihydrogen phosphate in water to make 1000 mL.
- **Samples** : 1) Ascorbic acid

Vitamins – Water soluble



(HPLC Condition)

- **Column Size** : INNO Column C18 5um 4.6 X 250mm
- **Flow Rate** : 0.8 mL/min
- **Detection** : PDA 210 nm
- **Temperature** : 35℃
- **Mobile Phase** : A) 10mM KH_2PO_4 Buffer(pH 3.0, H_3PO_4) Acetonitrile = 98/2
  B) 10mM KH_2PO_4 (pH 3.0, H_3PO_4) 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

Product List

■ Available particle size

Available Particle Size		2.7μm	3μm	3.5μm	5μm	10μm(100 Å)	10μm(120 Å)
Aegispak C18-F	AF		●		●		
Aegispak C18-FA	AFA		●		●		
Aegispak C18-L	AL		●		●		
Aegispak C18-LA	ALA		●		●		
Aegispak C8	A8		●		●		
INNO Column C18	N		●	●	●	●	●
INNO Column C18-HC	NHC				●		
INNO Column C18-SB	NSB		●		●		
INNO Column C18-SSB	NSSB				●		
INNO Column C18-SBA	NSBA				●		
INNO Column C18-NE	NE		●		●		
INNO Column C8	N8				●		
INNO Column C8-HC	N8HC				●		
INNO Column C8-SB	N8SB				●		
INNO Column C8-NE	N8E				●		
INNO Column C4	N4				●		
INNO Column C1	N1				●		
INNO Column Phenyl	PH				●		
INNO Column Silica	S		●		●	●	●
INNO Column Diol	DL				●		
INNO Column NH2	NH		●		●		●
INNO Column CN	CN				●		●
INNO Column SCX	SCX				●		
INNO Column SCX-L	SCX-L				●		
INNO Column SAX	SAX				●		
INNO Column C18/SCX (1/1)	N1SCX				●		
INNO Column C18/SCX (5/1)	N5SCX				●		
INNO Column C18/SAX (1/1)	N1SAX				●		
INNO Column C18/SAX (5/1)	N5SAX				●		
INNO-P Column C18	NP				●		
INNO-P Column C8	NP8				●		
INNO-P Column C4	NP4				●		
INNO-Core Column C18	NC	●			●		
INNO-Core Column C18-PE	NCPE	●			●		
INNO-Core Column C8	NC8	●			●		
INNO-Core Column Phenyl-Hexyl	NCPH	●			●		
INNO-Core Column PFP	NCPFP	●			●		

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

Classify	1.5	2.0	2.1	3.0	3.9	4.0	4.6	6.0	8.0	10	20
30	●	●		●	●	●	●				
33	●	●		●	●	●	●				
35	●	●		●	●	●	●				
40	●	●		●	●	●	●				
45	●	●		●	●	●	●				
50	●	●	●	●	●	●	●				
55	●	●		●	●	●	●				
60	●	●		●	●	●	●				
75	●	●		●	●	●	●				
80	●	●		●	●	●	●				
100	●	●	●	●	●	●	●	●	●		
110	●	●		●	●	●	●				
120	●	●		●	●	●	●				
125	●	●		●	●	●	●				
150	●	●	●	●	●	●	●	●	●		
200	●	●		●	●	●	●	●	●		
220	●	●		●	●	●	●	●	●		
250	●	●	●	●	●	●	●	●	●	●	●
300				●	●	●	●	●	●		

※ In the available specification, the length can be supplied as you wish.
※ Inner diameter 2.1mm is only for INNO-Core Column.

Product numbering method

Particle size (um)	Product Name (Abbreviation)	Inner Diameter (mm)	Length (cm)
03	AL	015	03
2.7um = 027 3um = 03 3.5um = 035 5um = 05 10um = 10 (P/S = 120Å) 10um=010 (P/S = 100Å)	Aegispak C18-F = AF Aegispak C18-FA= AFA Aegispak C18-L = AL Aegispak C18-LA = ALA Aegispak C8 = A8 INNO Column C18 = N INNO Column C18-HC = NHC INNO Column C18-SB = NSB INNO Column C18-SSB = NSSB INNO Column C18-SBA = NSBA INNO Column C18-NE = NE INNO Column C8 = N8 INNO Column C8-HC = N8HC INNO Column C8-SB = N8SB INNO Column C8-NE = N8E INNO Column C4 = N4 INNO Column C1 = N1 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 Column SCX-L = SCXL INNO Column SAX = SAX INNO Column C18/SCX (1/1) = N1SCX INNO Column C18/SCX (5/1) = N5SCX INNO Column C18/SAX (1/1) = N1SAX INNO Column C18/SAX (5/1) = N5SAX INNO-P Column C18 = NP INNO-P Column C8 = NP8 INNO-P Column C4 = NP4 INNO-Core Column C18 = NC INNO-Core Column C18-PE = NCPE INNO-Core Column C8 = NC8 INNO-Core Column Phenyl-Hexyl = NCPH INNO-Core Column PFP = NCPFP	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 60mm = 06 70mm = 07 75mm = 075 80mm = 08 100mm = 10 110mm =11 120mm = 12 125mm = 125 150mm = 15 200mm = 20 220mm = 22 250mm = 25 300mm = 30

Examples

Columns(um)	Particle Size (μm)	Product Name (Abbreviation)	Inner Diameter(mm)	Length (cm)	Product NO
Aegispak C18-L 5um 3.9 x 150mm	05	AL	039	15	05AL03915
Aegispak C8 5um 4.6 x 250mm	05	A8	046	25	05A804625
INNO Column C18-SB 5um 4.6 x 125mm	05	NSB	046	12.5	05NSB046125
INNO Column CN 5um 4.0 x 250mm	05	CN	040	25	05CN04025
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
INNO-Core Column C18 2.7um 4.6 x 150mm	027	NC	046	15	027NC04615

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-FA
		Aegispak C18-L
		Aegispak C18-LA
		INNO Column C18
		INNO Column C18-HC
		INNO Column C18-SB
		INNO Column C18-SSB
		INNO Column C18-SBA
		INNO Column C18-NE
		INNO-P Column C18
		INNO-Core Column C18
		INNO-Core Column C18-PE
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-HC
		INNO Column C8-SB
		INNO Column C8-NE
		INNO-P Column C8
		INNO-Core Column C8
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
		INNO Column SCX-L
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
		INNO-Core Column Phenyl-Hexyl
L13	Trimethylsilane groups chemically bonded to porous silica or hybrid particles, 1.5 to 10 µm in diameter	INNO Column C1
L14	Silica gel having a chemically bonded, strongly basic quaternary ammonium anionexchange coating, 5 to 10 µm in diameter.	INNO Column SAX
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
L43	Pentafluorophenyl groups chemically bonded to porous or superficially porous silica particles by a propyl spacer, 1.5 to 10 µm in diameter.	INNO-Core Column PFP
L##	Octadecyl silane chemically bonded to porous silica particles, 1.5 to 10 µm in diameter and porous silica gel having a chemically bonded, strongly acidic cation-exchange coating, 3 to 10 µm in diameter. The two resins are mixed 1/1 or 5/1	INNO Column C18/SCX
L##	Octadecyl silane chemically bonded to porous silica particles, 1.5 to 10 µm in diameter and porous silica gel having a chemically bonded, strongly basic quaternary ammonium anion exchange coating, 3 to 10 µm in diameter. The two resins are mixed 1/1 or 5/1	INNO Column C18/SAX
L##	This column is a unit that removes unknown or ghost peaks from the mobile phase.	Ghost Zero Column

Correspondence Table

Youngjin Biochrom	INNO-P	Aegispak C18-FA	Aegispak C18-F --- Aegispak C18-LA	Aegispak C18-L --- INNO Column C18-SSB	INNO Column C18	INNO Column C18-SB / C18-SSB / C18-SBA	INNO Column C18-HC	INNO Column C18-NE	INNO-Core Column C18
Agilent	ZORBAX 300SB-C18	ZORBAX SB-C18	Zorbax Eclipse C18	Zorbax Eclipse Plus C18					Poroshell 120 C18
AMT									Halo C18
EKA				Kromasil Ethernity C18	Kromasil C18				Kromasil EternityShell C18
GL Science	Inertsil ODS-SP	InertSustain Swift C18	Inertsil ODS-2	Inertsil ODS-3 Inertsil ODS-4 InertSustain C18			Inertsil ODS-P	Inertsil ODS-EP	InertCore Plus C18
Merck	LiChrospher® WP 300 RP-18				Purospher (STAR) RP-18 endcapped		LiChrospher 100 RP-18 endcapped LiChrospher PAH Purospher RP-18 HC	LiChrosorb RP-18	Ascentis® Express C18
Nacalai	Cosmosil C18 AR-300	Cosmosil C18-PAQ	Cosmosil C18-EB	Cosmosil C18 MS-II	Cosmosil C18 AR-II				COSMOCORE C18
Nagel	Nucleosil 300 C18			Nucleosil C18	Nucleodur C18 Gravity Nucleodur C18 Htec		Nucleodur C18 ISIS Nucleosil C18 HD	Nucleosil C18 Nautilus Nucleodur C18 Pyramid	Nucleoshell™ RP-C18
Nomura		Develosil ODS-P	Develosil ODS-UG Develosil ODS-HG	Develosil ODS-MG Develosil XG C18LC	Develosil ODS-SR Develosil XG C18M		Develosil ODS		
OSAKA Soda			Capcellpak C18 UG120	Capcellpak C18 MG Capcellpak C18 AQ					Capcellcore C18
Phenomenex				Gemini C18 Gemini NX C18	Luna C18 (2) Onyx C18 (HD)	EVO C18			Kinetex C18
Supelco	Discovery BIO Wide Pore C18		SUPELCOSIL™ LC-18	SUPELCOSIL™ LC-18-DB	Discovery C18		Discovery HS C18		
Thermo			Hypersil ODS	Hypersil BDS Hypersil Gold C18	Acclaim 120 C18				Accucore RP-MS
Vydac	Vydac 201TP C18 Vydac 218MS C18								
Waters		X-Terra XSelect HSS C18 SB	XTerra Shield RP18 Spherisorb ODS-2	XTerra MS C18 Sunfire C18 X-Bridge C18 XSelect CSH C18	Athlantis C18 Symmetry (Shield) C18 XBridge BEH C18 uBondapak C18	X-Bridge C18		Spherisorb ODS-1	Cortecs Solid Core Column
YMC			YMCpak Hydrosphere C18	YMCpak Pro C18	YMCpak ODS-AQ	YMCpak Triart C18	YMCpak Triart C18		Meteoric Core Column C18

The corresponding columns may behave differently depending on the analysis conditions and the analyte.

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