



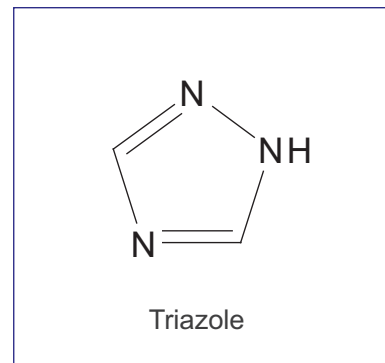
COSMOSIL

HPLC Column for Hydrophilic Interaction

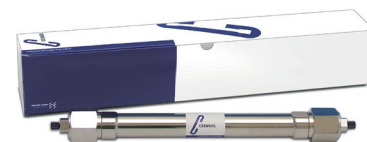
COSMOSIL HILIC

- Triazole bonded stationary phase
- Enhanced hydrophilic interaction
- Excellent separation for organic acids

Silica Gel	High Purity Porous Spherical Silica
Average Particle Size	5 µm
Average Pore Size	approx. 120 Å
Stationary Phase	Triazole
Main Interaction	Hydrophilic Interaction Anion-exchange

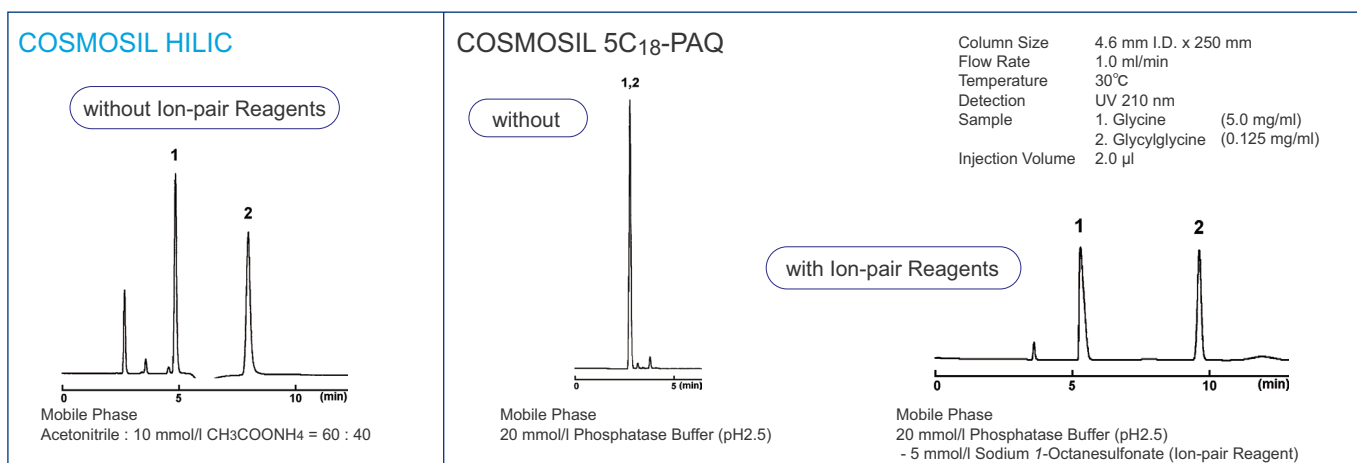


COSMOSIL HILIC is a column for hydrophilic interaction chromatography with Triazole bonded silica packing material. Without using ion-pair reagent it retains highly polar analytes that would not be retained in reversed phase chromatography. It also shows a weak anion-exchange mechanism with the positively charged stationary phase, thus acidic compound is strongly retained.



Comparison with C18 Columns

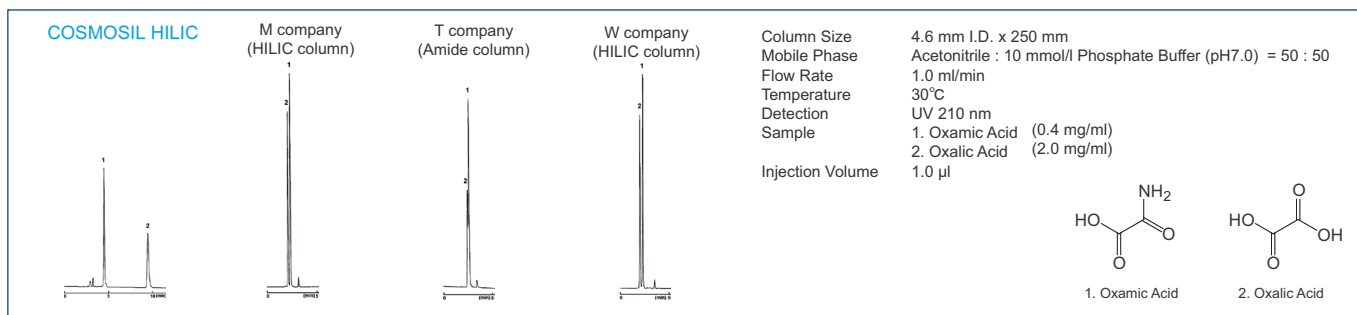
COSMOSIL HILIC can separate glycine and glycyglycine without ion-pair reagents. Although C18 column can separate them with ion-pair reagents, there are some disadvantages such as column equilibration, preparation of mobile phase and column deterioration.



Different Interactions

Separation of Anionic Compounds

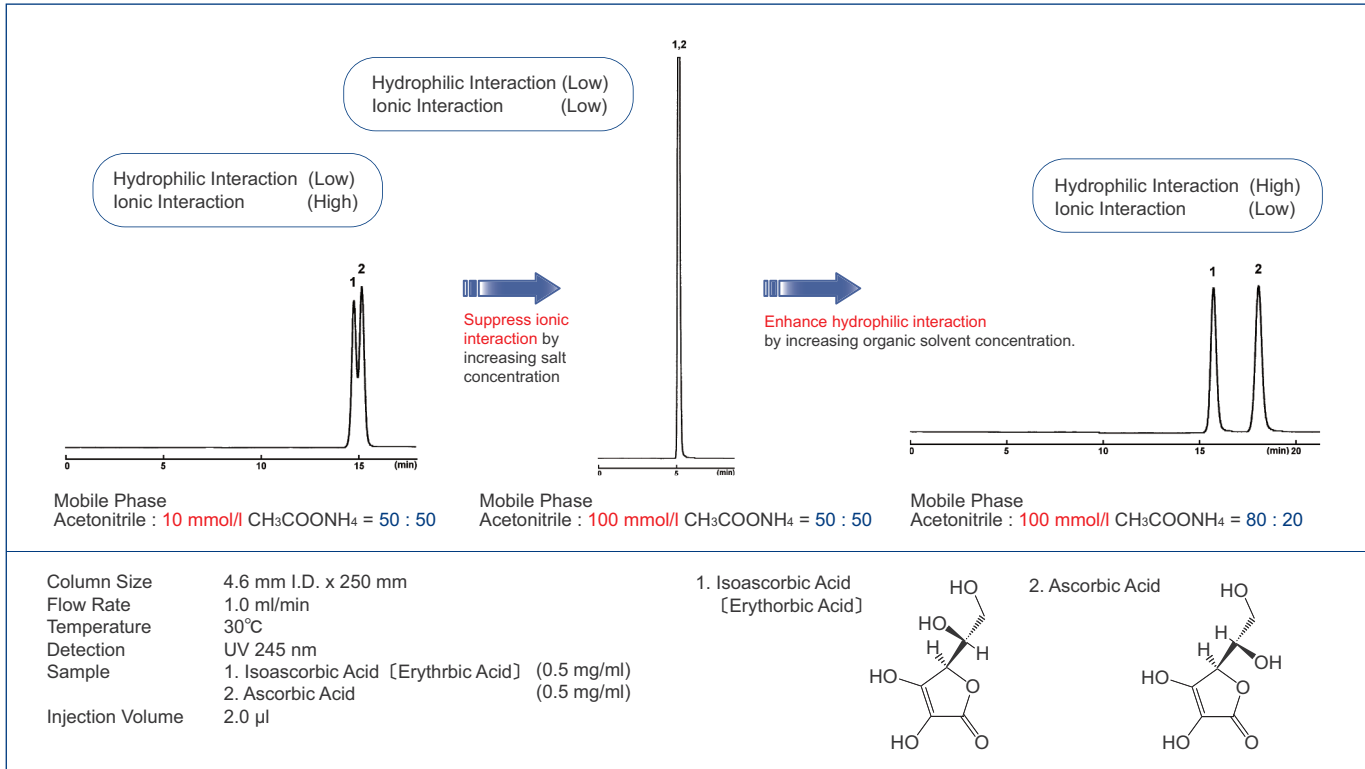
Anionic compounds were used to evaluate the anion-exchange capability. The only COSMOSIL HILIC showed strong selectivity of anionic compounds.



Different Interactions

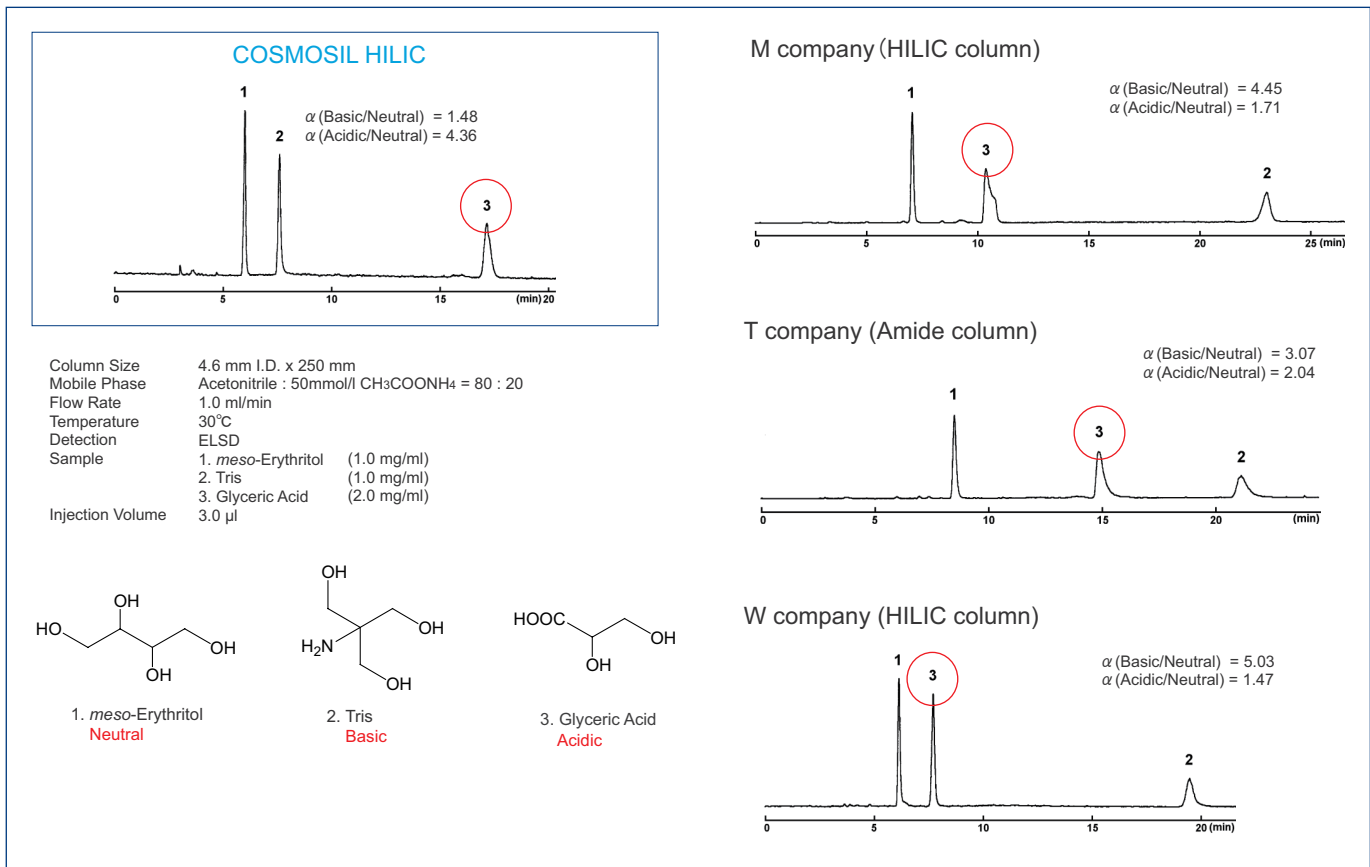
Separation by Hydrophilic Interaction

The retention mechanism of COSMOSIL HILIC is the combination of hydrophilic interaction and anion-exchange, and the retention can be controlled by changing the mobile phase.



Separation of Acidic, Basic and Neutral Compounds

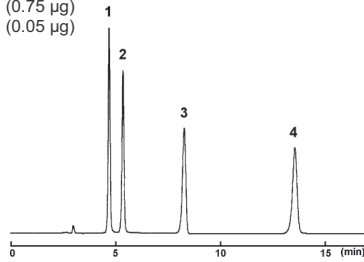
Acidic (Glyceric Acid), basic (Tris) and neutral (*meso*-Erythritol) compounds were used for evaluation of anion and cation-exchange characteristics. The separation factor $\alpha(\text{Acid/Neutral})$ indicates its anion-exchange capability and the factor $\alpha(\text{Basic/Neutral})$ shows its cation-exchange effect.



Application Data

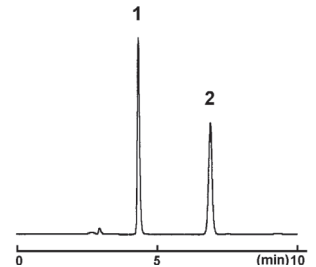
• Melamine

Column Size 4.6 mm I.D. x 250 mm
 Mobile Phase Acetonitrile : 10 mmol/l CH₃COONH₄ = 70 : 30
 Flow Rate 1.0 ml/min
 Temperature 30°C
 Detection UV 225 nm
 Sample 1. Melamine (0.1 µg)
 2. Ammeline (0.075 µg)
 3. Cyanuric Acid (0.75 µg)
 4. Ammelide (0.05 µg)



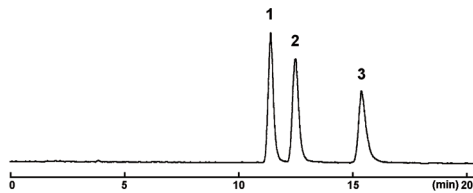
• Allantoins

Column Size 4.6 mm I.D. x 250 mm
 Mobile Phase Acetonitrile : Phosphate Buffer (pH7.0) = 70 : 30
 Flow Rate 1.0 ml/min
 Temperature 30°C
 Detection UV 210 nm
 Sample 1. Allantoin
 2. Allantoic Acid



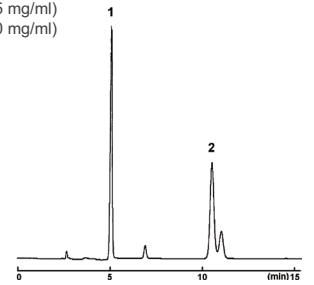
• BCAA (Amino Acid Branched-chain)

Column Size 4.6 mm I.D. x 250 mm
 Mobile Phase Acetonitrile : 10 mmol/l CH₃COONH₄ = 85 : 15
 Flow Rate 1.0 ml/min
 Temperature 30°C
 Detection ELSD (Atten = 8, Gain = 6)
 Sample 1. Leucine (1.0 mg/ml)
 2. Isoleucine (1.0 mg/ml)
 3. Valine (1.0 mg/ml)
 Injection Volume 3.0 µl



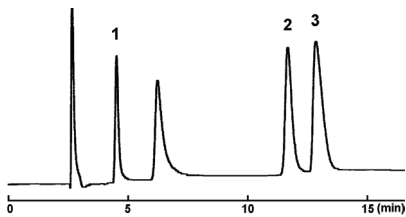
• Juice Components

Column Size 4.6 mm I.D. x 250 mm
 Mobile Phase Acetonitrile : 10 mmol/l Phosphate Buffer (pH7.0) = 50 : 50
 Flow Rate 1.0 ml/min
 Temperature 30°C
 Detection UV 210 nm
 Sample 1. Ascorbic Acid (0.5 mg/ml)
 2. Malic Acid (1.0 mg/ml)
 Injection Volume 3.0 µl



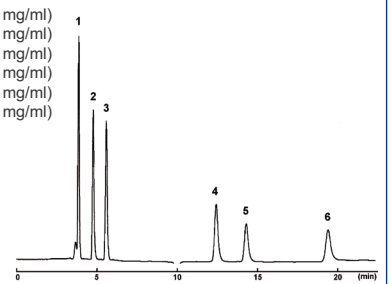
• Phosphorylated Saccharides

Column Size 4.6 mm I.D. x 250 mm
 Mobile Phase Acetonitrile : 20 mmol/l Phosphate Buffer (pH7.0) = 60 : 40
 Temperature 30°C
 Detection RI
 Sample 1. Glucose (2 mg/ml)
 2. α-D-Glucose-1-Phosphate (10 mg/ml)
 3. D-Glucose-6-Phosphate (10 mg/ml)
 Injection Volume 5.0 µl



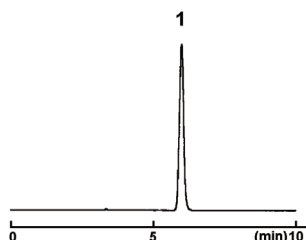
• Water-soluble Vitamins

Column Size 4.6 mm I.D. x 250 mm
 Mobile Phase Acetonitrile : 100 mmol/l CH₃COONH₄ = 80 : 20
 Flow Rate 1.0 ml/min
 Temperature 30°C
 Detection UV 220 nm
 Sample 0.5 ml
 1. Nicotinamide (0.25 mg/ml)
 2. Pyridoxine (Vitamin B₆) (0.50 mg/ml)
 3. Vitamin B₂ (Riboflavin) (0.50 mg/ml)
 4. Nicotinic Acid (0.25 mg/ml)
 5. D-Pantothenic Acid (6.25 mg/ml)
 6. L-(+)-Ascorbic Acid (1.75 mg/ml)
 Injection Volume 0.5 µl



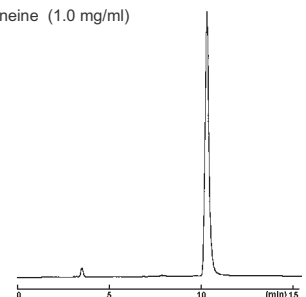
• Hydrophilic Drugs

Column Size 4.6 mm I.D. x 250 mm
 Mobile Phase Acetonitrile : 10 mmol/l CH₃COONH₄ = 90 : 10
 Flow Rate 1.0 ml/min
 Temperature 30°C
 Detection UV 254 nm
 Sample Famotidine (0.25 mg/ml)
 Injection Volume 2.0 µl

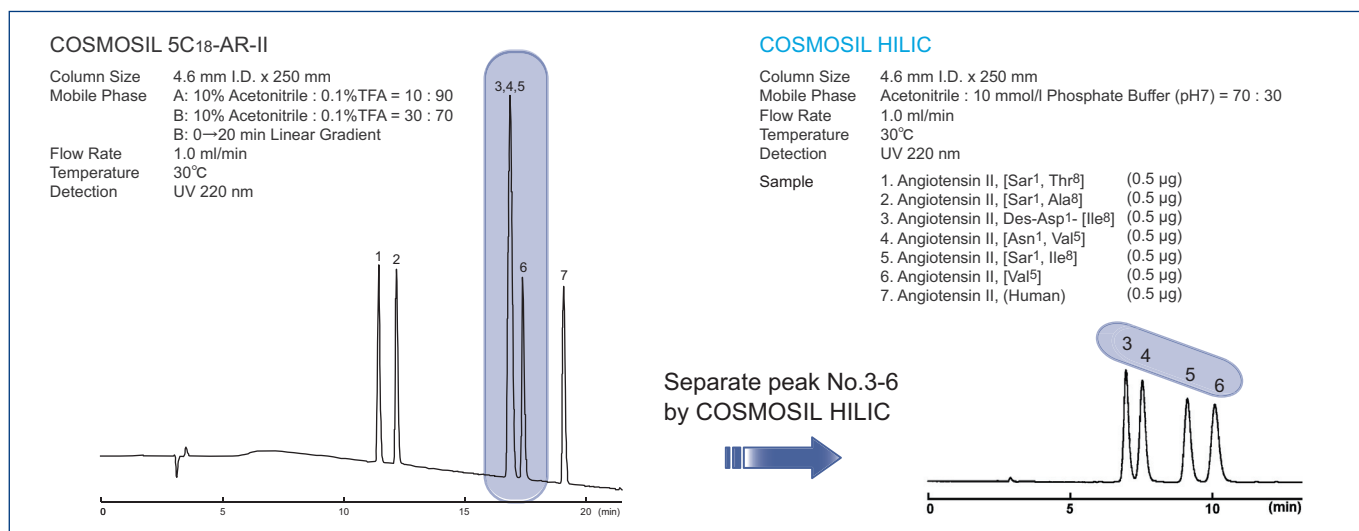


• Natural Products

Column Size 4.6 mm I.D. x 250 mm
 Mobile Phase Acetonitrile : 10 mmol/l CH₃COONH₄ = 80 : 20
 Flow Rate 1.0 ml/min
 Temperature 30°C
 Detection UV 220 nm
 Sample L-(+)-Ergothioneine (1.0 mg/ml)
 Injection Volume 1.0 µl



Combination with C18 Columns



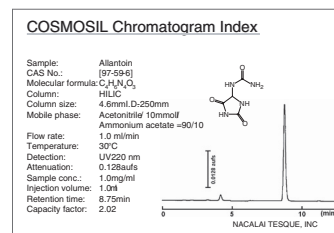
Selection of Mobile Phase

Following are the recommended mobile phases for different samples.

- Neutral Compounds Acetonitrile : Water = 90 : 10
- Basic Compounds Acetonitrile : 10mmol/l CH₃COONH₄ = 90 : 10
- Amphoteric Compounds Acetonitrile : 10mmol/l CH₃COONH₄ = 70 : 30
- Acidic Compounds Acetonitrile : 10mmol/l CH₃COONH₄ = 50 : 50
 (not eluted) → Acetonitrile : 10 mmol/l Phosphatase Buffer (pH7.0) = 50 : 50

COSMOSIL Chromatogram Index

COSMOSIL HILIC Chromatogram Index, which includes 154 chromatograms using COSMOSIL HILIC is now available. This index is useful for optimizing analytical conditions for hydrophilic interaction chromatography.



Ordering Information

Product Name	Column Size	Product Number
COSMOSIL HILIC Packed Column	1.0 mm I.D. x 150 mm	07869-11
	1.0 mm I.D. x 250 mm	07870-71
	2.0 mm I.D. x 30 mm	08568-21
	2.0 mm I.D. x 50 mm	07052-91
	2.0 mm I.D. x 100 mm	08569-11
	2.0 mm I.D. x 150 mm	07054-71
	2.0 mm I.D. x 250 mm	07489-91
	3.0 mm I.D. x 150 mm	07871-61
COSMOSIL HILIC Guard Column	3.0 mm I.D. x 250 mm	07872-51
	4.6 mm I.D. x 150 mm	07056-51

Product Name	Column Size	Product Number
COSMOSIL HILIC Packed Column	4.6 mm I.D. x 250 mm	07057-41
	10.0 mm I.D. x 150 mm	05564-51
	10.0 mm I.D. x 250 mm	07059-21
	20.0 mm I.D. x 250 mm	07060-81
	28.0 mm I.D. x 250 mm	07875-21
COSMOSIL HILIC Guard Column	4.6 mm I.D. x 10 mm	07055-61
	10.0 mm I.D. x 20 mm	07058-31
	20.0 mm I.D. x 20 mm	07854-91
	20.0 mm I.D. x 50 mm	07873-41
	28.0 mm I.D. x 50 mm	07874-31

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