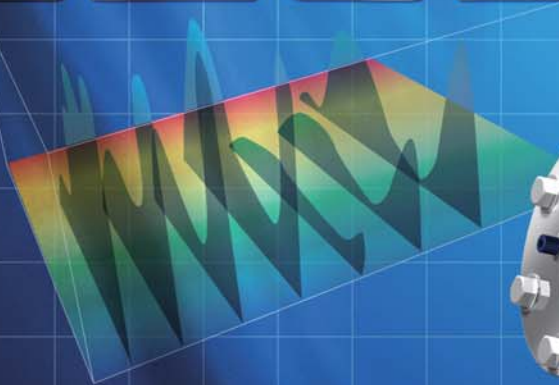
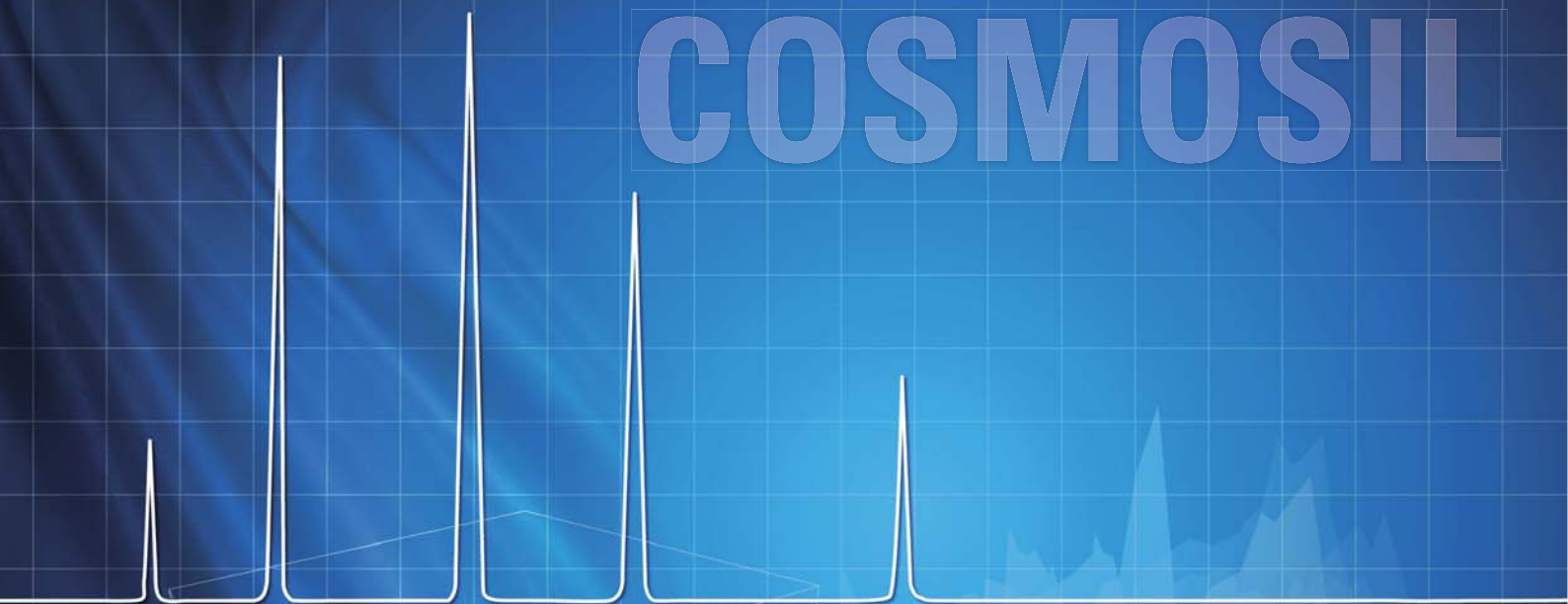


**COSMOSIL**

**COSMOSIL**



**COSMOSIL HILIC**  
**Application Notebook**  
**2013**

COSMOSIL HILIC Application Notebook contains about 200 chromatograms for the separation of polar compounds using COSMOSIL HILIC column. It also describes how the mobile phase conditions, such as buffer pH and salt concentration influence the separation in HILIC mode

## Contents

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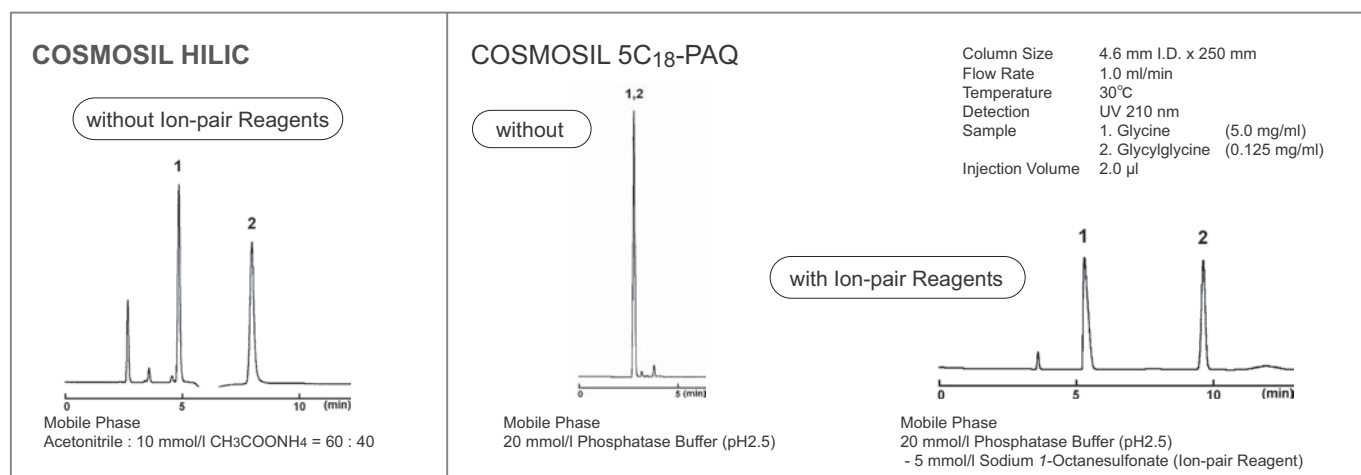
## Hydrophilic Interaction Chromatography

The hydrophilic interaction chromatography is a variation of normal phase chromatography. The elution order is similar to that of normal phase and the sample elution is in the order of increasing hydrophilicity.

Separation Mode	Hydrophilic interaction chromatography	Hydrophobic interaction chromatography
Stationary Phase	Hydrophilic Group (or Silica Gel)	Hydrophobic group (C <sub>18</sub> etc.)
Mobile Phase	Organic Solvent (CH <sub>3</sub> CN etc.) / H <sub>2</sub> O	
Main Interaction	Hydrophilic interaction	Hydrophobic interaction
Target Sample	Hydrophilic compounds	Hydrophilic and hydrophobic compounds
Features	<ul style="list-style-type: none"> <li>for separation of Hydrophilic compounds</li> <li>Suitable for LC/MS</li> </ul>	<ul style="list-style-type: none"> <li>for the widest range of compounds</li> <li>High separation ability</li> <li>A wide range of applications</li> </ul>

## Comparison with C<sub>18</sub>

COSMOSIL HILIC can separate glycine and glycyglycine without ion-pair reagent. Although C<sub>18</sub> column can separate them with ion-pair reagents, there are some disadvantages such as longer column equilibration time, time-consuming preparation of mobile phase and earlier column deterioration.



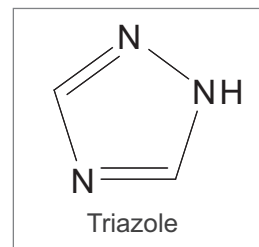


COSMOSIL

HPLC Column for Hydrophilic Interaction

# COSMOSIL HILIC

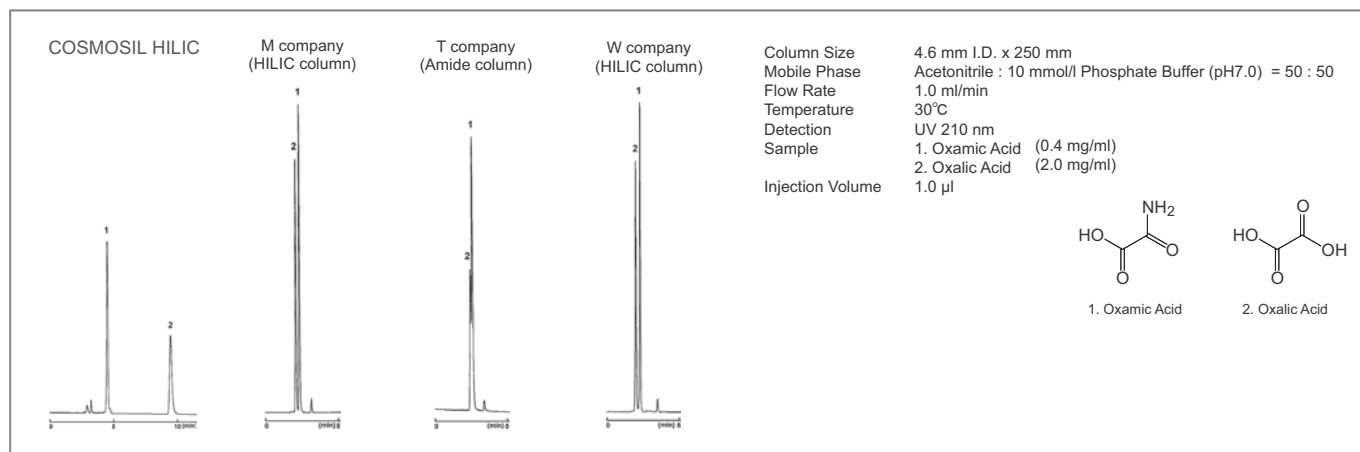
- Triazole bonded stationary phase
- Enhanced hydrophilic interaction
- Alternative selectivity to other HILIC columns



## Different Interactions

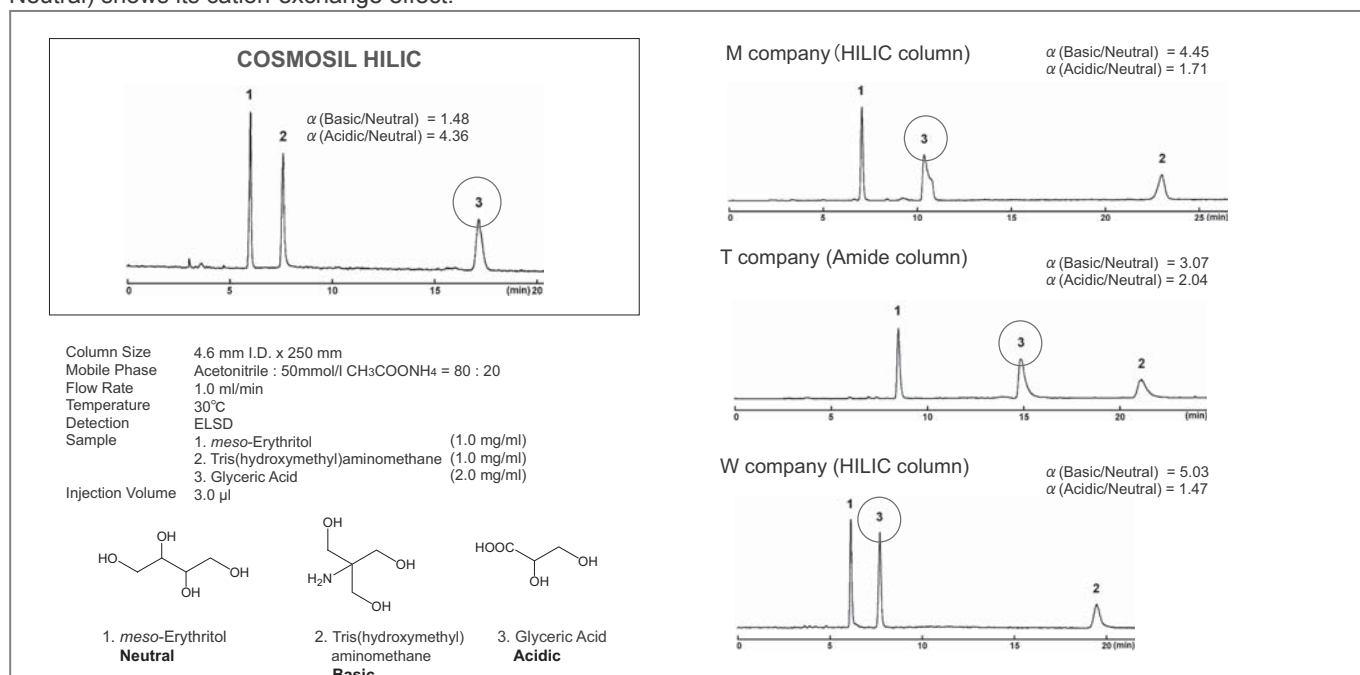
### • Separation of Anionic Compounds

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



### • Separation of Acidic, Basic and Neutral Compounds

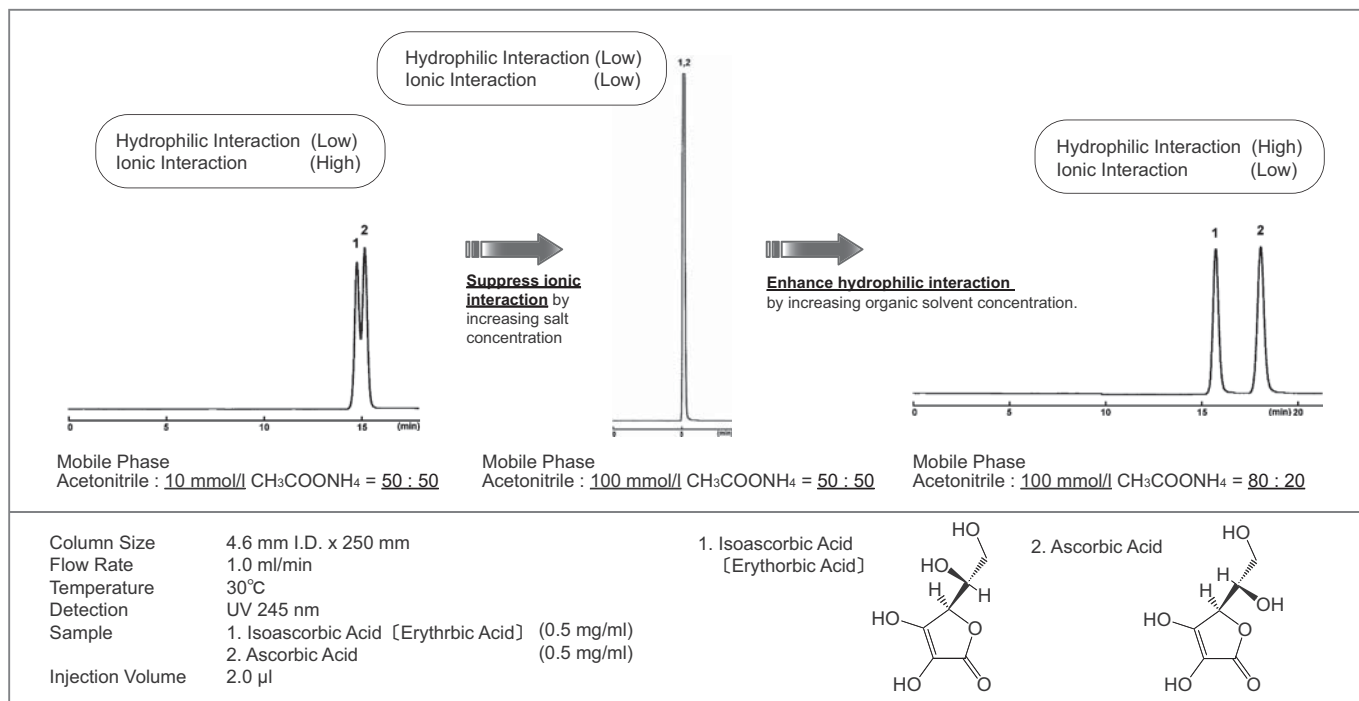
Acidic (Glyceric Acid), basic (Tris) and neutral (*meso*-Erythritol) compounds were used for evaluation of anion and cation-exchange characteristics. The separation factor  $\alpha(\text{Acid/Neutral})$  indicates its anion-exchange capability and the factor  $\alpha(\text{Basic/Neutral})$  shows its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



## Different Interactions

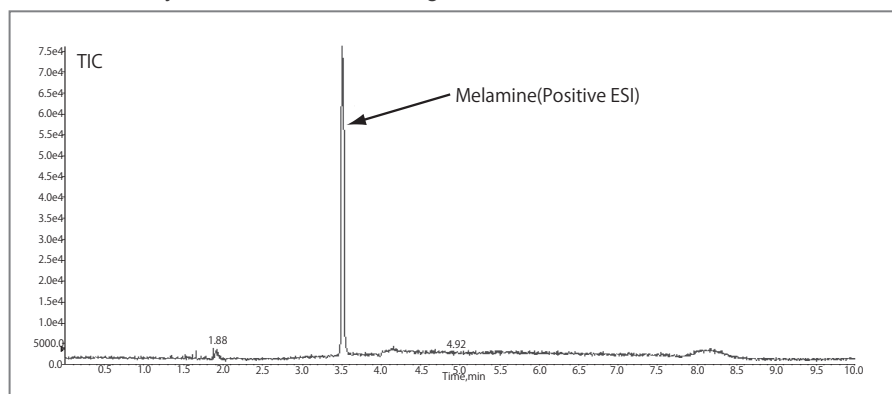
### Separation by Hydrophilic Interaction

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

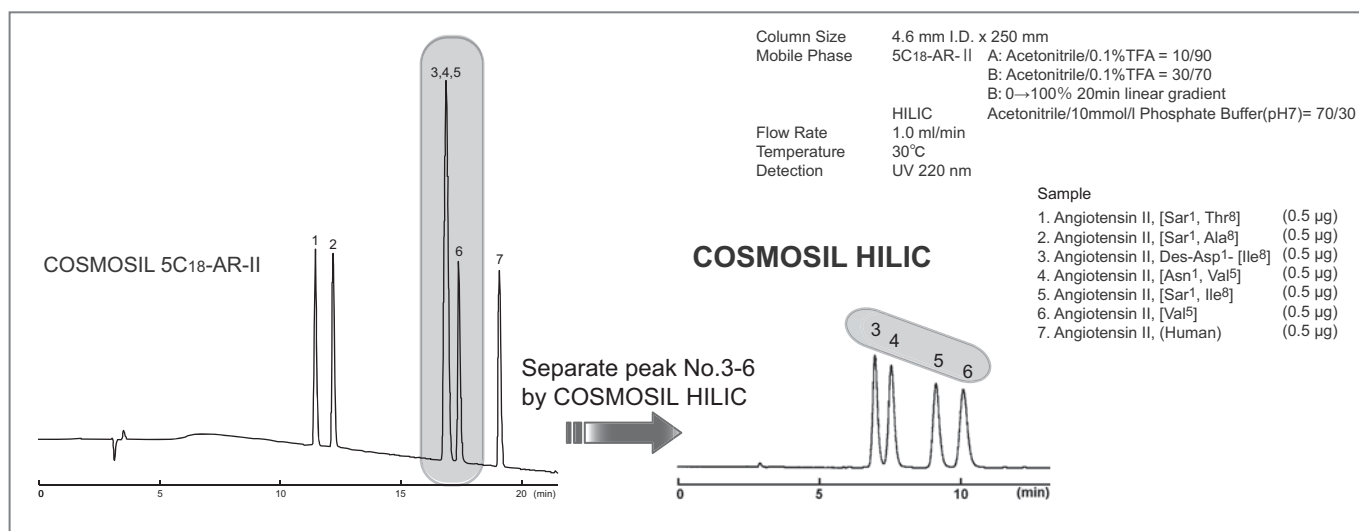


## Melamine Analysis

Melamine analysis and LC/MS/MS using COSMOSIL HILIC.



## Combination with C<sub>18</sub> Columns



## 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
	3.0 mm I.D. x 250 mm	07872-51
	4.6 mm I.D. x 150 mm	07056-51
4.6 mm I.D. x 150 mm 3 lots set	09385-23	

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

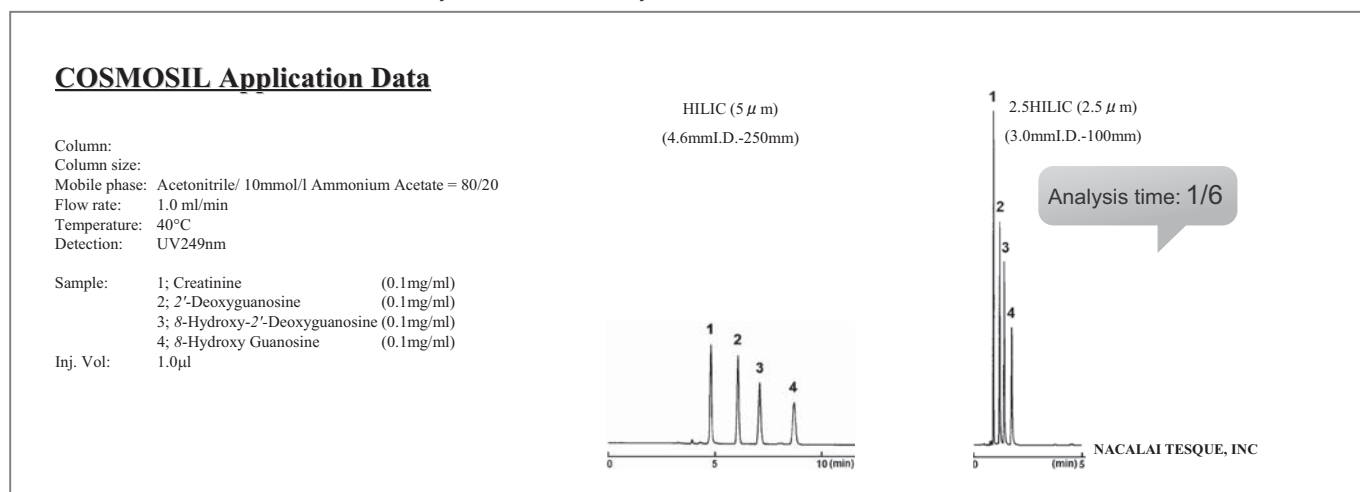
## Ultra-High Performance Column for HILIC Analysis

# COSMOSIL 2.5HILIC

- Ultra-High Performance using 2.5  $\mu\text{m}$  particles

## Ultra-High-Speed Analysis (Oxidation marker analysis)

COSMOSIL 2.5HILIC can be used with any conventional LC systems.



## Ordering Information

Product Name	Column Size	Product Number
COSMOSIL 2.5HILIC Packed Column	2.0 mm I.D. x 50 mm	11766-21
	2.0 mm I.D. x 75 mm	11768-01
	2.0 mm I.D. x 100 mm	11769-91
	2.0 mm I.D. x 150 mm	11770-51

Product Name	Column Size	Product Number
COSMOSIL 2.5HILIC Packed Column	3.0 mm I.D. x 50 mm	11771-41
	3.0 mm I.D. x 75 mm	11772-31
	3.0 mm I.D. x 100 mm	11773-21
	3.0 mm I.D. x 150 mm	11774-11

## Selection guide of mobile phase

COMOSIL HILIC column generates retention and separation by hydrophilic interaction (mainly hydrogen bond) and anion-exchange. Refer to following recommendations to select an appropriate mobile phase condition.

### (1) The effect of organic solvent type and content

- In general, acetonitrile/water is used as mobile phase.
- Retention increases as water content in the mobile phase decreased. (Fig.1)
- Use acetonitrile content in the mobile phase within the range of 0-95% (in general 50-95%).
- Methanol/water generates shorter retention than acetonitrile/water. (Fig.2)
- Use only HPLC grade solvent

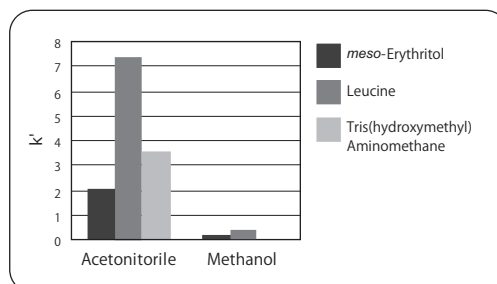
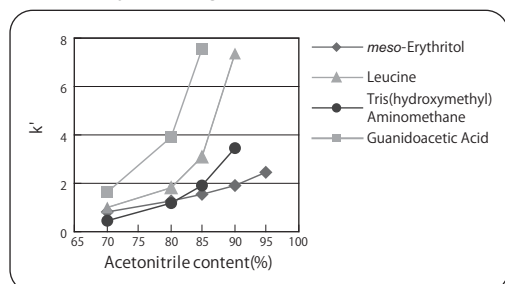


Fig.1 The effect of acetonitrile content on retention

Column; COSMOSIL HILIC  
Mobile phase; Acetonitrile/ 10mmol/l CH<sub>3</sub>COONH<sub>4</sub>

Fig.2 Difference of acetonitrile and methanol on retention

Column; COSMOSIL HILIC  
Mobile phase; Organic solvent/ 10mmol/l CH<sub>3</sub>COONH<sub>4</sub> = 90/10

### (2) The effect of buffer pH

- Keep pH of the mobile phase within the range of 2-7.5.
- The buffer around neutrality generates larger retention. (Fig.3)

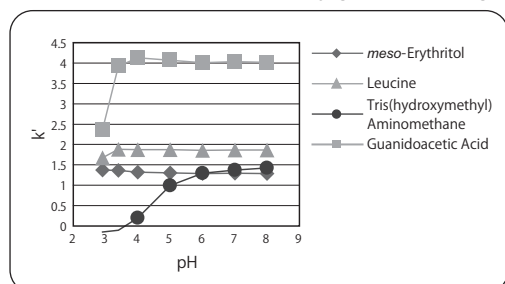


Fig.3 The effect of buffer pH on retention

Column; COSMOSIL HILIC  
Mobile phase; Acetonitrile / 10mmol/l buffer = 90/10

### (3) The effect of salt type and concentration

- When analyze ionic compounds, add salts or buffers in the mobile phase.
- When mobile phase has high acetonitrile content, note dissolubility of the salt. The dissolubility of phosphate buffers used widely in reversed phase chromatography is low in acetonitrile. Therefore use of phosphate buffers is not recommended. Keep the concentration of acetonitrile under 70% if use a phosphate buffer. Check that the salt does not precipitate when mixed with acetonitril before use.
- Ammonium acetate or formic acid ammonium buffers are recommended because they are soluble in high acetonitrile content.
- Use the buffer concentration within the range of 5 - 100mmol/l. Moreover, check that the salt does not precipitate after mixing buffer and acetonitrile.
- High salt concentration inhibits ion exchange capability and decreases retention. (Fig.4)
- Run mobile phase through membrane filter (less than 0.45μm in pore size) before use.

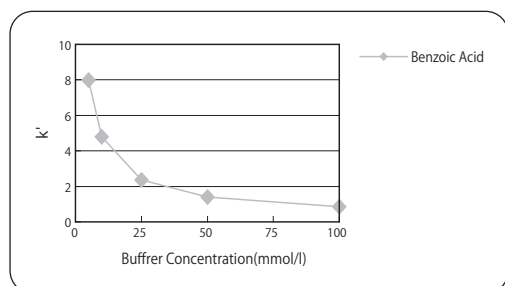


Fig.4 The effect of salt concentration on retention

Column; COSMOSIL HILIC  
Mobile phase; Acetonitrile / 10mmol/l CH<sub>3</sub>COONH<sub>4</sub> = 50/50

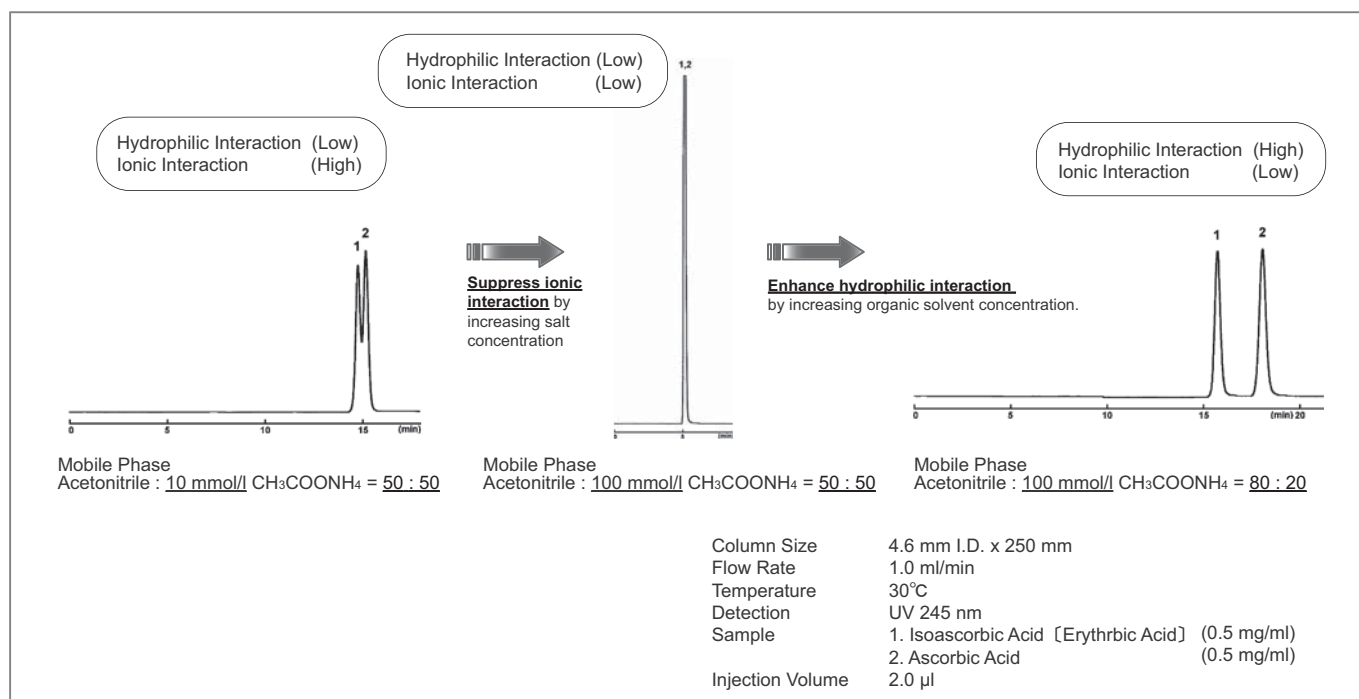
#### (4) Selection of mobile phase

Following are the recommended mobile phases for different compound types.

Neutral compounds	→ Acetonitrile / Water = 90/10
Basic compounds	→ Acetonitrile / 10mmol/l CH <sub>3</sub> COONH <sub>4</sub> = 90/10
Amphoteric compounds	→ Acetonitrile / 10mmol/l CH <sub>3</sub> COONH <sub>4</sub> = 70/30
Acidic compounds	→ Acetonitrile / 10mmol/l CH <sub>3</sub> COONH <sub>4</sub> = 50/50
	↓ not eluted
	Acetonitrile / 10mmol/l Phosphate buffer (pH7.0)= 50/50

#### (5) Two interactions (hydrophilic interaction and anion exchange capability)

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. More specifically, the hydrophilic interaction can be enhanced by increasing the organic solvent concentration while suppressing the ionic interaction with high salt concentration.



#### (6) Improvement of peak shape

Try following if peak shape is tailing. The peak shape might improve.

- Add 5mmol/l EDTA to mobile phase.
- Change to citrate buffer. (i. e. 10 mmol/l citrate buffer pH7.0)

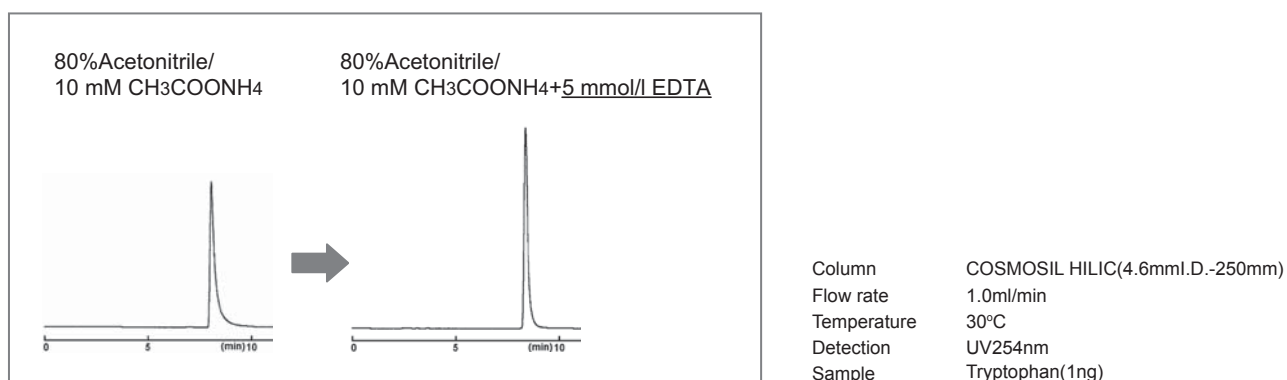


Fig.5 Improvement of peak shape

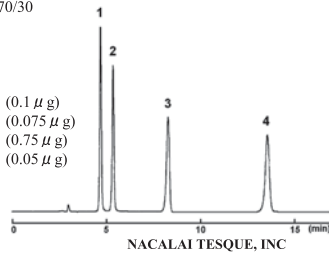
#### (7) Others

- Use scrupulously degassed mobile phase. Air bubbles generate detection noise and accelerate column deterioration.
- We recommend keeping the chromatography conditions constant, since frequent changes of mobile phase shorten column life.

### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l  
 Ammonium Acetate = 70/30  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV225nm

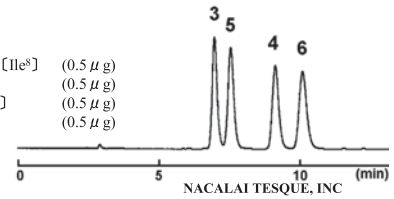
Sample: 1; Melamine (0.1 μg)  
 2; Ammeline (0.075 μg)  
 3; Cyanuric Acid (0.75 μg)  
 4; Ammelide (0.05 μg)



### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Phosphate  
 buffer(pH7.0) = 70/30  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220nm

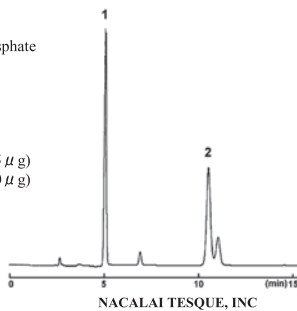
Sample: 3; Angiotensin II, Des-Asp1-[Ile<sup>8</sup>] (0.5 μg)  
 4; Angiotensin II, [Sar<sup>1</sup>,Ile<sup>8</sup>] (0.5 μg)  
 5; Angiotensin II, [Asn<sup>1</sup>,Val<sup>5</sup>] (0.5 μg)  
 6; Angiotensin II, [Val<sup>3</sup>] (0.5 μg)



### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Phosphate  
 buffer(pH7.0) = 50/50  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV210nm

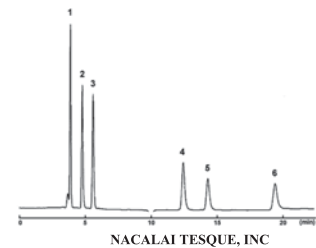
Sample: 1; Ascorbic Acid (1.5 μg)  
 2; Malic Acid (3.0 μg)



### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 100mmol/l Ammonium  
 Acetate = 80/20  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220nm

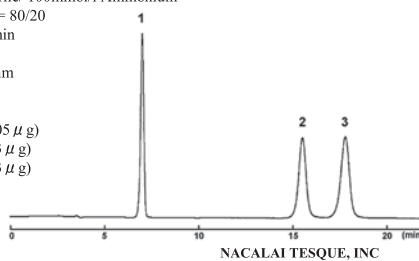
Sample: 1; Nicotinamide (0.125 μg)  
 2; Pyridoxine(Vitamin B<sub>6</sub>) (0.25 μg)  
 3; Riboflavin (Vitamin B<sub>2</sub>) (0.25 μg)  
 4; Nicotinic Acid (0.125 μg)  
 5; D-Pantothenic Acid (3.125 μg)  
 6; L(+)-Ascorbic Acid (0.875 μg)



### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 100mmol/l Ammonium  
 Acetate = 80/20  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV254nm

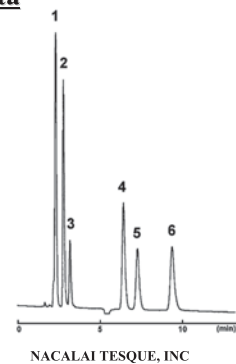
Sample: 1; Sorbic Acid (0.05 μg)  
 2; Isoascorbic Acid (0.3 μg)  
 3; Ascorbic Acid (0.3 μg)



### COSMOSIL Application Data

Column: HILIC  
 Column size: 2.0mm I.D.-150mm  
 Mobile phase: Acetonitrile/ 100mmol/l Ammonium  
 Acetate = 80/20  
 Flow rate: 0.2 ml/min  
 Temperature: 30°C  
 Detection: UV220nm

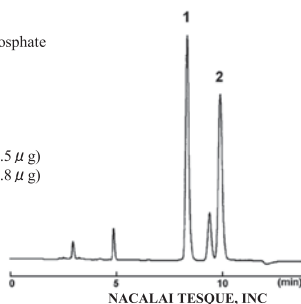
Sample: 1; Nicotinamide (0.125 μg)  
 2; Pyridoxine(Vitamin B<sub>6</sub>) (0.25 μg)  
 3; Riboflavin (Vitamin B<sub>2</sub>) (0.25 μg)  
 4; Nicotinic Acid (0.125 μg)  
 5; D-Pantothenic Acid (3.125 μg)  
 6; L(+)-Ascorbic Acid (0.875 μg)



### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 20mmol/l Phosphate  
 buffer(pH7.0) = 70/30  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV210nm

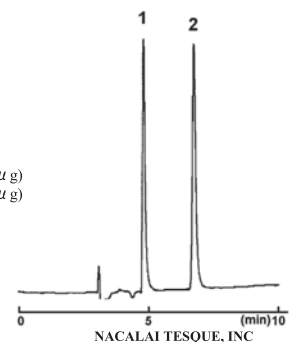
Sample: 1; L-Citrulline (7.5 μg)  
 2; Malic Acid (3.8 μg)



### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile / H<sub>2</sub>O = 95/5  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: RI

Sample: 1; Diethylene Glycol (20 μg)  
 2; Glycerol (20 μg)

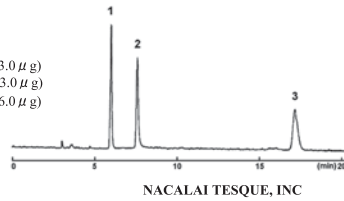




### COSMOSIL Application Data

Column: HILIC  
Column size: 4.6mmI.D.-250mm  
Mobile phase: Acetonitrile/ 50mmol/l Ammonium  
Acetate = 80/20  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: ELSD

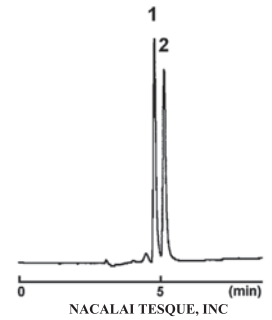
Sample:  
1; *meso*-Erythritol (3.0 µg)  
2; Tris(hydroxymethyl)aminomethane (3.0 µg)  
3; Glyceric Acid (6.0 µg)



### COSMOSIL Application Data

Column: HILIC  
Column size: 4.6mmI.D.-250mm  
Mobile phase: Acetonitrile/ H<sub>2</sub>O = 95/5  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: RI

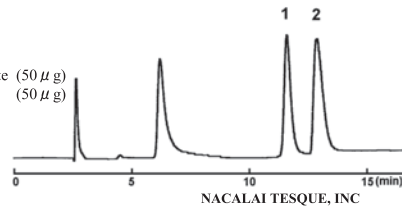
Sample: 1; Trimethylene Glycol (20 µg)  
2; Ethylene Glycol (20 µg)



### COSMOSIL Application Data

Column: HILIC  
Column size: 4.6mmI.D.-250mm  
Mobile phase: Acetonitrile/ 20mmol/l Phosphate  
buffer(pH7.0) = 60/40  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: RI

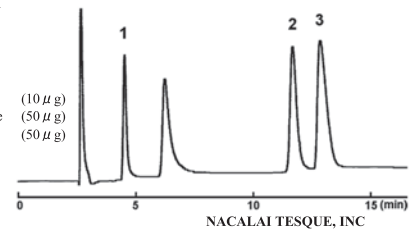
Sample:  
1; *D*-Fructose -6-phosphate (50 µg)  
2; *D*-Glucose-6-phosphate (50 µg)



### COSMOSIL Application Data

Column: HILIC  
Column size: 4.6mmI.D.-250mm  
Mobile phase: Acetonitrile/ 20mmol/l Phosphate  
buffer(pH7.0) = 60/40  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: RI

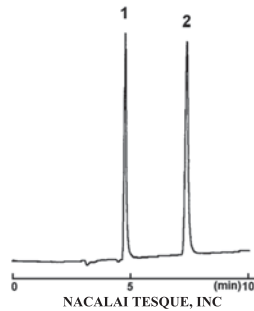
Sample:  
1; Glucose (10 µg)  
2;  $\alpha$ -D-Glucose-1-phosphate (50 µg)  
3; D-Glucose-6-phosphate (50 µg)



### COSMOSIL Application Data

Column: HILIC  
Column size: 4.6mmI.D.-250mm  
Mobile phase: Acetonitrile/ H<sub>2</sub>O = 95/5  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: RI

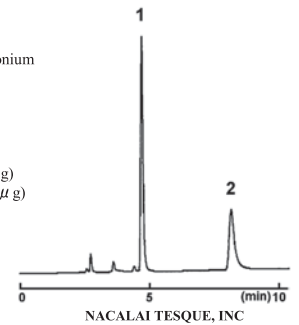
Sample: 1; Trimethylene Glycol (20 µg)  
2; Glycerol (20 µg)



### COSMOSIL Application Data

Column: HILIC  
Column size: 4.6mmI.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium  
Acetate = 60/40  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210nm

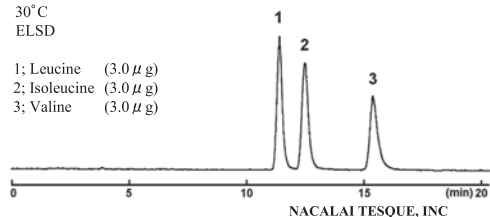
Sample: 1; Glycine (10 µg)  
2; Glycylglycine (0.25 µg)



### COSMOSIL Application Data

Column: HILIC  
Column size: 4.6mmI.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium  
Acetate = 85/15  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: ELSD

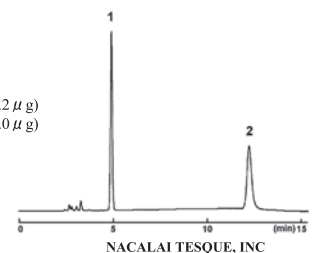
Sample: 1; Leucine (3.0 µg)  
2; Isoleucine (3.0 µg)  
3; Valine (3.0 µg)



### COSMOSIL Application Data

Column: HILIC  
Column size: 4.6mmI.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Phosphate  
buffer(pH7.0) = 50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210nm

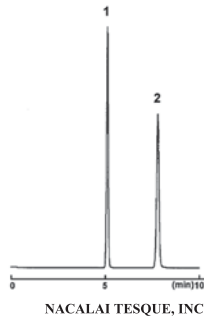
Sample: 1; Oxamic Acid (0.2 µg)  
2; Oxalic Acid (1.0 µg)



### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile / H<sub>2</sub>O = 90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV254nm

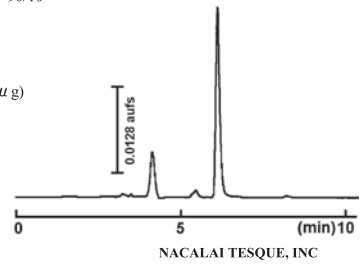
Sample: 1; Uracil (0.1 μg)  
 2; Uridine (0.2 μg)



### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/H<sub>2</sub>O = 90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV210nm

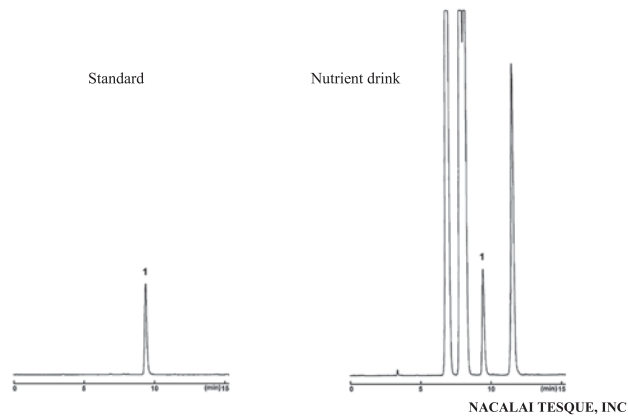
Sample: Urea (20 μg)



### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium Acetate = 80/20  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: ELSD

Sample: 1; Taurine Standard (10mg/ml)  
 Injection Vol. 0.5 μl



### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 50mmol/l Ammonium Acetate = 90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220nm

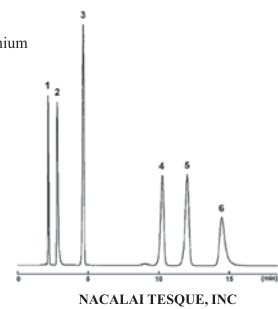
Sample: 1; 4-Methylimidazole (0.25mg/ml)  
 2; 2-Methylimidazole (0.25mg/ml)  
 Inj. Vol.: 1.0 μl



### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-150mm  
 Mobile phase: Acetonitrile/ 50mmol/l Ammonium Acetate = 90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220nm

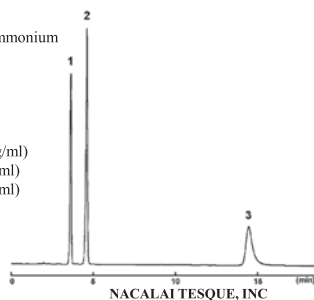
Sample: 1; Caffeine (0.075mg/ml)  
 2; Quinine (0.075mg/ml)  
 3; Saccharin (0.15mg/ml)  
 4; Sorbic Acid (0.15mg/ml)  
 5; Benzoic Acid (0.15mg/ml)  
 6; Aspartame (0.75mg/ml)  
 Inj. Vol.: 1.0 μl



### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-150mm  
 Mobile phase: Acetonitrile/ 50mmol/l Ammonium Acetate = 90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220nm

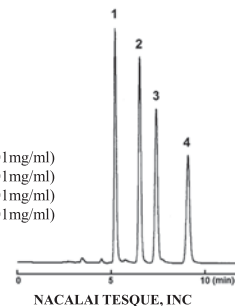
Sample: 1; Acesulfame (0.075mg/ml)  
 2; Saccharin (0.15mg/ml)  
 3; Aspartame (0.75mg/ml)  
 Inj. Vol.: 1.0 μl

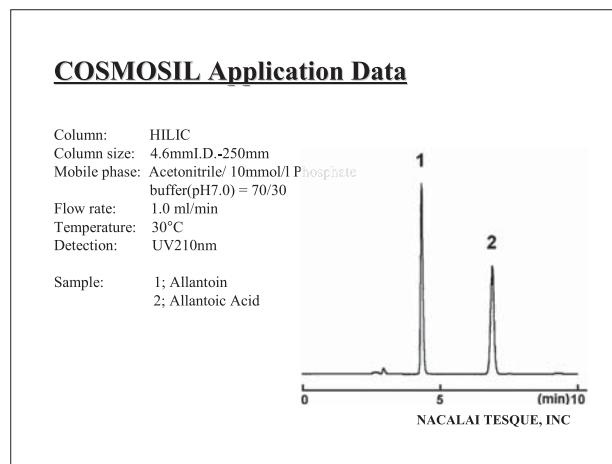
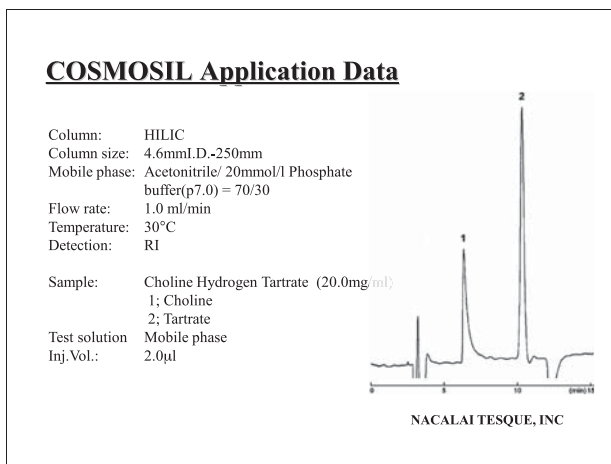
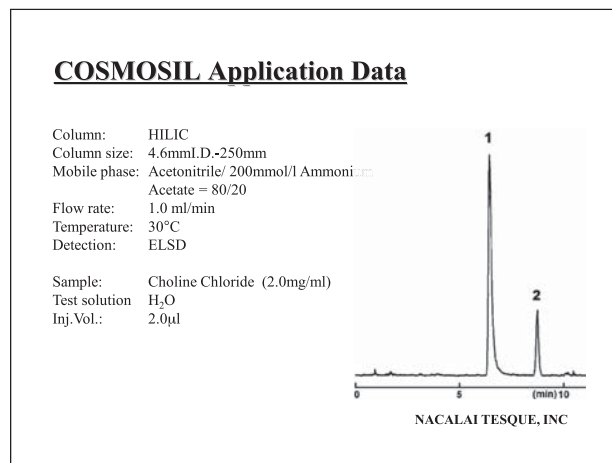
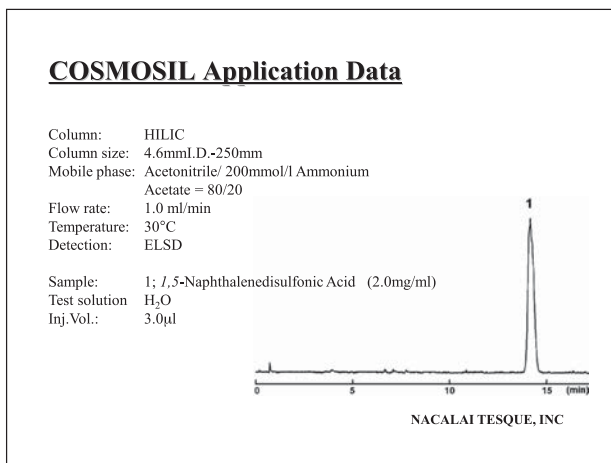


### COSMOSIL Application Data

Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium Acetate = 80/20  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV249nm

Sample: 1; Creatinine (0.01mg/ml)  
 2; 2'-Deoxyguanosine (0.01mg/ml)  
 3; 8-Hydroxy-2'-Deoxyguanosine (0.01mg/ml)  
 4; 8-Hydroxy Guanosine (0.01mg/ml)  
 Inj. Vol.: 5.0 μl





## COSMOSIL Applications

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Search Result

Date	Date Name	Sample	Particle Size (µm)	Column	CAS No.
AP10381	Dichlorophenol	2,3-Dichlorophenol	5	µHAP	176-24-9
		2,4-Dichlorophenol			100-43-2
		2,5-Dichlorophenol			583-78-8
		2,6-Dichlorophenol			87-65-0

Click

COSMOSIL Application

**COSMOSIL Application Data**

Column: 4.6mm I.D.-150mm  
 Mobile phase: Methanol/ 20mmol/l Phosphate buffer(pH7.0) = 60/40  
 AC-MS-II = 60/40  
 µHAP = 60/40  
 µHAP = 60/20  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV210nm

Sample: 1; Phthalate (0.2 µg)  
 2; Benzoate (0.2 µg)

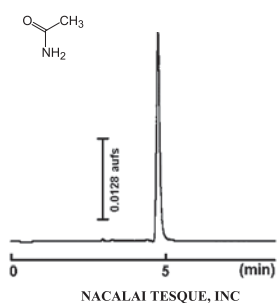
Applications are search by

1. Sample Category
2. Sample Name
3. CAS No.,
4. Column Name
5. Particle Size

Click

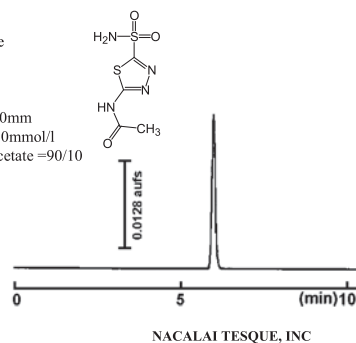
### COSMOSIL Chromatogram Index

Sample: Acetamide  
CAS No.: [60-35-5]  
Molecular formula: C<sub>2</sub>H<sub>5</sub>NO  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ H<sub>2</sub>O=95/5  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFs  
Sample conc.: 10.0mg/ml  
Injection volume: 0.5µl  
Retention time: 4.75min  
Capacity factor: 0.57



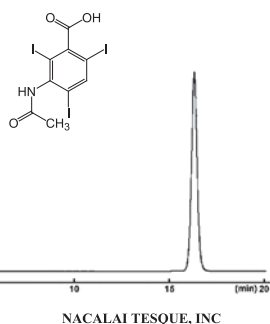
### COSMOSIL Chromatogram Index

Sample: Acetazolamide  
CAS No.: [59-66-5]  
Molecular formula: C<sub>4</sub>H<sub>6</sub>N<sub>4</sub>O<sub>3</sub>S<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFs  
Sample conc.: 0.2mg/ml  
Injection volume: 0.5µl  
Retention time: 5.99min  
Capacity factor: 1.05



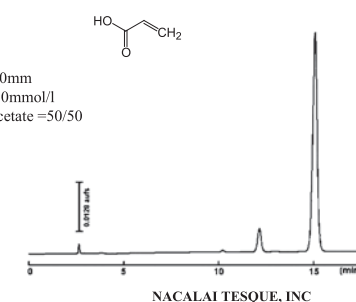
### COSMOSIL Chromatogram Index

Sample: Acetizonic Acid  
CAS No.: [85-36-9]  
Molecular formula: C<sub>9</sub>H<sub>9</sub>N<sub>3</sub>O<sub>3</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFs  
Sample conc.: 0.8mg/ml  
Injection volume: 1.0µl  
Retention time: 16.39min  
Capacity factor: 4.76



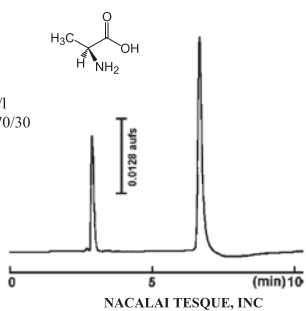
### COSMOSIL Chromatogram Index

Sample: Acrylic Acid  
CAS No.: [79-10-7]  
Molecular formula: C<sub>3</sub>H<sub>4</sub>O<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFs  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 15.05min  
Capacity factor: 4.28



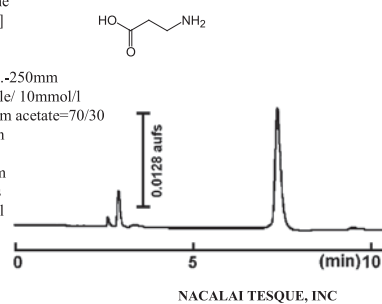
### COSMOSIL Chromatogram Index

Sample: L-α-Alanine  
CAS No.: [56-41-7]  
Molecular formula: C<sub>3</sub>H<sub>7</sub>NO<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 210nm  
Attenuation: 0.128 auFs  
Sample conc.: 5.0mg/ml  
Injection volume: 2.0µl  
Retention time: 6.67min  
Capacity factor: 1.53



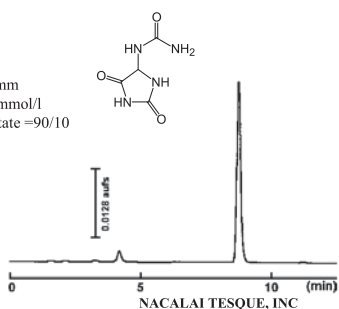
### COSMOSIL Chromatogram Index

Sample: β-Alanine  
CAS No.: [107-95-9]  
Molecular formula: C<sub>3</sub>H<sub>7</sub>NO<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 210nm  
Attenuation: 0.128 auFs  
Sample conc.: 10.0mg/ml  
Injection volume: 0.5µl  
Retention time: 7.38min  
Capacity factor: 1.81



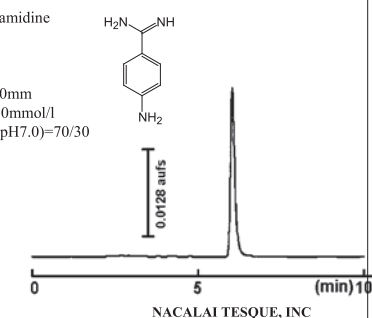
### COSMOSIL Chromatogram Index

Sample: Allantoin  
CAS No.: [97-59-6]  
Molecular formula: C<sub>4</sub>H<sub>6</sub>N<sub>4</sub>O<sub>3</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFs  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 8.75min  
Capacity factor: 2.02



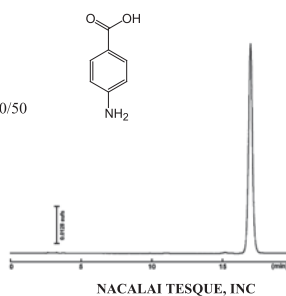
### COSMOSIL Chromatogram Index

Sample: p-Aminobenzamidine  
CAS No.: [3858-83-1]  
Molecular formula: C<sub>8</sub>H<sub>9</sub>N<sub>3</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFs  
Sample conc.: 0.5mg/ml  
Injection volume: 1.0µl  
Retention time: 6.07min  
Capacity factor: 1.31



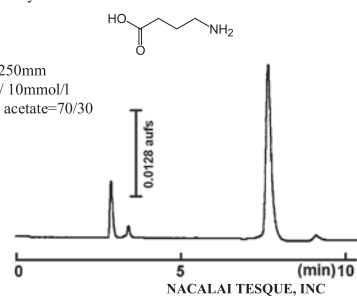
### COSMOSIL Chromatogram Index

Sample: *p*-Aminobenzoic Acid  
CAS No.: [150-13-0]  
Molecular formula: C<sub>7</sub>H<sub>7</sub>NO<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 aufs  
Sample conc.: 0.4mg/ml  
Injection volume: 1.0µl  
Retention time: 16.97min  
Capacity factor: 4.91



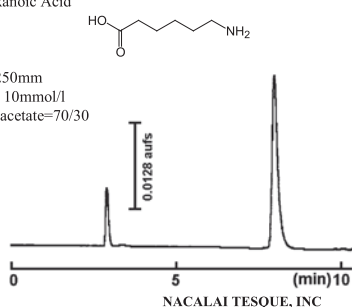
### COSMOSIL Chromatogram Index

Sample: 4-Amino-*n*-butyric Acid  
CAS No.: [56-12-2]  
Molecular formula: C<sub>6</sub>H<sub>9</sub>NO<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 aufs  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 7.67min  
Capacity factor: 1.92



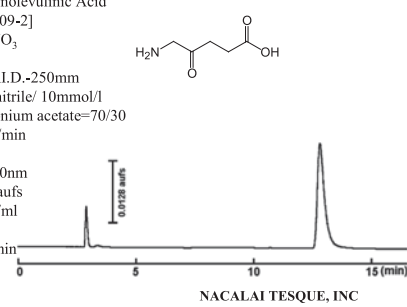
### COSMOSIL Chromatogram Index

Sample: 6-Aminohexanoic Acid  
CAS No.: [60-32-2]  
Molecular formula: C<sub>6</sub>H<sub>13</sub>NO<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 210nm  
Attenuation: 0.128 aufs  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 7.98min  
Capacity factor: 2.03



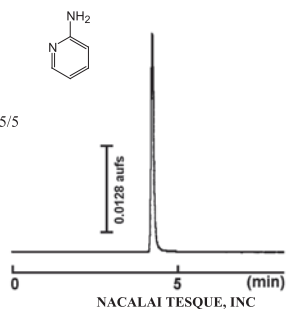
### COSMOSIL Chromatogram Index

Sample: 5-Aminolevulinic Acid  
CAS No.: [5451-09-2]  
Molecular formula: C<sub>5</sub>H<sub>9</sub>NO<sub>3</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 210nm  
Attenuation: 0.128 aufs  
Sample conc.: 5.0mg/ml  
Injection volume: 1.0µl  
Retention time: 12.80min  
Capacity factor: 3.87



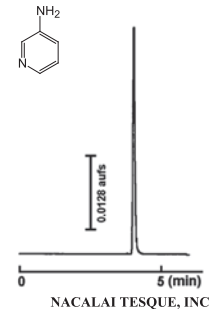
### COSMOSIL Chromatogram Index

Sample: 2-Aminopyridine  
CAS No.: [504-29-0]  
Molecular formula: C<sub>5</sub>H<sub>6</sub>N<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =95/5  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 aufs  
Sample conc.: 1.0mg/ml  
Injection volume: 0.5µl  
Retention time: 4.25min  
Capacity factor: 0.39



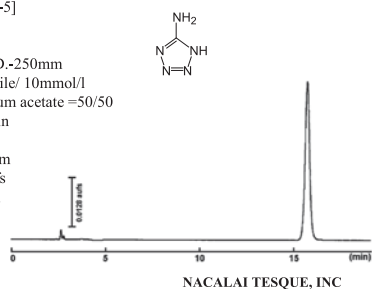
### COSMOSIL Chromatogram Index

Sample: 3-Aminopyridine  
CAS No.: [462-08-8]  
Molecular formula: C<sub>5</sub>H<sub>6</sub>N<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 aufs  
Sample conc.: 0.1mg/ml  
Injection volume: 1.0µl  
Retention time: 4.05min  
Capacity factor: 0.51



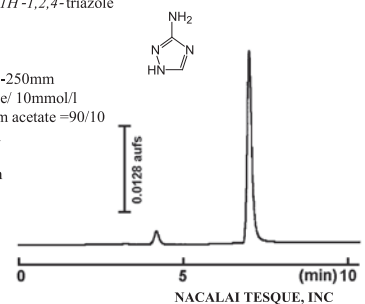
### COSMOSIL Chromatogram Index

Sample: 5-Amino-1*H*-tetrazole  
CAS No.: [4418-61-5]  
Molecular formula: CH<sub>3</sub>N<sub>5</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 aufs  
Sample conc.: 0.5mg/ml  
Injection volume: 1.0µl  
Retention time: 15.76min  
Capacity factor: 4.49



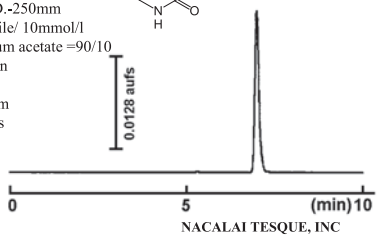
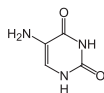
### COSMOSIL Chromatogram Index

Sample: 3-Amino-1*H*-1,2,4-triazole  
CAS No.: [61-82-5]  
Molecular formula: C<sub>2</sub>H<sub>4</sub>N<sub>4</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 aufs  
Sample conc.: 0.2mg/ml  
Injection volume: 1.0µl  
Retention time: 7.01min  
Capacity factor: 1.42



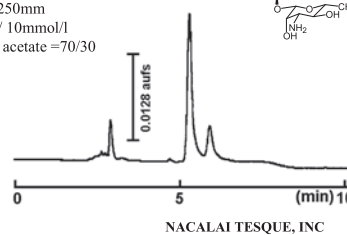
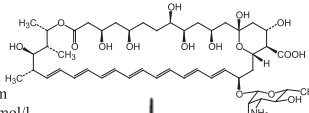
### COSMOSIL Chromatogram Index

Sample: 5-Aminouracil  
 CAS No.: [932-52-5]  
 Molecular formula:  $C_4H_4N_2O_2$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV260 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 0.5mg/ml  
 Injection volume: 0.5µl  
 Retention time: 7.01min  
 Capacity factor: 1.42



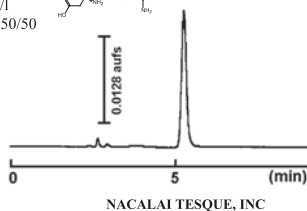
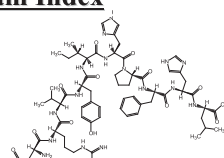
### COSMOSIL Chromatogram Index

Sample: Amphotericin B  
 CAS No.: [1397-89-3]  
 Molecular formula:  $C_{47}H_{73}NO_{17}$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =70/30  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV210 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 0.25mg/ml  
 Injection volume: 0.5µl  
 Retention time: 5.34min  
 Capacity factor: 0.99



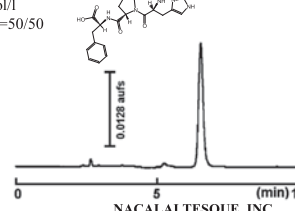
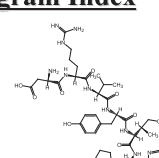
### COSMOSIL Chromatogram Index

Sample: Angiotensin I(Human)  
 CAS No.: [484-42-4]  
 Molecular formula:  $C_{62}H_{89}N_{17}O_{14}$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 0.4mg/ml  
 Injection volume: 0.5µl  
 Retention time: 5.28min  
 Capacity factor: 0.84



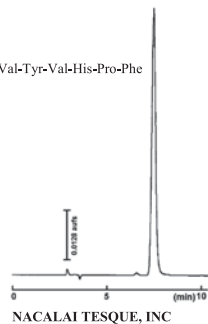
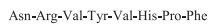
### COSMOSIL Chromatogram Index

Sample: Angiotensin II(Human)  
 CAS No.: [4474-91-3]  
 Molecular formula:  $C_{50}H_{71}N_{13}O_{12}$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 0.4mg/ml  
 Injection volume: 0.5µl  
 Retention time: 6.56min  
 Capacity factor: 1.29



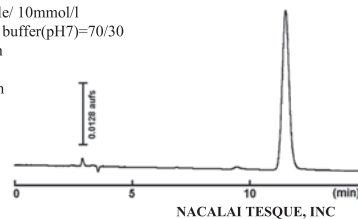
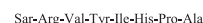
### COSMOSIL Chromatogram Index

Sample: Angiotensin II,[Asn<sup>1</sup>,Val<sup>2</sup>]  
 CAS No.: [53-73-6]  
 Molecular formula:  $C_{46}H_{70}N_{14}O_{11}$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=70/30  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 1.0mg/ml  
 Injection volume: 1.0µl  
 Retention time: 7.48min  
 Capacity factor: 1.85



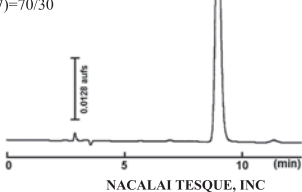
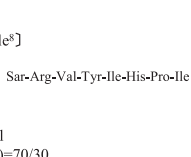
### COSMOSIL Chromatogram Index

Sample: Angiotensin II,[Sar<sup>1</sup>,Ala<sup>8</sup>]  
 CAS No.: [38027-95-1]  
 Molecular formula:  $C_{43}H_{67}N_{13}O_{10}$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=70/30  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 1.0mg/ml  
 Injection volume: 1.0µl  
 Retention time: 11.57min  
 Capacity factor: 3.41



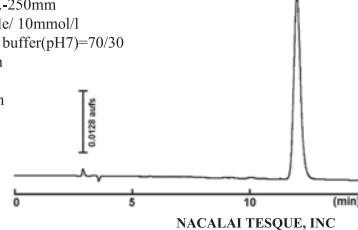
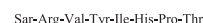
### COSMOSIL Chromatogram Index

Sample: Angiotensin II,[Sar<sup>1</sup>,Ile<sup>8</sup>]  
 CAS No.: [37827-06-8]  
 Molecular formula:  $C_{46}H_{73}N_{13}O_{10}$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=70/30  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 1.0mg/ml  
 Injection volume: 1.0µl  
 Retention time: 9.02min  
 Capacity factor: 2.44



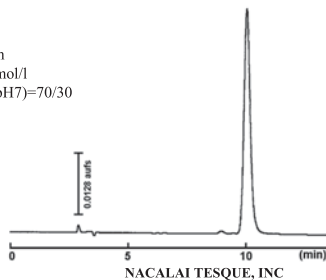
### COSMOSIL Chromatogram Index

Sample: Angiotensin II,[Sar<sup>1</sup>,Thr<sup>8</sup>]  
 CAS No.: [53632-49-8]  
 Molecular formula:  $C_{44}H_{69}N_{13}O_{11}$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=70/30  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 1.0mg/ml  
 Injection volume: 1.0µl  
 Retention time: 12.04min  
 Capacity factor: 3.59



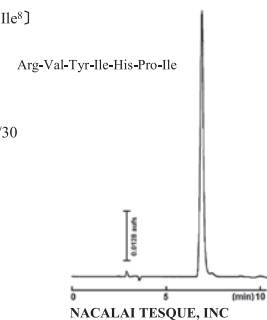
### COSMOSIL Chromatogram Index

Sample: Angiotensin II, [Val<sup>8</sup>] Asp-Arg-Val-Tyr-Val-His-Pro-Phe  
CAS No.: [58-49-1]  
Molecular formula: C<sub>49</sub>H<sub>69</sub>N<sub>13</sub>O<sub>12</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 au/s  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 10.08min  
Capacity factor: 2.85



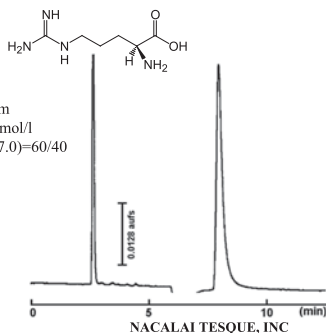
### COSMOSIL Chromatogram Index

Sample: Angiotensin II, Des-Asp<sup>1</sup>-[Ile<sup>8</sup>] Arg-Val-Tyr-Ile-His-Pro-Ile  
CAS No.: [52498-25-6]  
Molecular formula: C<sub>43</sub>H<sub>68</sub>N<sub>12</sub>O<sub>6</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 au/s  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 6.89min  
Capacity factor: 1.63



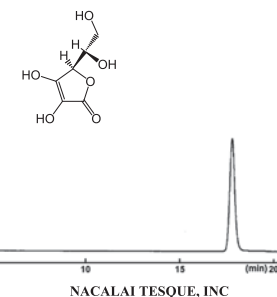
### COSMOSIL Chromatogram Index

Sample: L-Arginine  
CAS No.: [74-79-3]  
Molecular formula: C<sub>6</sub>H<sub>14</sub>N<sub>4</sub>O<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=60/40  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 au/s  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 7.97min  
Capacity factor: 1.95



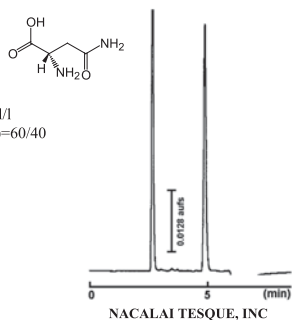
### COSMOSIL Chromatogram Index

Sample: L(+)-Ascorbic Acid  
CAS No.: [50-81-7]  
Molecular formula: C<sub>6</sub>H<sub>8</sub>O<sub>6</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV245nm  
Attenuation: 0.128 au/s  
Sample conc.: 0.2mg/ml  
Injection volume: 3.0µl  
Retention time: 17.80min  
Capacity factor: 5.31



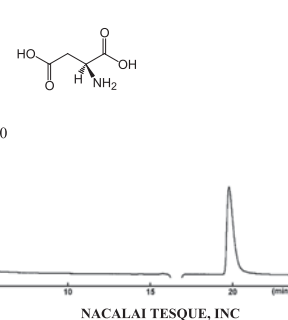
### COSMOSIL Chromatogram Index

Sample: L-Asparagine  
CAS No.: [70-47-3]  
Molecular formula: C<sub>4</sub>H<sub>8</sub>N<sub>2</sub>O<sub>3</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=60/40  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 au/s  
Sample conc.: 5.0mg/ml  
Injection volume: 1.0µl  
Retention time: 4.88min  
Capacity factor: 0.80



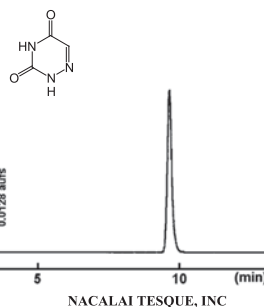
### COSMOSIL Chromatogram Index

Sample: L-Aspartic Acid  
CAS No.: [56-84-8]  
Molecular formula: C<sub>4</sub>H<sub>7</sub>NO<sub>4</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 210nm  
Attenuation: 0.128 au/s  
Sample conc.: 10.0mg/ml  
Injection volume: 2.0µl  
Retention time: 19.79min  
Capacity factor: 6.01



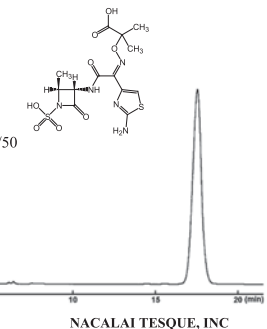
### COSMOSIL Chromatogram Index

Sample: 6-Azauracil  
CAS No.: [461-89-2]  
Molecular formula: C<sub>3</sub>H<sub>3</sub>N<sub>3</sub>O<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=95/5  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV260 nm  
Attenuation: 0.128 au/s  
Sample conc.: 0.3mg/ml  
Injection volume: 0.5µl  
Retention time: 9.65min  
Capacity factor: 2.19



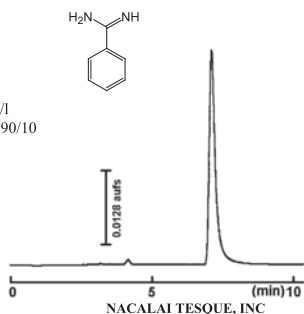
### COSMOSIL Chromatogram Index

Sample: Aztreonam  
CAS No.: [78110-38-0]  
Molecular formula: C<sub>13</sub>H<sub>17</sub>N<sub>5</sub>O<sub>8</sub>S<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 20mmol/l Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV280 nm  
Attenuation: 0.128 au/s  
Sample conc.: 2.5mg/ml  
Injection volume: 1.0µl  
Retention time: 17.57min  
Capacity factor: 5.18



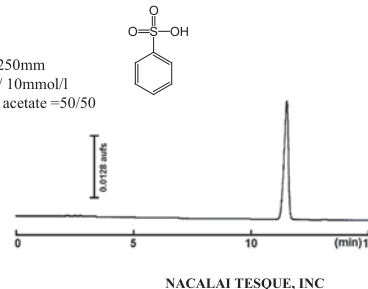
### COSMOSIL Chromatogram Index

Sample: Benzamidine  
CAS No.: [618-39-3]  
Molecular formula:  $C_8H_{10}N_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 au/s  
Sample conc.: 1.5mg/ml  
Injection volume: 0.5µl  
Retention time: 7.16min  
Capacity factor: 1.46



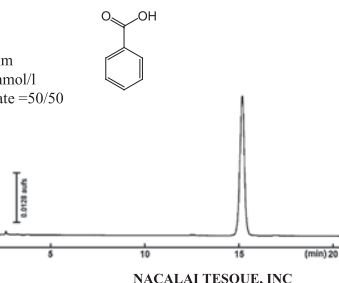
### COSMOSIL Chromatogram Index

Sample: Benzenesulfonic Acid  
CAS No.: [98-11-3]  
Molecular formula:  $C_6H_5O_3S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 au/s  
Sample conc.: 5.0mg/ml  
Injection volume: 1.0µl  
Retention time: 11.54min  
Capacity factor: 3.05



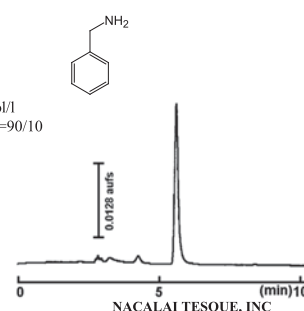
### COSMOSIL Chromatogram Index

Sample: Benzoic Acid  
CAS No.: [65-85-0]  
Molecular formula:  $C_7H_6O_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 au/s  
Sample conc.: 5.0mg/ml  
Injection volume: 0.5µl  
Retention time: 15.19min  
Capacity factor: 4.29



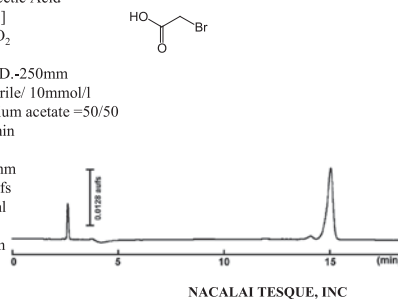
### COSMOSIL Chromatogram Index

Sample: Benzylamine  
CAS No.: [100-46-9]  
Molecular formula:  $C_7H_9N$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 50mmol/l  
Ammonium acetate =90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 au/s  
Sample conc.: 1.0mg/ml  
Injection volume: 0.5µl  
Retention time: 5.58min  
Capacity factor: 0.95



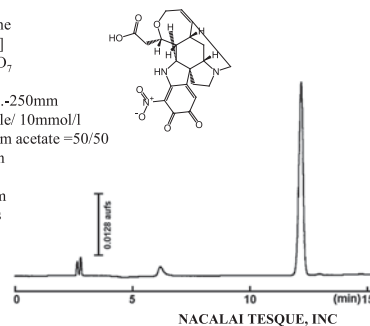
### COSMOSIL Chromatogram Index

Sample: Bromoacetic Acid  
CAS No.: [79-08-3]  
Molecular formula:  $C_2H_3BrO_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 au/s  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 15.04min  
Capacity factor: 4.31



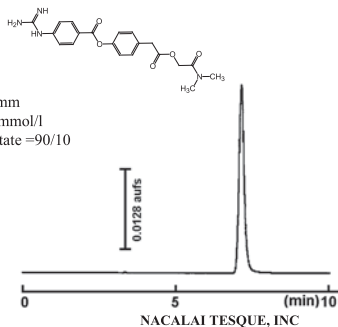
### COSMOSIL Chromatogram Index

Sample: Cacotheine  
CAS No.: [561-20-6]  
Molecular formula:  $C_{21}H_{21}N_3O_7$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 au/s  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 12.19min  
Capacity factor: 3.23



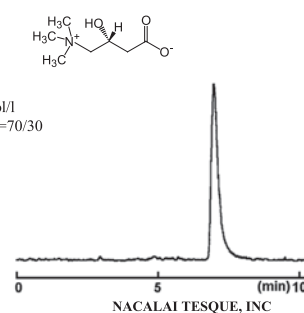
### COSMOSIL Chromatogram Index

Sample: Camostat  
CAS No.: [59721-28-7]  
Molecular formula:  $C_{20}H_{22}N_4O_5$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV265 nm  
Attenuation: 0.128 au/s  
Sample conc.: 0.5mg/ml  
Injection volume: 0.5µl  
Retention time: 7.16min  
Capacity factor: 1.47



### COSMOSIL Chromatogram Index

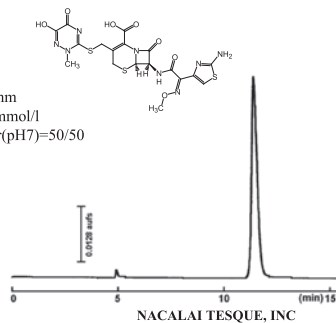
Sample: L-Carnitine  
CAS No.: [541-15-1]  
Molecular formula:  $C_7H_{15}NO_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: ELSD  
Attenuation: Gain=6, Atten=8  
Sample conc.: 2.0mg/ml  
Injection volume: 1.5µl  
Retention time: 6.96min  
Capacity factor: 1.78





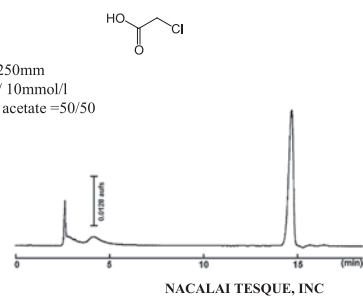
### COSMOSIL Chromatogram Index

Sample: Ceftriaxone  
CAS No.: [73384-59-5]  
Molecular formula:  $C_{15}H_{18}N_6O_7S_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 aufs  
Sample conc.: 0.5mg/ml  
Injection volume: 1.0µl  
Retention time: 11.36min  
Capacity factor: 3.05



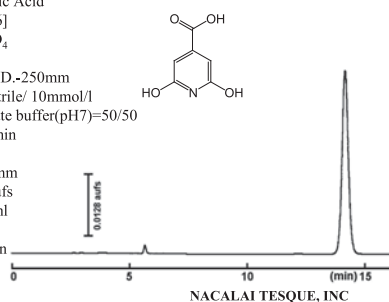
### COSMOSIL Chromatogram Index

Sample: Chloroacetic Acid  
CAS No.: [79-11-8]  
Molecular formula:  $C_2H_3ClO_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 aufs  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 14.69min  
Capacity factor: 4.15



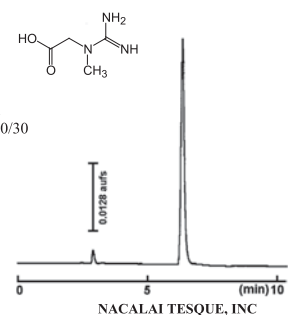
### COSMOSIL Chromatogram Index

Sample: Citrazinic Acid  
CAS No.: [99-11-6]  
Molecular formula:  $C_6H_5NO_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 aufs  
Sample conc.: 0.5mg/ml  
Injection volume: 0.5µl  
Retention time: 14.16min  
Capacity factor: 3.98



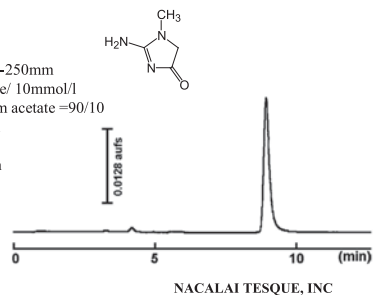
### COSMOSIL Chromatogram Index

Sample: Creatine  
CAS No.: [57-00-1]  
Molecular formula:  $C_4H_9N_3O_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 aufs  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 6.35min  
Capacity factor: 1.40



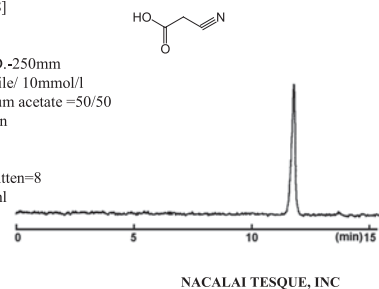
### COSMOSIL Chromatogram Index

Sample: Creatinine  
CAS No.: [60-27-5]  
Molecular formula:  $C_4H_7N_3O$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 aufs  
Sample conc.: 0.5mg/ml  
Injection volume: 0.5µl  
Retention time: 8.93min  
Capacity factor: 2.08



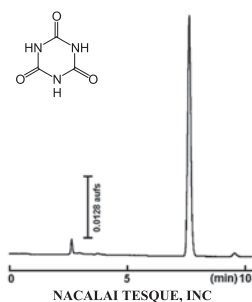
### COSMOSIL Chromatogram Index

Sample: Cyanoacetic Acid  
CAS No.: [372-09-8]  
Molecular formula:  $C_3H_3NO_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: ELSD  
Attenuation: Gain=6, Atten=8  
Sample conc.: 10.0mg/ml  
Injection volume: 0.5µl  
Retention time: 11.78min  
Capacity factor: 3.56



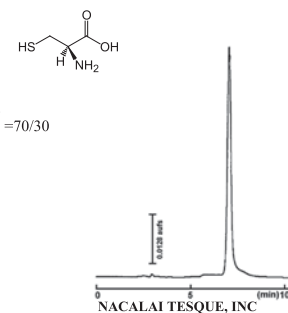
### COSMOSIL Chromatogram Index

Sample: Cyanuric Acid  
CAS No.: [108-80-5]  
Molecular formula:  $C_3H_3N_3O_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 aufs  
Sample conc.: 0.5mg/ml  
Injection volume: 1.0µl  
Retention time: 7.61min  
Capacity factor: 1.68



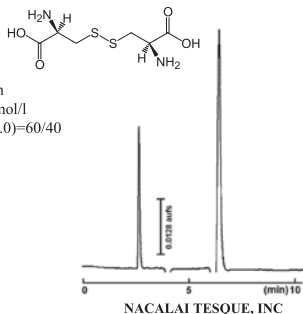
### COSMOSIL Chromatogram Index

Sample: L-Cysteine  
CAS No.: [52-90-4]  
Molecular formula:  $C_3H_7NO_2S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 20mmol/l  
Phosphate buffer(pH7) =70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 aufs  
Sample conc.: 5.0mg/ml  
Injection volume: 2.0µl  
Retention time: 7.05min  
Capacity factor: 1.69



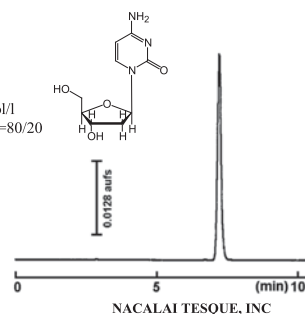
### COSMOSIL Chromatogram Index

Sample: L-(-)-Cystine  
 CAS No.: [56-89-3]  
 Molecular formula: C<sub>6</sub>H<sub>12</sub>N<sub>2</sub>O<sub>4</sub>S<sub>2</sub>  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=60/40  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV210 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 5.0mg/ml  
 Injection volume: 0.5µl  
 Retention time: 6.42min  
 Capacity factor: 1.38



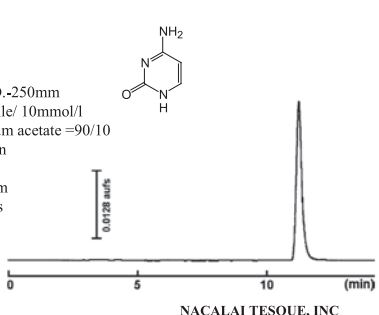
### COSMOSIL Chromatogram Index

Sample: Cytidine  
 CAS No.: [65-46-3]  
 Molecular formula: C<sub>9</sub>H<sub>13</sub>N<sub>3</sub>O<sub>5</sub>  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =80/20  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV260 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 0.5mg/ml  
 Injection volume: 0.5µl  
 Retention time: 7.22min  
 Capacity factor: 1.58



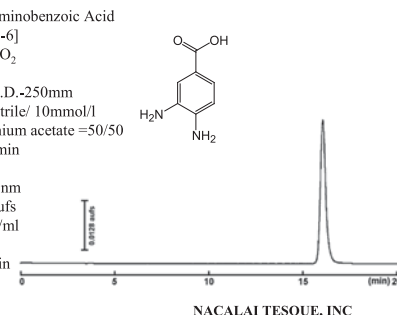
### COSMOSIL Chromatogram Index

Sample: Cytosine  
 CAS No.: [71-30-7]  
 Molecular formula: C<sub>4</sub>H<sub>5</sub>N<sub>3</sub>O  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV260 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 0.5mg/ml  
 Injection volume: 0.5µl  
 Retention time: 11.22min  
 Capacity factor: 2.87



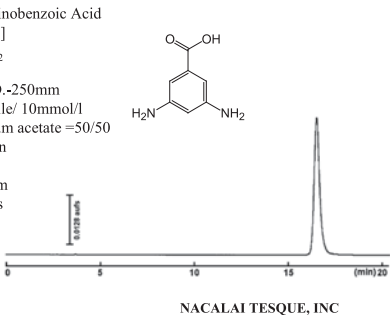
### COSMOSIL Chromatogram Index

Sample: 3,4-Diaminobenzoic Acid  
 CAS No.: [619-05-6]  
 Molecular formula: C<sub>7</sub>H<sub>7</sub>N<sub>2</sub>O<sub>2</sub>  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV254 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 0.10mg/ml  
 Injection volume: 4.0µl  
 Retention time: 16.13min  
 Capacity factor: 4.62



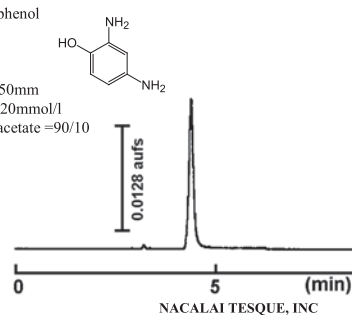
### COSMOSIL Chromatogram Index

Sample: 3,5-Diaminobenzoic Acid  
 CAS No.: [535-87-5]  
 Molecular formula: C<sub>7</sub>H<sub>7</sub>N<sub>2</sub>O<sub>2</sub>  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV254 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 0.1mg/ml  
 Injection volume: 4.0µl  
 Retention time: 16.54min  
 Capacity factor: 4.76



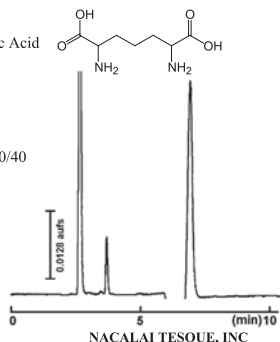
### COSMOSIL Chromatogram Index

Sample: 2,4-Diaminophenol  
 CAS No.: [95-86-3]  
 Molecular formula: C<sub>6</sub>H<sub>7</sub>N<sub>2</sub>O  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 20mmol/l Ammonium acetate =90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV254 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 0.5mg/ml  
 Injection volume: 0.5µl  
 Retention time: 4.40min  
 Capacity factor: 0.51



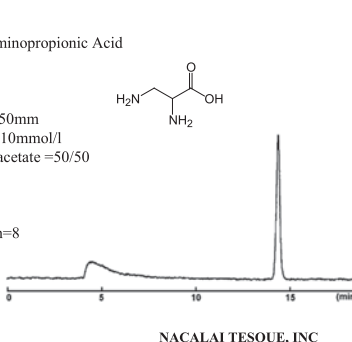
### COSMOSIL Chromatogram Index

Sample: DL-2,6-Diaminopimelic Acid  
 CAS No.: [583-93-7]  
 Molecular formula: C<sub>7</sub>H<sub>14</sub>N<sub>2</sub>O<sub>4</sub>  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=60/40  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV210 nm  
 Attenuation: 0.128 auFS  
 Sample conc.: 10.0mg/ml  
 Injection volume: 1.5µl  
 Retention time: 6.93min  
 Capacity factor: 1.56



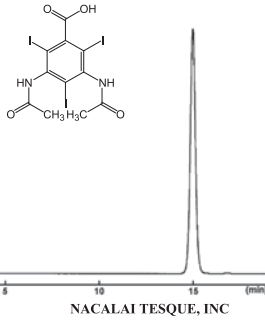
### COSMOSIL Chromatogram Index

Sample: DL-2,3-Diaminopropionic Acid  
 CAS No.: [54897-59-5]  
 Molecular formula: C<sub>3</sub>H<sub>6</sub>N<sub>2</sub>O<sub>2</sub>  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: ELSD  
 Attenuation: Gain=6, Atten=8  
 Sample conc.: 5.0mg/ml  
 Injection volume: 2.0µl  
 Retention time: 14.38min  
 Capacity factor: 4.52



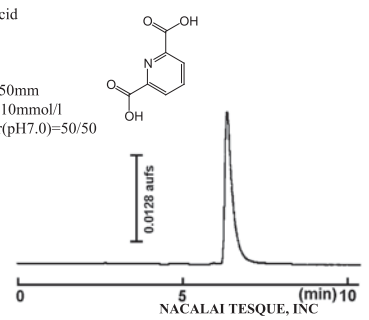
### COSMOSIL Chromatogram Index

Sample: Diatrizoic Acid  
CAS No.: [117-96-4]  
Molecular formula:  $C_7H_5I_3N_2O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 au/s  
Sample conc.: 0.8mg/ml  
Injection volume: 1.0µl  
Retention time: 14.98min  
Capacity factor: 4.26



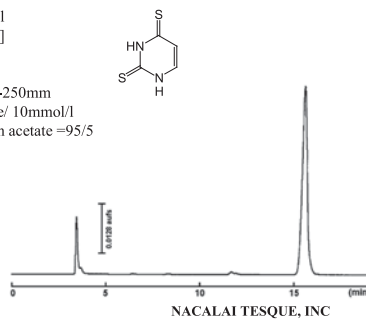
### COSMOSIL Chromatogram Index

Sample: Dipicolinic acid  
CAS No.: [499-83-2]  
Molecular formula:  $C_6H_7NO_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 au/s  
Sample conc.: 0.5mg/ml  
Injection volume: 1.0µl  
Retention time: 6.37min  
Capacity factor: 1.23



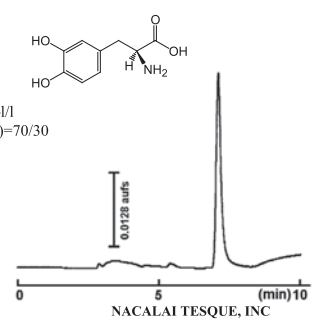
### COSMOSIL Chromatogram Index

Sample: Dithiouracil  
CAS No.: [2001-93-6]  
Molecular formula:  $C_4H_3N_2S_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =95/5  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV260 nm  
Attenuation: 0.128 au/s  
Sample conc.: 0.2mg/ml  
Injection volume: 1.5µl  
Retention time: 15.60min  
Capacity factor: 4.15



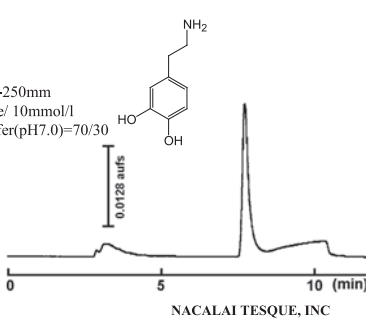
### COSMOSIL Chromatogram Index

Sample: L-DOPA  
CAS No.: [59-92-7]  
Molecular formula:  $C_9H_9NO_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 au/s  
Sample conc.: 3.0mg/ml  
Injection volume: 3.0µl  
Retention time: 7.12min  
Capacity factor: 1.72



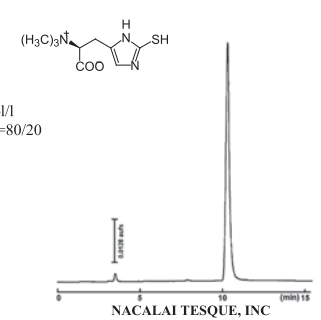
### COSMOSIL Chromatogram Index

Sample: Dopamine  
CAS No.: [51-61-6]  
Molecular formula:  $C_8H_{11}NO_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 au/s  
Sample conc.: 1.0mg/ml  
Injection volume: 4.0µl  
Retention time: 7.73min  
Capacity factor: 1.96



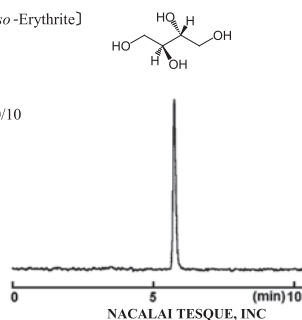
### COSMOSIL Chromatogram Index

Sample: L-(+)-Ergothioneine  
CAS No.: [497-30-3]  
Molecular formula:  $C_8H_{13}N_3O_2S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =80/20  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 au/s  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 10.29min  
Capacity factor: 2.79



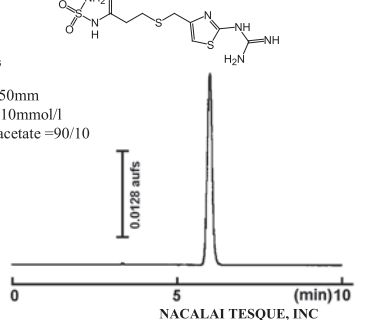
### COSMOSIL Chromatogram Index

Sample: meso-Erythritol [meso-Erythrite]  
CAS No.: [149-32-6]  
Molecular formula:  $C_4H_{10}O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/  $H_2O$ =90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: ELSD  
Attenuation: Gain=6, Atten=8  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 5.78min  
Capacity factor: 1.18



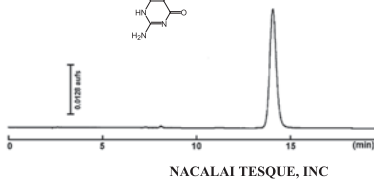
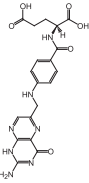
### COSMOSIL Chromatogram Index

Sample: Famotidin  
CAS No.: [76824-35-6]  
Molecular formula:  $C_8H_{13}N_5O_2S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 au/s  
Sample conc.: 0.25mg/ml  
Injection volume: 2.0µl  
Retention time: 5.99min  
Capacity factor: 1.06



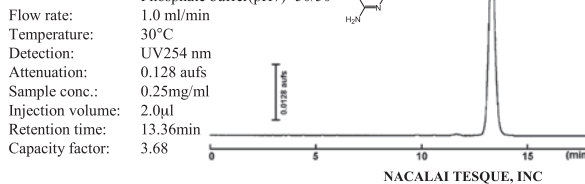
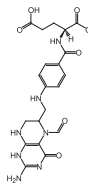
### COSMOSIL Chromatogram Index

Sample: Folic Acid  
CAS No.: [59-30-3]  
Molecular formula:  $C_{19}H_{19}N_7O_6$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 20mmol/l Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 au/s  
Sample conc.: 0.25mg/ml  
Injection volume: 2.0µl  
Retention time: 14.09min  
Capacity factor: 3.95



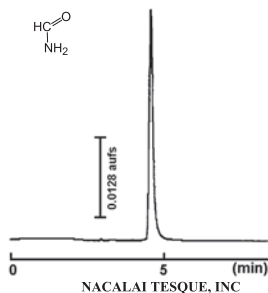
### COSMOSIL Chromatogram Index

Sample: Folic Acid  
CAS No.: [58-05-9]  
Molecular formula:  $C_{20}H_{23}N_7O_7$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 au/s  
Sample conc.: 0.25mg/ml  
Injection volume: 2.0µl  
Retention time: 13.36min  
Capacity factor: 3.68



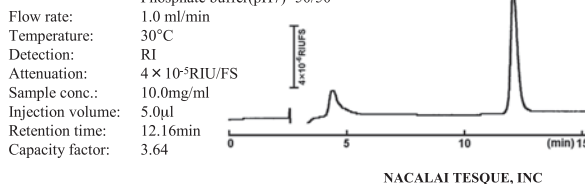
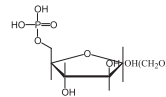
### COSMOSIL Chromatogram Index

Sample: Formamide  
CAS No.: [75-12-7]  
Molecular formula:  $CH_3NO$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/  $H_2O=95/5$   
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 au/s  
Sample conc.: 10.0mg/ml  
Injection volume: 0.5µl  
Retention time: 4.58min  
Capacity factor: 0.52



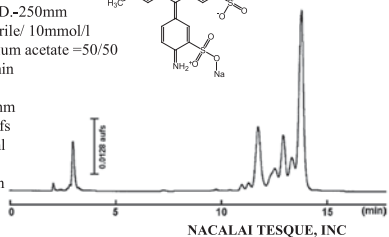
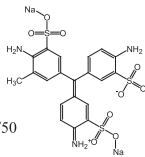
### COSMOSIL Chromatogram Index

Sample: D-Fructose-6-phosphate  
CAS No.: [643-13-0]  
Molecular formula:  $C_6H_{13}O_5P$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: RI  
Attenuation:  $4 \times 10^{-5}$  RIU/FS  
Sample conc.: 10.0mg/ml  
Injection volume: 5.0µl  
Retention time: 12.16min  
Capacity factor: 3.64



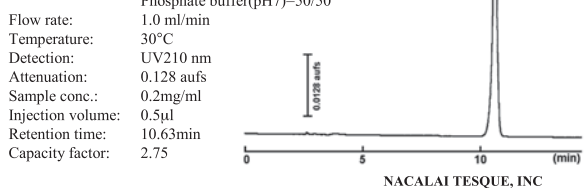
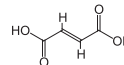
### COSMOSIL Chromatogram Index

Sample: Fuchsine, Acid  
CAS No.: [3244-88-0]  
Molecular formula:  $C_{20}H_{17}N_3Na_2O_9S_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 au/s  
Sample conc.: 5.0mg/ml  
Injection volume: 1.5µl  
Retention time: 13.82min  
Capacity factor: 3.85



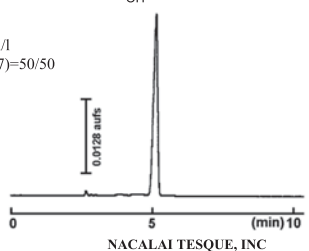
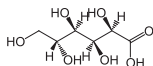
### COSMOSIL Chromatogram Index

Sample: Fumaric Acid  
CAS No.: [110-17-8]  
Molecular formula:  $C_4H_4O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 au/s  
Sample conc.: 0.2mg/ml  
Injection volume: 0.5µl  
Retention time: 10.63min  
Capacity factor: 2.75



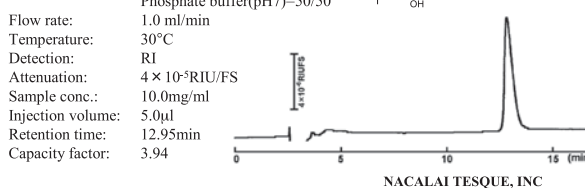
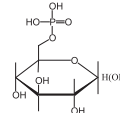
### COSMOSIL Chromatogram Index

Sample: Gluconic Acid  
CAS No.: [526-95-4]  
Molecular formula:  $C_6H_{12}O_7$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 au/s  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 5.15min  
Capacity factor: 0.81



### COSMOSIL Chromatogram Index

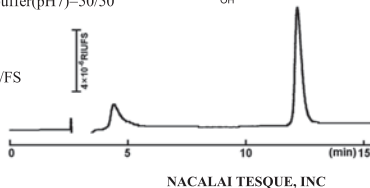
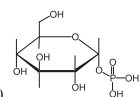
Sample: D-Glucose-6-phosphate  
CAS No.: [56-73-5]  
Molecular formula:  $C_6H_{13}O_5P$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: RI  
Attenuation:  $4 \times 10^{-5}$  RIU/FS  
Sample conc.: 10.0mg/ml  
Injection volume: 5.0µl  
Retention time: 12.95min  
Capacity factor: 3.94



### COSMOSIL Chromatogram Index

Sample:  $\alpha$ -D-Glucose-1-phosphate  
CAS No.: [59-56-3]  
Molecular formula:  $C_6H_{13}O_9P$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50

Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: RI  
Attenuation:  $4 \times 10^{-5}$  RIU/FS  
Sample conc.: 10.0mg/ml  
Injection volume: 5.0 $\mu$ l  
Retention time: 12.26min  
Capacity factor: 3.68

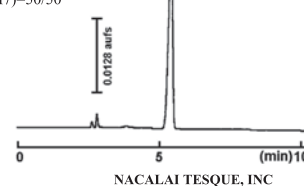
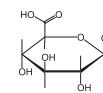


NACALAI TESQUE, INC

### COSMOSIL Chromatogram Index

Sample: D-Glucuronic Acid  
CAS No.: [6556-12-3]  
Molecular formula:  $C_6H_{10}O_7$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50

Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 aufs  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0 $\mu$ l  
Retention time: 5.45min  
Capacity factor: 0.92

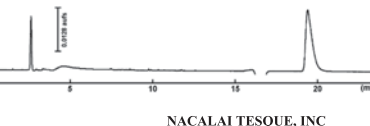
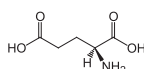


NACALAI TESQUE, INC

### COSMOSIL Chromatogram Index

Sample: L-Glutamic Acid  
CAS No.: [56-86-0]  
Molecular formula:  $C_5H_9NO_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=50/50

Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 210nm  
Attenuation: 0.128 aufs  
Sample conc.: 10.0mg/ml  
Injection volume: 2.0 $\mu$ l  
Retention time: 19.38min  
Capacity factor: 5.87

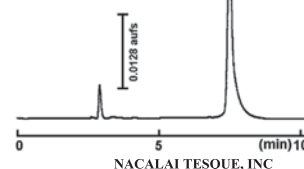
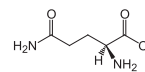


NACALAI TESQUE, INC

### COSMOSIL Chromatogram Index

Sample: L-Glutamine  
CAS No.: [56-85-9]  
Molecular formula:  $C_5H_{11}N_2O_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=70/30

Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 aufs  
Sample conc.: 10.0mg/ml  
Injection volume: 0.5 $\mu$ l  
Retention time: 7.50min  
Capacity factor: 1.85

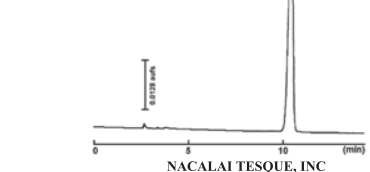
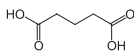


NACALAI TESQUE, INC

### COSMOSIL Chromatogram Index

Sample: Glutaric Acid  
CAS No.: [110-94-1]  
Molecular formula:  $C_5H_8O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50

Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 aufs  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0 $\mu$ l  
Retention time: 10.45min  
Capacity factor: 2.68

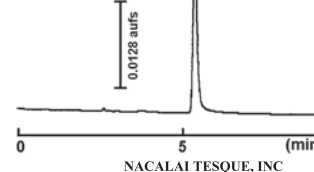
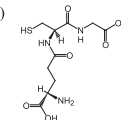


NACALAI TESQUE, INC

### COSMOSIL Chromatogram Index

Sample: Glutathione(Reduced Form)  
CAS No.: [70-18-8]  
Molecular formula:  $C_{10}H_{17}N_3O_6S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50

Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 aufs  
Sample conc.: 1.0mg/ml  
Injection volume: 2.0 $\mu$ l  
Retention time: 5.43min  
Capacity factor: 0.89

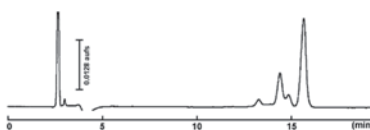
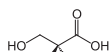


NACALAI TESQUE, INC

### COSMOSIL Chromatogram Index

Sample: DL-Glyceric Acid  
CAS No.: [600-19-1]  
Molecular formula:  $C_3H_6O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50

Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 aufs  
Sample conc.: 6.0mg/ml  
Injection volume: 5.0 $\mu$ l  
Retention time: 15.68min  
Capacity factor: 4.50

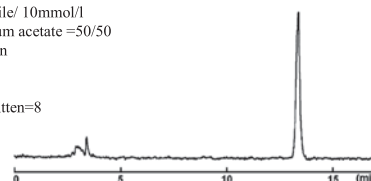


NACALAI TESQUE, INC

### COSMOSIL Chromatogram Index

Sample: Glycinamide  
CAS No.: [598-41-4]  
Molecular formula:  $C_2H_5N_2O$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50

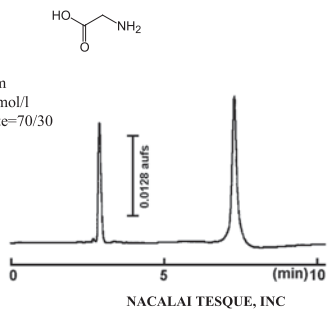
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: ELSD  
Attenuation: Gain=6, Atten=8  
Sample conc.: 1.0mg/ml  
Injection volume: 3.0 $\mu$ l  
Retention time: 13.35min  
Capacity factor: 3.64



NACALAI TESQUE, INC

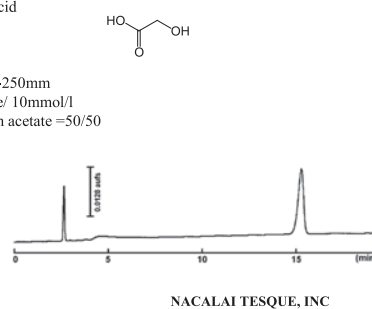
### COSMOSIL Chromatogram Index

Sample: Glycine  
CAS No.: [56-40-6]  
Molecular formula:  $C_2H_5NO_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 5.0mg/ml  
Injection volume: 2.0µl  
Retention time: 7.29min  
Capacity factor: 1.77



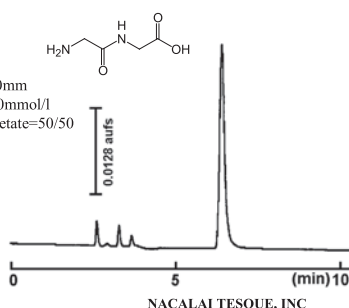
### COSMOSIL Chromatogram Index

Sample: Glycolic Acid  
CAS No.: [79-14-1]  
Molecular formula:  $C_2H_4O_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 2.0µl  
Retention time: 15.28min  
Capacity factor: 4.39



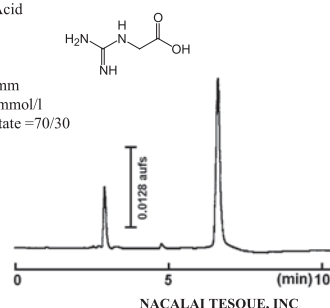
### COSMOSIL Chromatogram Index

Sample: Glycylglycine  
CAS No.: [556-50-3]  
Molecular formula:  $C_4H_8N_2O_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 1.0mg/ml  
Injection volume: 0.5µl  
Retention time: 6.40min  
Capacity factor: 1.27



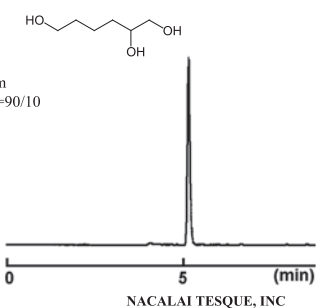
### COSMOSIL Chromatogram Index

Sample: Guanidoacetic Acid  
CAS No.: [352-97-6]  
Molecular formula:  $C_3H_6N_2O_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.5mg/ml  
Injection volume: 1.0µl  
Retention time: 6.61min  
Capacity factor: 1.51



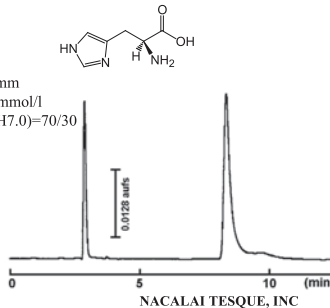
### COSMOSIL Chromatogram Index

Sample: 1,2,6-Hexanetriol  
CAS No.: [106-69-4]  
Molecular formula:  $C_6H_{14}O_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/  $H_2O$ =90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: ELSD  
Gain=6, Atten=8  
Sample conc.: 1.0mg/ml  
Injection volume: 2.0µl  
Retention time: 5.19min  
Capacity factor: 0.80



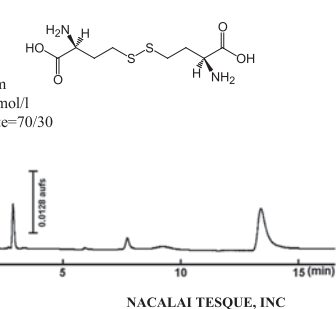
### COSMOSIL Chromatogram Index

Sample: L-Histidine  
CAS No.: [71-00-1]  
Molecular formula:  $C_6H_9N_3O_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Citrate buffer(pH7.0)=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.50mg/ml  
Injection volume: 1.0µl  
Retention time: 8.38min  
Capacity factor: 2.19



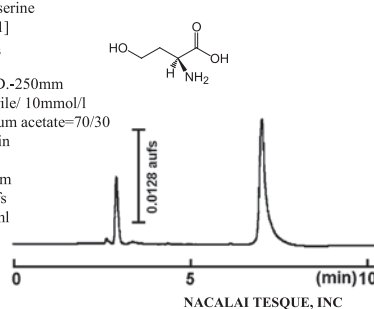
### COSMOSIL Chromatogram Index

Sample: L-Homocysteine  
CAS No.: [626-72-2]  
Molecular formula:  $C_8H_{16}N_2O_4S_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 210nm  
Attenuation: 0.128 auFS  
Sample conc.: 2.0mg/ml  
Injection volume: 1.0µl  
Retention time: 13.41min  
Capacity factor: 4.10



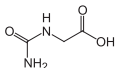
### COSMOSIL Chromatogram Index

Sample: L-Homoserine  
CAS No.: [672-15-1]  
Molecular formula:  $C_4H_9NO_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 210nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 7.03min  
Capacity factor: 1.67

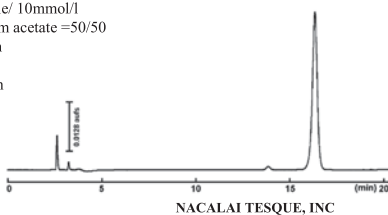


### COSMOSIL Chromatogram Index

Sample: Hydatoic Acid  
CAS No.: [462-60-2]  
Molecular formula:  $C_3H_5N_2O_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50



Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 5.0mg/ml  
Injection volume: 1.0µl  
Retention time: 16.33min  
Capacity factor: 4.72

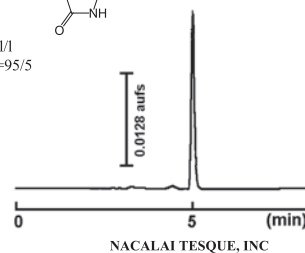


### COSMOSIL Chromatogram Index

Sample: Hydatoin  
CAS No.: [461-72-3]  
Molecular formula:  $C_3H_4N_2O_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =95/5



Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFS  
Sample conc.: 1.0mg/ml  
Injection volume: 0.5µl  
Retention time: 5.01min  
Capacity factor: 0.66

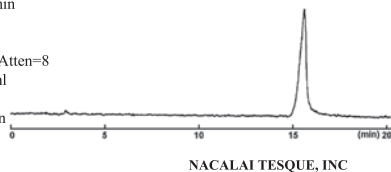


### COSMOSIL Chromatogram Index

Sample: Hydroxylamine-O-sulfonic Acid  
CAS No.: [2950-43-8]  
Molecular formula:  $H_3NO_3S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30

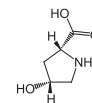


Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: ELSD  
Attenuation: Gain=6, Atten=8  
Sample conc.: 2.0mg/ml  
Injection volume: 3.0µl  
Retention time: 15.60min  
Capacity factor: 5.24

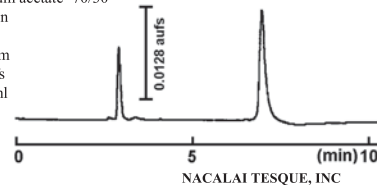


### COSMOSIL Chromatogram Index

Sample: *cis*-4-Hydroxy-D-proline  
CAS No.: [2584-71-6]  
Molecular formula:  $C_5H_9NO_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30



Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 6.96min  
Capacity factor: 1.65

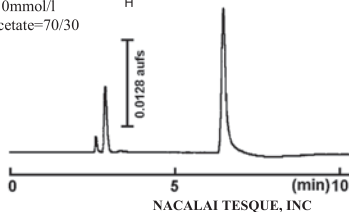


### COSMOSIL Chromatogram Index

Sample: *L*-Hydroxyproline  
CAS No.: [51-35-4]  
Molecular formula:  $C_5H_9NO_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30



Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 210nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 6.49min  
Capacity factor: 1.47

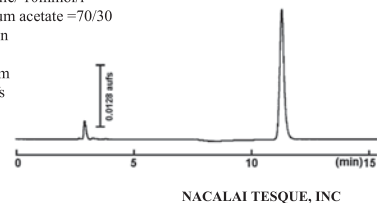


### COSMOSIL Chromatogram Index

Sample: *N*-Hydroxysuccinimide  
CAS No.: [6066-82-6]  
Molecular formula:  $C_4H_5NO_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30

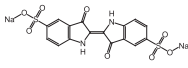


Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.1mg/ml  
Injection volume: 1.5µl  
Retention time: 11.29min  
Capacity factor: 3.22

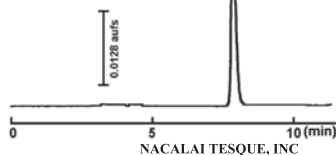


### COSMOSIL Chromatogram Index

Sample: Indigo carmine  
CAS No.: [860-22-0]  
Molecular formula:  $C_{16}H_8N_2Na_2O_8S_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50

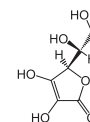


Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.2mg/ml  
Injection volume: 1.0µl  
Retention time: 7.82min  
Capacity factor: 1.79

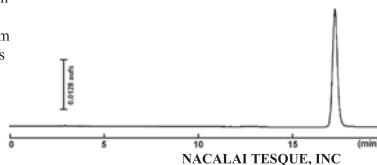


### COSMOSIL Chromatogram Index

Sample: *D*-Isoascorbic Acid  
CAS No.: [89-65-6]  
Molecular formula:  $C_6H_8O_6$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50

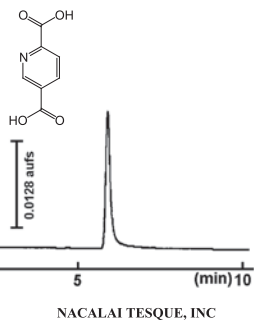


Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 245nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.2mg/ml  
Injection volume: 3.0µl  
Retention time: 17.26min  
Capacity factor: 5.11



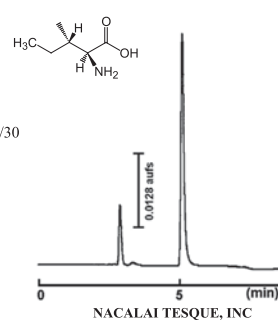
### COSMOSIL Chromatogram Index

Sample: Isocinchomeronic Acid  
CAS No.: [100-26-5]  
Molecular formula:  $C_7H_7NO_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.5mg/ml  
Injection volume: 0.5µl  
Retention time: 5.91min  
Capacity factor: 1.07



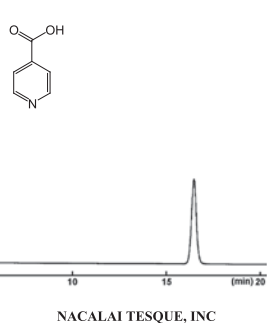
### COSMOSIL Chromatogram Index

Sample: L-Isoleucine  
CAS No.: [73-32-5]  
Molecular formula:  $C_6H_{13}NO_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 5.12min  
Capacity factor: 0.95



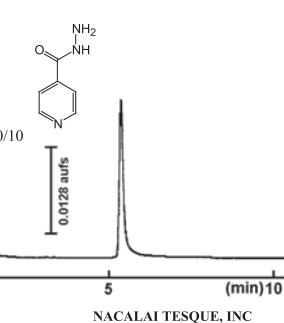
### COSMOSIL Chromatogram Index

Sample: Isonicotinic Acid  
CAS No.: [55-22-1]  
Molecular formula:  $C_6H_5NO_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFS  
Sample conc.: 1.0mg/ml  
Injection volume: 0.5µl  
Retention time: 16.45min  
Capacity factor: 4.78



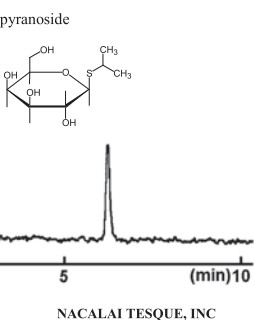
### COSMOSIL Chromatogram Index

Sample: Isonicotinohydrazide  
CAS No.: [54-85-3]  
Molecular formula:  $C_6H_7N_3O$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV265 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.50mg/ml  
Injection volume: 0.5µl  
Retention time: 5.37min  
Capacity factor: 0.85



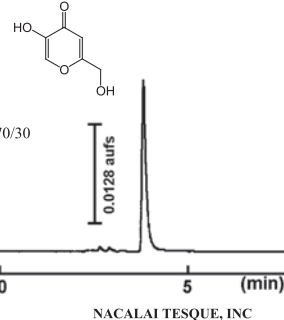
### COSMOSIL Chromatogram Index

Sample: Isopropyl β-D-1-thiogalactopyranoside  
CAS No.: [367-93-1]  
Molecular formula:  $C_9H_{18}O_5S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ H<sub>2</sub>O=90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: ELSD  
Attenuation: Gain=6, Atten=8  
Sample conc.: 0.1mg/ml  
Injection volume: 0.5µl  
Retention time: 6.23min  
Capacity factor: 1.15



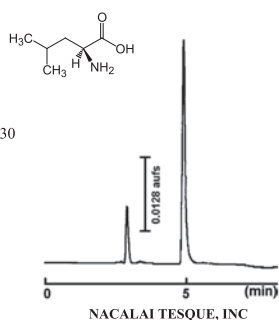
### COSMOSIL Chromatogram Index

Sample: Kojic Acid  
CAS No.: [501-30-4]  
Molecular formula:  $C_6H_6O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV245 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.1mg/ml  
Injection volume: 1.0µl  
Retention time: 3.83min  
Capacity factor: 0.46



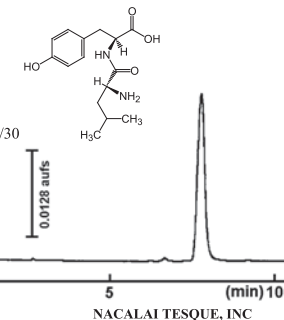
### COSMOSIL Chromatogram Index

Sample: L-Leucine  
CAS No.: [61-90-5]  
Molecular formula:  $C_6H_{13}NO_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 4.91min  
Capacity factor: 0.87



### COSMOSIL Chromatogram Index

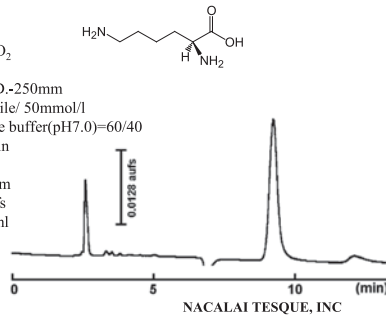
Sample: D-Leucyl-L-tyrosine  
CAS No.: [3303-29-5]  
Molecular formula:  $C_{12}H_{22}N_2O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 254nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 7.79min  
Capacity factor: 1.96





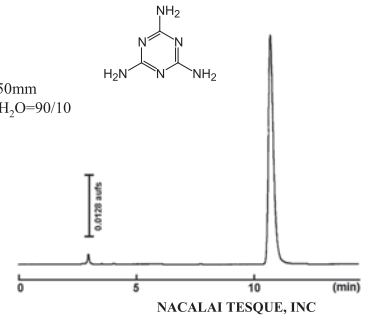
### COSMOSIL Chromatogram Index

Sample: L-Lysine  
CAS No.: [56-87-1]  
Molecular formula:  $C_6H_{11}N_2O_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 50mmol/l  
Phosphate buffer(pH7.0)=60/40  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 2.0µl  
Retention time: 9.26min  
Capacity factor: 2.55



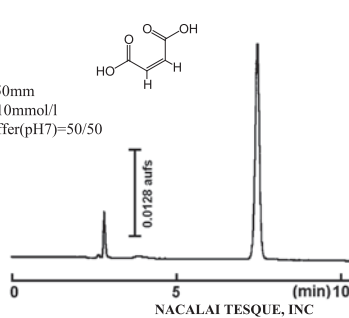
### COSMOSIL Chromatogram Index

Sample: Melamine  
CAS No.: [108-78-1]  
Molecular formula:  $C_3H_4N_6$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ H<sub>2</sub>O=90/10  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV240 nm  
Attenuation: 0.128 auFS  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 10.79min  
Capacity factor: 2.79



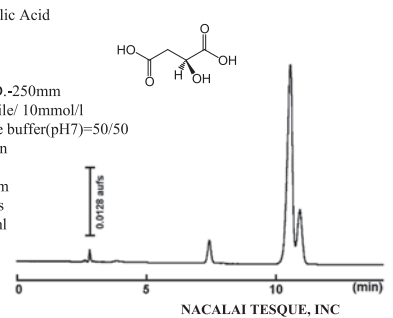
### COSMOSIL Chromatogram Index

Sample: Maleic Acid  
CAS No.: [110-16-7]  
Molecular formula:  $C_4H_4O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.1mg/ml  
Injection volume: 0.5µl  
Retention time: 7.45min  
Capacity factor: 1.62



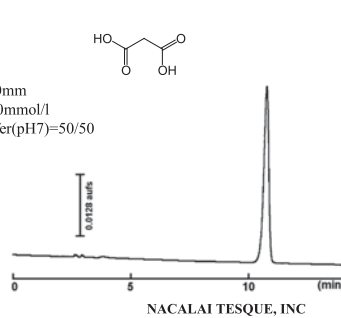
### COSMOSIL Chromatogram Index

Sample: L-(-)-Malic Acid  
CAS No.: [97-67-6]  
Molecular formula:  $C_4H_6O_5$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 0.5µl  
Retention time: 10.55min  
Capacity factor: 2.71



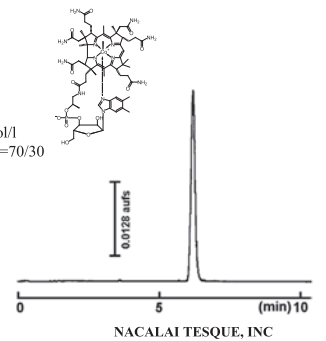
### COSMOSIL Chromatogram Index

Sample: Malonic Acid  
CAS No.: [141-82-2]  
Molecular formula:  $C_3H_4O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 0.5µl  
Retention time: 10.78min  
Capacity factor: 2.81



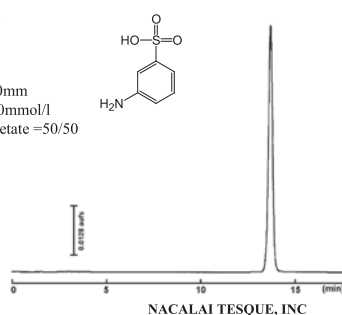
### COSMOSIL Chromatogram Index

Sample: Mecobalamin  
CAS No.: [13422-55-4]  
Molecular formula:  $C_{63}H_{91}CoN_{13}O_{14}P$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV266 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.5mg/ml  
Injection volume: 1.0µl  
Retention time: 6.22min  
Capacity factor: 1.35



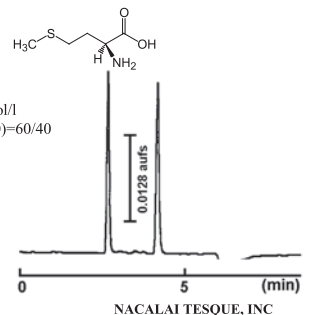
### COSMOSIL Chromatogram Index

Sample: Metanilic Acid  
CAS No.: [121-47-1]  
Molecular formula:  $C_6H_7NO_3S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFS  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 13.68min  
Capacity factor: 3.80



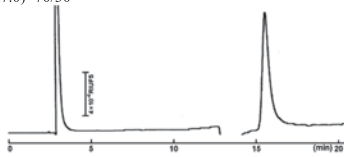
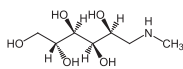
### COSMOSIL Chromatogram Index

Sample: L- Methionine  
CAS No.: [63-68-3]  
Molecular formula:  $C_5H_{11}NO_2S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Citrate buffer(pH7.0)=60/40  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 1.0mg/ml  
Injection volume: 0.5µl  
Retention time: 4.15min  
Capacity factor: 0.54



### COSMOSIL Chromatogram Index

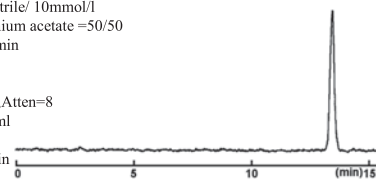
Sample: *N*-Methylglucamine  
 CAS No.: [6284-40-8]  
 Molecular formula: C<sub>8</sub>H<sub>17</sub>NO<sub>5</sub>  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=70/30  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: RI  
 Attenuation: 4 × 10<sup>-5</sup>RIU/FS  
 Sample conc.: 10.0mg/ml  
 Injection volume: 2.0µl  
 Retention time: 15.52min  
 Capacity factor: 4.22



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### COSMOSIL Chromatogram Index

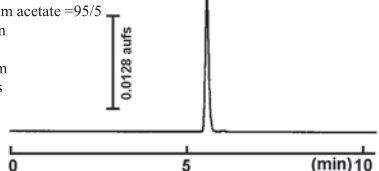
Sample: *N*-Methylhydroxylamine  
 CAS No.: [593-77-1]  
 Molecular formula: CH<sub>3</sub>NO<sub>2</sub>  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: ELSD  
 Attenuation: Gain=6, Atten=8  
 Sample conc.: 1.0mg/ml  
 Injection volume: 2.0µl  
 Retention time: 13.45min  
 Capacity factor: 4.21



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### COSMOSIL Chromatogram Index

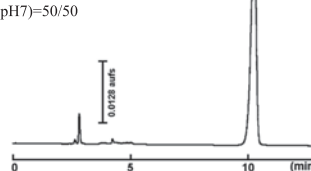
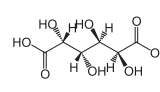
Sample: 6-Methyl-2-thiouracil  
 CAS No.: [56-04-2]  
 Molecular formula: C<sub>5</sub>H<sub>4</sub>N<sub>2</sub>OS  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =95/5  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV260 nm  
 Attenuation: 0.128 auFs  
 Sample conc.: 0.1mg/ml  
 Injection volume: 0.5µl  
 Retention time: 5.58min  
 Capacity factor: 0.84



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### COSMOSIL Chromatogram Index

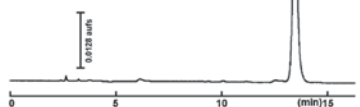
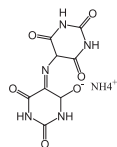
Sample: Mucic Acid  
 CAS No.: [526-99-8]  
 Molecular formula: C<sub>6</sub>H<sub>10</sub>O<sub>8</sub>  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=50/50  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV210 nm  
 Attenuation: 0.128 auFs  
 Sample conc.: 10.0mg/ml  
 Injection volume: 1.0µl  
 Retention time: 10.27min  
 Capacity factor: 2.62



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### COSMOSIL Chromatogram Index

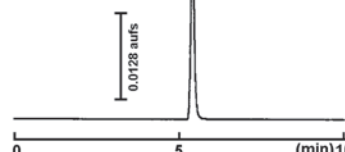
Sample: Murexide  
 CAS No.: [3051-09-0]  
 Molecular formula: C<sub>8</sub>H<sub>6</sub>N<sub>4</sub>O<sub>6</sub>  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220 nm  
 Attenuation: 0.128 auFs  
 Sample conc.: 1.0mg/ml  
 Injection volume: 0.5µl  
 Retention time: 13.47min  
 Capacity factor: 3.69



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### COSMOSIL Chromatogram Index

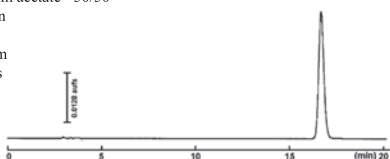
Sample: Nicotinamide  
 CAS No.: [98-92-0]  
 Molecular formula: C<sub>6</sub>H<sub>6</sub>N<sub>2</sub>O  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =95/5  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV254 nm  
 Attenuation: 0.128 auFs  
 Sample conc.: 0.2mg/ml  
 Injection volume: 1.0µl  
 Retention time: 5.40min  
 Capacity factor: 0.77



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### COSMOSIL Chromatogram Index

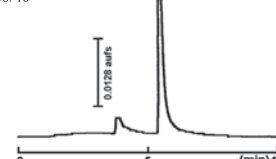
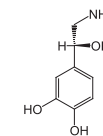
Sample: Nicotinic Acid  
 CAS No.: [59-67-6]  
 Molecular formula: C<sub>6</sub>H<sub>5</sub>NO<sub>2</sub>  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV254 nm  
 Attenuation: 0.128 auFs  
 Sample conc.: 1.0mg/ml  
 Injection volume: 0.5µl  
 Retention time: 16.67min  
 Capacity factor: 4.87



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### COSMOSIL Chromatogram Index

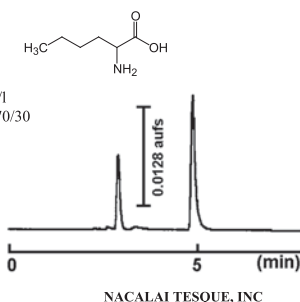
Sample: *L*-Noradrenaline  
 CAS No.: [51-41-2]  
 Molecular formula: C<sub>8</sub>H<sub>11</sub>NO<sub>3</sub>  
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=60/40  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV254 nm  
 Attenuation: 0.128 auFs  
 Sample conc.: 5.0mg/ml  
 Injection volume: 1.0µl  
 Retention time: 5.47min  
 Capacity factor: 1.07



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### COSMOSIL Chromatogram Index

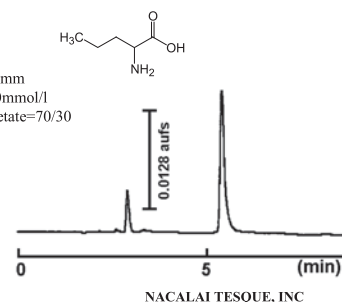
Sample: DL-Norleucine  
CAS No.: [616-06-8]  
Molecular formula:  $C_7H_{13}NO_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 5.0mg/ml  
Injection volume: 1.0µl  
Retention time: 4.89min  
Capacity factor: 0.86



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### COSMOSIL Chromatogram Index

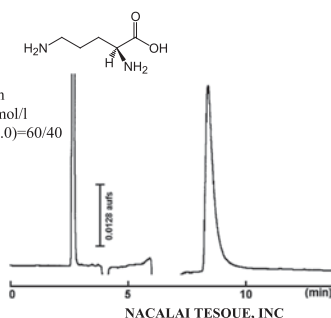
Sample: DL-Norvaline  
CAS No.: [760-78-1]  
Molecular formula:  $C_7H_{13}NO_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 210nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 0.5µl  
Retention time: 5.43min  
Capacity factor: 1.07



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### COSMOSIL Chromatogram Index

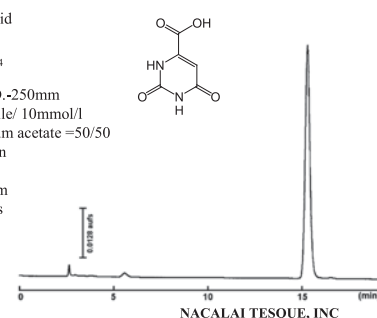
Sample: L-Ornithine  
CAS No.: [70-26-8]  
Molecular formula:  $C_5H_{12}N_2O_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Citrate buffer(pH7.0)=60/40  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 2.0µl  
Retention time: 8.39min  
Capacity factor: 2.10



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### COSMOSIL Chromatogram Index

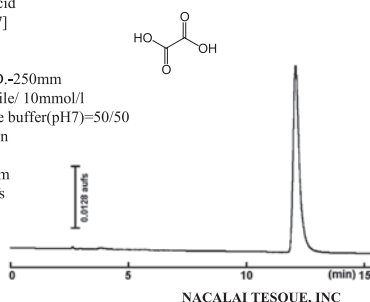
Sample: Orotic Acid  
CAS No.: [65-86-1]  
Molecular formula:  $C_5H_6N_2O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.5mg/ml  
Injection volume: 1.0µl  
Retention time: 15.24min  
Capacity factor: 4.36



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### COSMOSIL Chromatogram Index

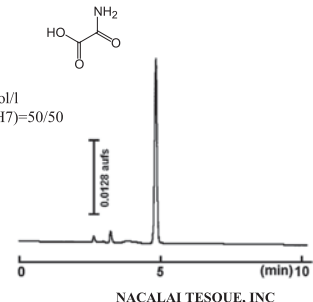
Sample: Oxalic Acid  
CAS No.: [144-62-7]  
Molecular formula:  $C_2H_2O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 5.0mg/ml  
Injection volume: 0.5µl  
Retention time: 12.08min  
Capacity factor: 3.27



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### COSMOSIL Chromatogram Index

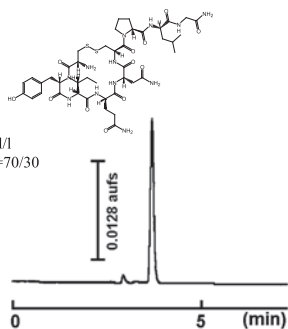
Sample: Oxamic Acid  
CAS No.: [471-47-6]  
Molecular formula:  $C_2H_3NO_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.1mg/ml  
Injection volume: 1.0µl  
Retention time: 4.83min  
Capacity factor: 0.71



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### COSMOSIL Chromatogram Index

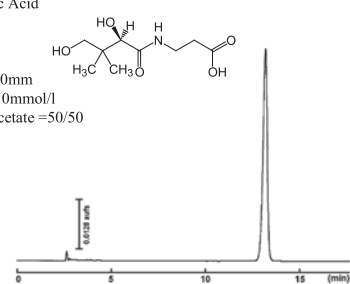
Sample: Oxytocin  
CAS No.: [50-56-6]  
Molecular formula:  $C_{43}H_{66}N_{12}O_{12}S_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.4mg/ml  
Injection volume: 0.5µl  
Retention time: 3.71min  
Capacity factor: 0.39



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### COSMOSIL Chromatogram Index

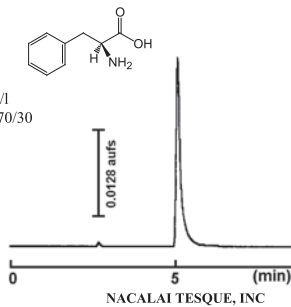
Sample: D-Pantoic Acid  
CAS No.: [79-83-4]  
Molecular formula:  $C_9H_{17}NO_5$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 13.21min  
Capacity factor: 3.60



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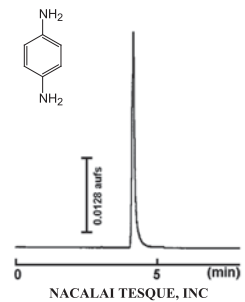
### COSMOSIL Chromatogram Index

Sample: L-(-)-Phenylalanine  
CAS No.: [63-91-2]  
Molecular formula: C<sub>9</sub>H<sub>9</sub>NO<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 254nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 0.5µl  
Retention time: 5.10min  
Capacity factor: 0.94



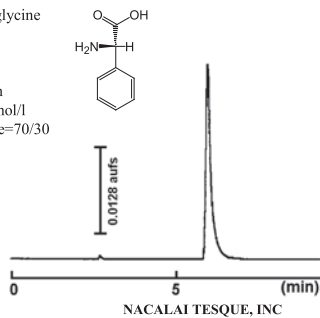
### COSMOSIL Chromatogram Index

Sample: p-Phenylenediamine  
CAS No.: [106-50-3]  
Molecular formula: C<sub>6</sub>H<sub>8</sub>N<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =95/5  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.1mg/ml  
Injection volume: 0.5µl  
Retention time: 4.15min  
Capacity factor: 0.36



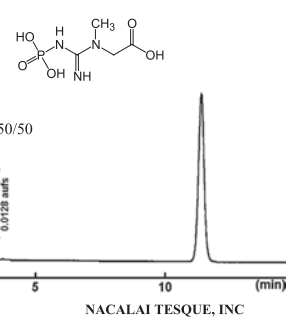
### COSMOSIL Chromatogram Index

Sample: L-(+)-α-Phenylglycine  
CAS No.: [2935-35-5]  
Molecular formula: C<sub>9</sub>H<sub>9</sub>NO<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFS  
Sample conc.: 5.0mg/ml  
Injection volume: 1.0µl  
Retention time: 5.96min  
Capacity factor: 1.27



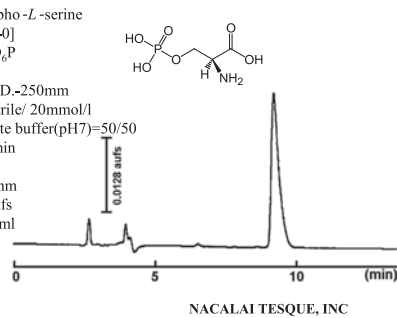
### COSMOSIL Chromatogram Index

Sample: Phosphocreatine  
CAS No.: [67-07-2]  
Molecular formula: C<sub>4</sub>H<sub>10</sub>N<sub>3</sub>O<sub>5</sub>P  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFS  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 11.42min  
Capacity factor: 3.00



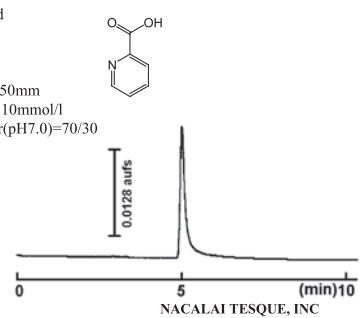
### COSMOSIL Chromatogram Index

Sample: O-Phospho-L-serine  
CAS No.: [407-41-0]  
Molecular formula: C<sub>3</sub>H<sub>7</sub>NO<sub>6</sub>P  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 20mmol/l Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 3.0µl  
Retention time: 9.19min  
Capacity factor: 2.24



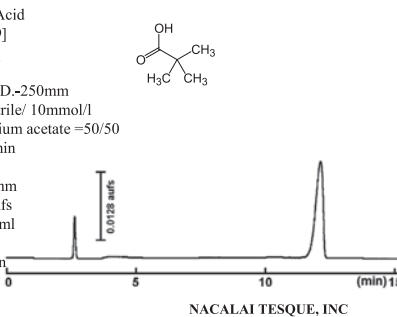
### COSMOSIL Chromatogram Index

Sample: Picolinic acid  
CAS No.: [98-98-6]  
Molecular formula: C<sub>6</sub>H<sub>5</sub>NO<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Citrate buffer(pH7.0)=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.5mg/ml  
Injection volume: 0.5µl  
Retention time: 5.03min  
Capacity factor: 0.92



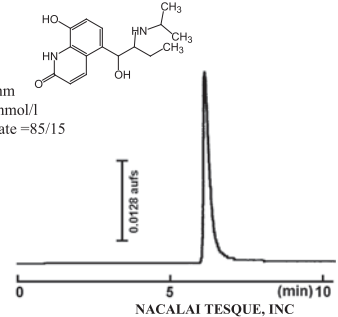
### COSMOSIL Chromatogram Index

Sample: Pivalic Acid  
CAS No.: [75-98-9]  
Molecular formula: C<sub>5</sub>H<sub>10</sub>O<sub>2</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 12.14min  
Capacity factor: 3.28



### COSMOSIL Chromatogram Index

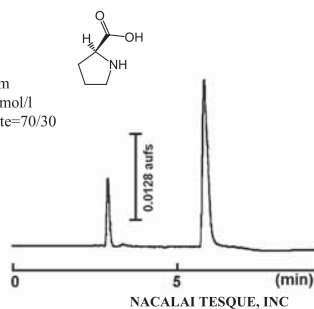
Sample: Procaterol  
CAS No.: [72332-33-3]  
Molecular formula: C<sub>16</sub>H<sub>22</sub>N<sub>2</sub>O<sub>3</sub>  
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 20mmol/l Ammonium acetate =85/15  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.5mg/ml  
Injection volume: 0.5µl  
Retention time: 6.17min  
Capacity factor: 1.25



### COSMOSIL Chromatogram Index

Sample: L-Proline  
CAS No.: [147-85-3]  
Molecular formula:  $C_5H_9NO_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=70/30

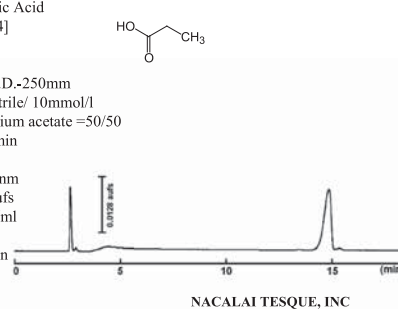
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 5.83min  
Capacity factor: 1.22



### COSMOSIL Chromatogram Index

Sample: Propionic Acid  
CAS No.: [79-09-4]  
Molecular formula:  $C_3H_6O_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=50/50

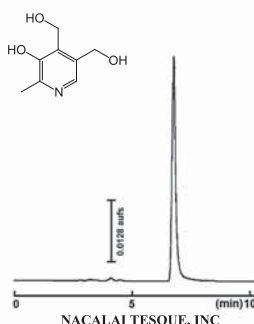
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 2.0µl  
Retention time: 14.85min  
Capacity factor: 4.24



### COSMOSIL Chromatogram Index

Sample: Pyridoxine  
CAS No.: [65-23-6]  
Molecular formula:  $C_8H_{10}NO_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=90/10

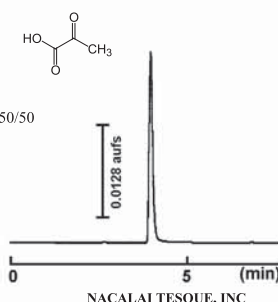
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFS  
Sample conc.: 1.0mg/ml  
Injection volume: 0.5µl  
Retention time: 6.78min  
Capacity factor: 1.35



### COSMOSIL Chromatogram Index

Sample: Pyruvic Acid  
CAS No.: [127-17-3]  
Molecular formula:  $C_3H_4O_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 20mmol/l  
Phosphate buffer(pH7)=50/50

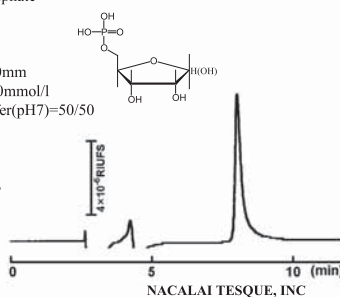
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFS  
Sample conc.: 1.0mg/ml  
Injection volume: 2.0µl  
Retention time: 3.97min  
Capacity factor: 0.39



### COSMOSIL Chromatogram Index

Sample: Ribose-5-phosphate  
CAS No.: [4300-28-1]  
Molecular formula:  $C_5H_{11}O_8P$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 20mmol/l  
Phosphate buffer(pH7)=50/50

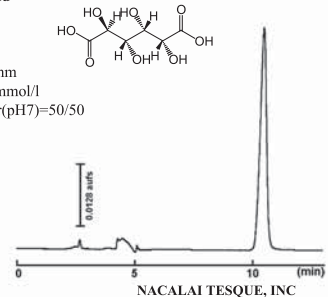
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: RI  
Attenuation:  $4 \times 10^{-5}$  RIU/FS  
Sample conc.: 10.0mg/ml  
Injection volume: 5.0µl  
Retention time: 8.02min  
Capacity factor: 2.06



### COSMOSIL Chromatogram Index

Sample: D-Saccharic Acid  
CAS No.: [87-73-0]  
Molecular formula:  $C_6H_{10}O_8$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50

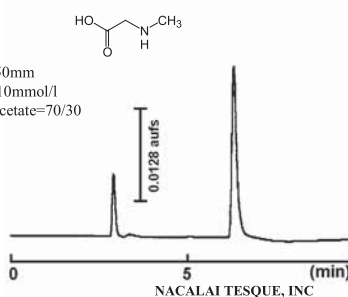
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 2.0µl  
Retention time: 10.48min  
Capacity factor: 2.69



### COSMOSIL Chromatogram Index

Sample: Sarcosine  
CAS No.: [107-97-1]  
Molecular formula:  $C_3H_7NO_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=70/30

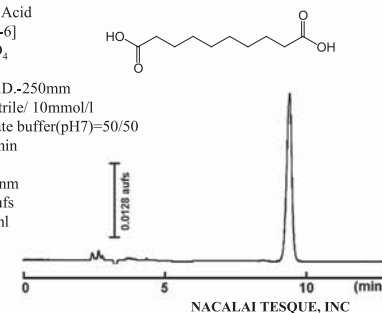
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV 210nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 1.0µl  
Retention time: 6.30min  
Capacity factor: 1.40



### COSMOSIL Chromatogram Index

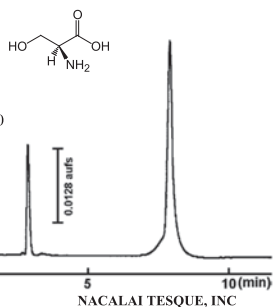
Sample: Sebacic Acid  
CAS No.: [111-20-6]  
Molecular formula:  $C_{18}H_{34}O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50

Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 5.0mg/ml  
Injection volume: 1.5µl  
Retention time: 9.43min  
Capacity factor: 2.28



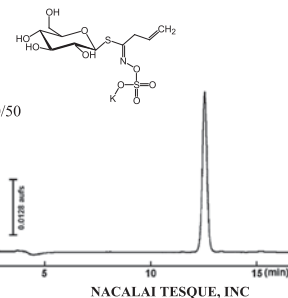
### COSMOSIL Chromatogram Index

Sample: L-Serine  
CAS No.: [56-45-1]  
Molecular formula:  $C_3H_7NO_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 aufs  
Sample conc.: 10.0mg/ml  
Injection volume: 2.0µl  
Retention time: 7.92min  
Capacity factor: 2.01



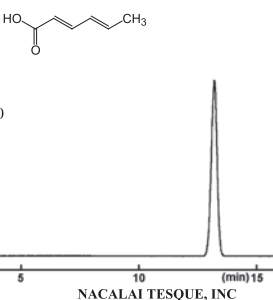
### COSMOSIL Chromatogram Index

Sample: Sinigrin  
CAS No.: [3952-98-5]  
Molecular formula:  $C_{16}H_{19}KNO_9S_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 aufs  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 12.57min  
Capacity factor: 3.38



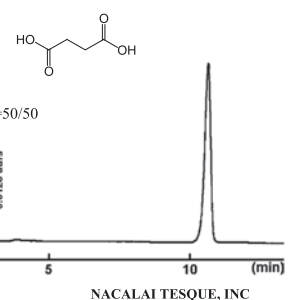
### COSMOSIL Chromatogram Index

Sample: Sorbic Acid  
CAS No.: [110-44-1]  
Molecular formula:  $C_8H_8O_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 aufs  
Sample conc.: 0.1mg/ml  
Injection volume: 0.5µl  
Retention time: 13.19min  
Capacity factor: 3.59



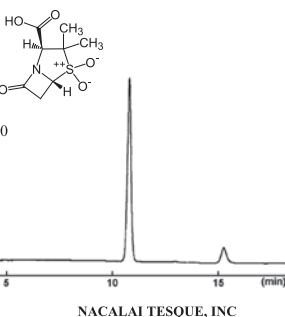
### COSMOSIL Chromatogram Index

Sample: Succinic Acid  
CAS No.: [110-15-6]  
Molecular formula:  $C_4H_6O_4$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 aufs  
Sample conc.: 10.0mg/ml  
Injection volume: 0.5µl  
Retention time: 10.64min  
Capacity factor: 2.74



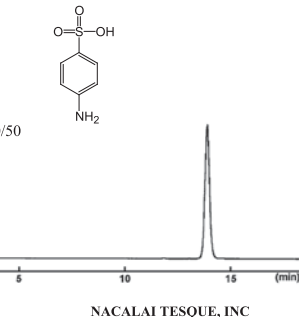
### COSMOSIL Chromatogram Index

Sample: Sulbactam  
CAS No.: [68373-14-8]  
Molecular formula:  $C_8H_{11}NO_5S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 aufs  
Sample conc.: 5.0mg/ml  
Injection volume: 0.5µl  
Retention time: 10.86min  
Capacity factor: 2.81



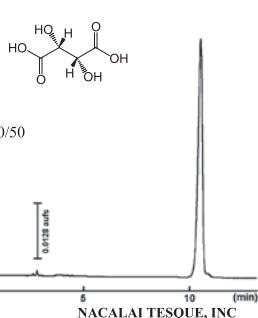
### COSMOSIL Chromatogram Index

Sample: Sulfamic acid  
CAS No.: [121-57-3]  
Molecular formula:  $C_6H_7NO_3S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 aufs  
Sample conc.: 0.10mg/ml  
Injection volume: 1.0µl  
Retention time: 13.87min  
Capacity factor: 3.87



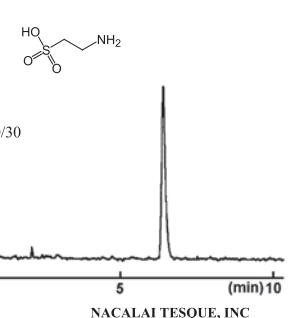
### COSMOSIL Chromatogram Index

Sample: L-(+)-Tartaric Acid  
CAS No.: [87-69-4]  
Molecular formula:  $C_4H_6O_6$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 aufs  
Sample conc.: 10.0mg/ml  
Injection volume: 1.5µl  
Retention time: 10.52min  
Capacity factor: 2.70



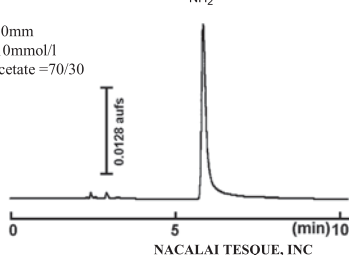
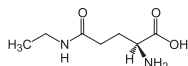
### COSMOSIL Chromatogram Index

Sample: Taurine  
CAS No.: [107-35-7]  
Molecular formula:  $C_2H_7NO_3S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: ELSD  
Attenuation: Gain=6, Atten=8  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 6.40min  
Capacity factor: 1.25



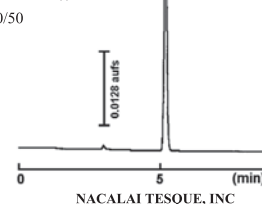
### COSMOSIL Chromatogram Index

Sample: L-Theanine  
CAS No.: [3081-61-6]  
Molecular formula:  $C_7H_{14}N_2O_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV220 nm  
Attenuation: 0.128 auFS  
Sample conc.: 5.0mg/ml  
Injection volume: 0.5µl  
Retention time: 5.89min  
Capacity factor: 1.21



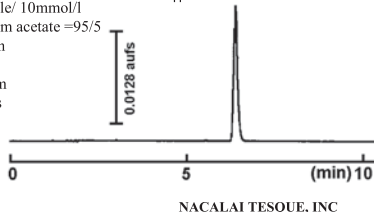
### COSMOSIL Chromatogram Index

Sample: 2-Thiobarbituric Acid  
CAS No.: [504-17-6]  
Molecular formula:  $C_4H_4N_2O_2S$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Phosphate buffer(pH7)=50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.1mg/ml  
Injection volume: 0.5µl  
Retention time: 5.18min  
Capacity factor: 0.82



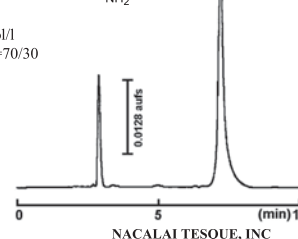
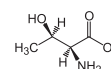
### COSMOSIL Chromatogram Index

Sample: 2-Thiouracil  
CAS No.: [141-90-2]  
Molecular formula:  $C_4H_4N_2OS$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =95/5  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV260 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.1mg/ml  
Injection volume: 0.5µl  
Retention time: 6.38min  
Capacity factor: 1.11



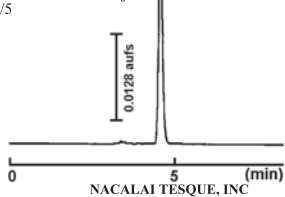
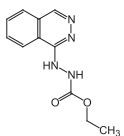
### COSMOSIL Chromatogram Index

Sample: L-Threonine  
CAS No.: [72-19-5]  
Molecular formula:  $C_4H_9NO_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 10.0mg/ml  
Injection volume: 2.0µl  
Retention time: 7.19min  
Capacity factor: 1.73



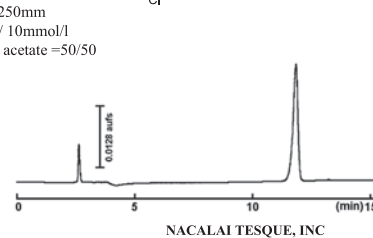
### COSMOSIL Chromatogram Index

Sample: Todalazine  
CAS No.: [14679-73-3]  
Molecular formula:  $C_{11}H_{13}N_3O_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =95/5  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV240 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.5mg/ml  
Injection volume: 0.5µl  
Retention time: 4.56min  
Capacity factor: 0.51



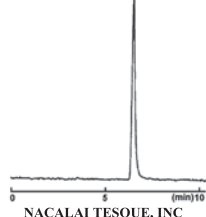
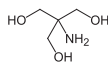
### COSMOSIL Chromatogram Index

Sample: Trichloroacetic Acid  
CAS No.: [76-03-9]  
Molecular formula:  $C_2HCl_3O_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =50/50  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV210 nm  
Attenuation: 0.128 auFS  
Sample conc.: 1.0mg/ml  
Injection volume: 1.0µl  
Retention time: 11.83min  
Capacity factor: 3.17



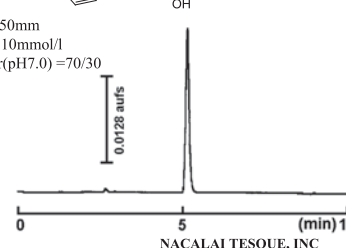
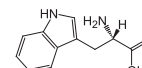
### COSMOSIL Chromatogram Index

Sample: Tris(hydroxymethyl)aminomethane  
CAS No.: [77-86-1]  
Molecular formula:  $C_4H_{11}NO_3$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Ammonium acetate =80/20  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: ELSD  
Attenuation: Gain=6, Atten=8  
Sample conc.: 2.0mg/ml  
Injection volume: 1.0µl  
Retention time: 6.47min  
Capacity factor: 1.48



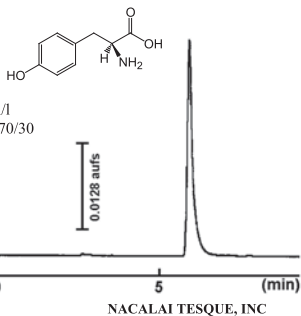
### COSMOSIL Chromatogram Index

Sample: L-Tryptophan  
CAS No.: [73-22-3]  
Molecular formula:  $C_{11}H_{12}N_2O_2$   
Column: HILIC  
Column size: 4.6mm I.D.-250mm  
Mobile phase: Acetonitrile/ 10mmol/l  
Citrate buffer(pH7.0)=70/30  
Flow rate: 1.0 ml/min  
Temperature: 30°C  
Detection: UV254 nm  
Attenuation: 0.128 auFS  
Sample conc.: 0.5mg/ml  
Injection volume: 0.5µl  
Retention time: 5.14min  
Capacity factor: 0.95



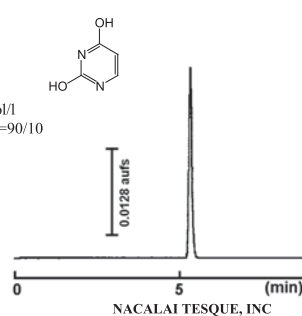
### COSMOSIL Chromatogram Index

Sample: L-Tyrosine  
 CAS No.: [60-18-4]  
 Molecular formula:  $C_9H_9NO_3$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=70/30  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV 254nm  
 Attenuation: 0.128 au/s  
 Sample conc.: 5.0mg/ml  
 Injection volume: 1.0µl  
 Retention time: 5.92min  
 Capacity factor: 1.25



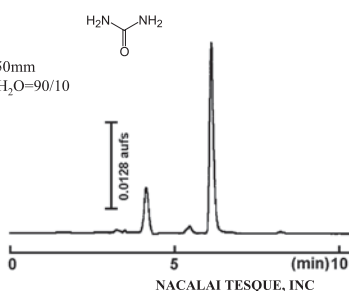
### COSMOSIL Chromatogram Index

Sample: Uracil  
 CAS No.: [66-22-8]  
 Molecular formula:  $C_4H_4N_2O_2$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV260 nm  
 Attenuation: 0.128 au/s  
 Sample conc.: 0.1mg/ml  
 Injection volume: 0.5µl  
 Retention time: 5.33min  
 Capacity factor: 0.84



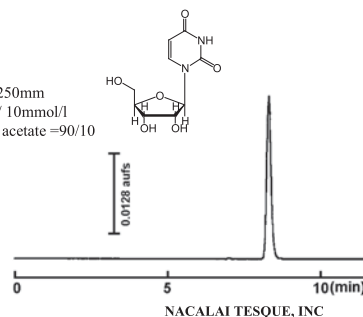
### COSMOSIL Chromatogram Index

Sample: Urea  
 CAS No.: [57-13-6]  
 Molecular formula:  $CH_4N_2O$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/  $H_2O$ =90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV210 nm  
 Attenuation: 0.128 au/s  
 Sample conc.: 10.0mg/ml  
 Injection volume: 2.0µl  
 Retention time: 6.12min  
 Capacity factor: 1.15



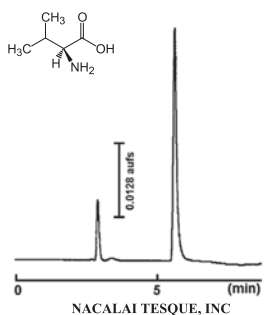
### COSMOSIL Chromatogram Index

Sample: Uridine  
 CAS No.: [58-96-8]  
 Molecular formula:  $C_9H_{12}N_2O_6$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV260 nm  
 Attenuation: 0.128 au/s  
 Sample conc.: 0.1mg/ml  
 Injection volume: 1.0µl  
 Retention time: 8.30min  
 Capacity factor: 1.86



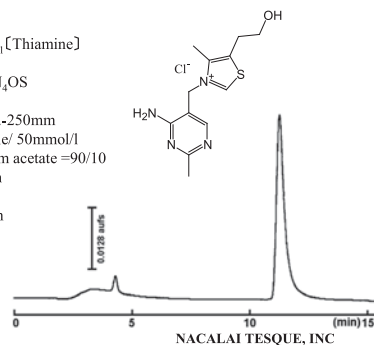
### COSMOSIL Chromatogram Index

Sample: L-Valine  
 CAS No.: [72-18-4]  
 Molecular formula:  $C_6H_{11}NO_2$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate=70/30  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV210 nm  
 Attenuation: 0.128 au/s  
 Sample conc.: 10.0mg/ml  
 Injection volume: 1.0µl  
 Retention time: 5.63min  
 Capacity factor: 1.14



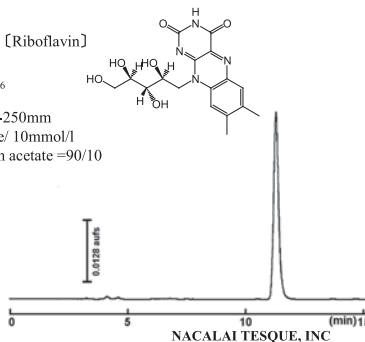
### COSMOSIL Chromatogram Index

Sample: Vitamin B<sub>1</sub> [Thiamine]  
 CAS No.: [67-03-8]  
 Molecular formula:  $C_{12}H_{17}ClN_4OS$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 50mmol/l Ammonium acetate =90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220 nm  
 Attenuation: 0.128 au/s  
 Sample conc.: 1.0mg/ml  
 Injection volume: 1.0µl  
 Retention time: 11.25min  
 Capacity factor: 2.93



### COSMOSIL Chromatogram Index

Sample: Vitamin B<sub>2</sub> [Riboflavin]  
 CAS No.: [83-88-5]  
 Molecular formula:  $C_{17}H_{20}N_4O_6$   
 Column: HILIC  
 Column size: 4.6mm I.D.-250mm  
 Mobile phase: Acetonitrile/ 10mmol/l Ammonium acetate =90/10  
 Flow rate: 1.0 ml/min  
 Temperature: 30°C  
 Detection: UV220 nm  
 Attenuation: 0.128 au/s  
 Sample conc.: 1.0mg/ml  
 Injection volume: 0.5µl  
 Retention time: 11.33min  
 Capacity factor: 2.92







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