

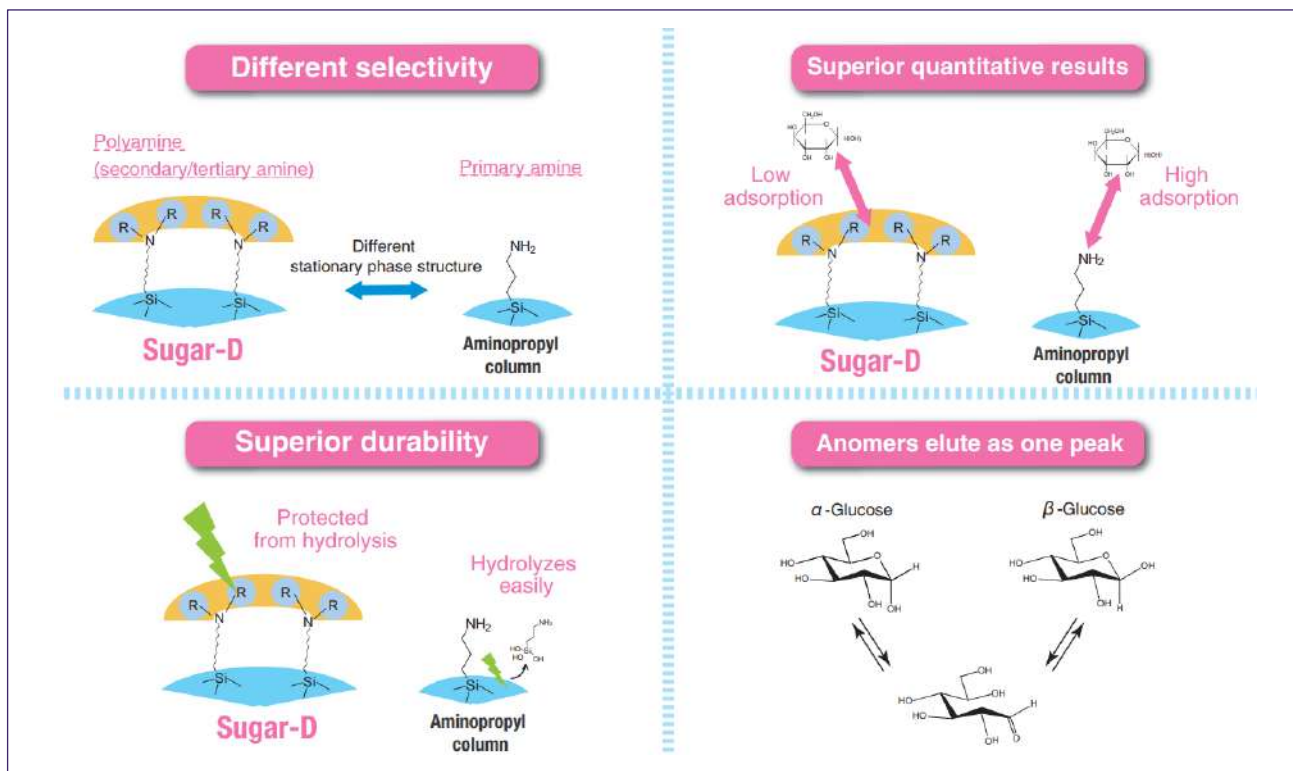


COSMOSIL Sugar-D

HPLC Column for Saccharide Analysis

- Different Selectivity from Aminopropyl Columns
- Superior Quantitative Result
- Superior Durability
- Anomers Remain Unseparated

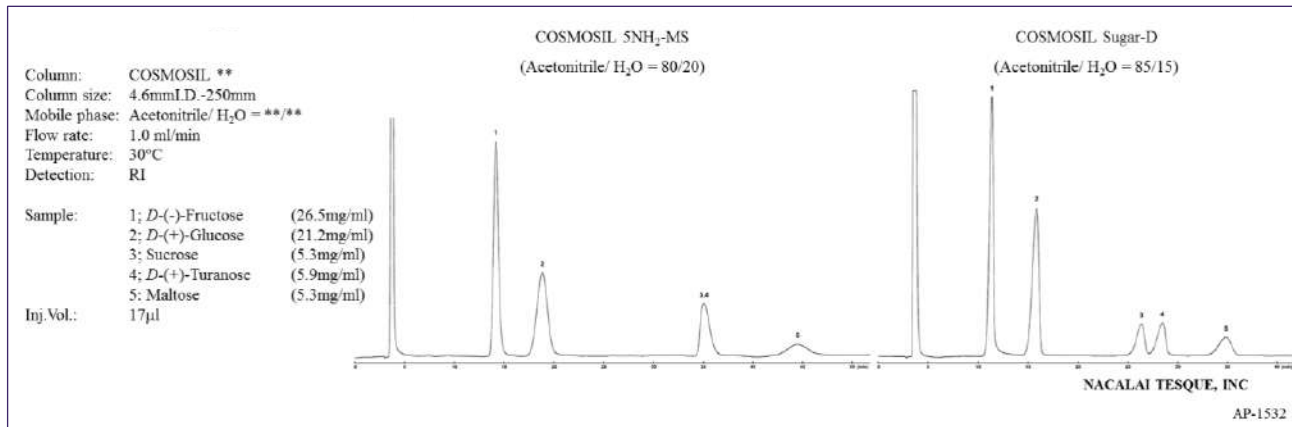
Aminopropyl columns are commonly used for analysis of monosaccharides and oligosaccharides; however, this type of column has several problems, including low durability, poor separation, and adsorption and peak tailing with some analytes. Carbamoyl based columns separate anomers, which may not be desirable. To solve these problems, we developed a specialty column for sugar analysis with high durability and performance that does not induce irreversible adsorption.



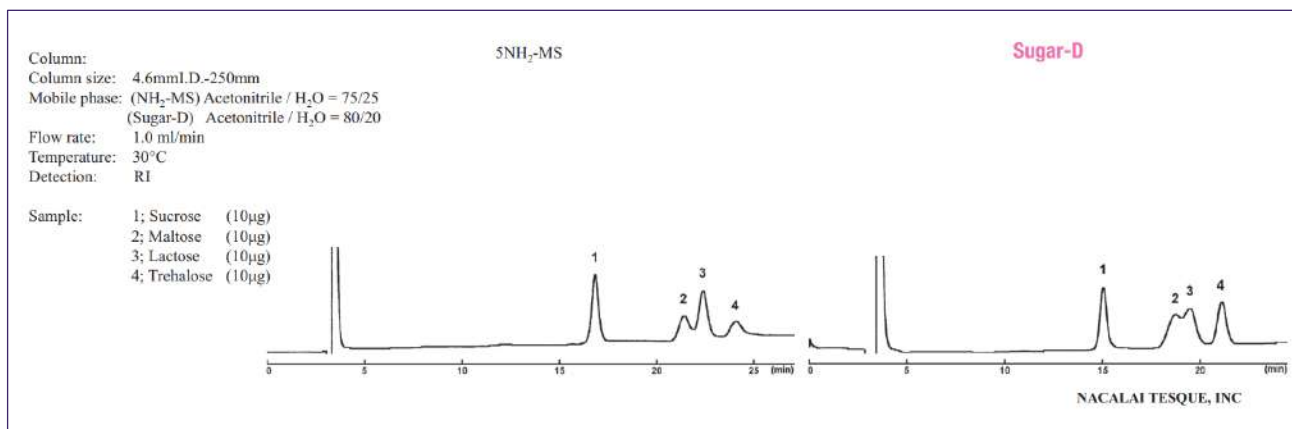
Different selectivity from aminopropyl columns

COSMOSIL Sugar-D has a polyamine-based stationary phase, which results in different selectivity from primary amine-based phases, such as aminopropyl.

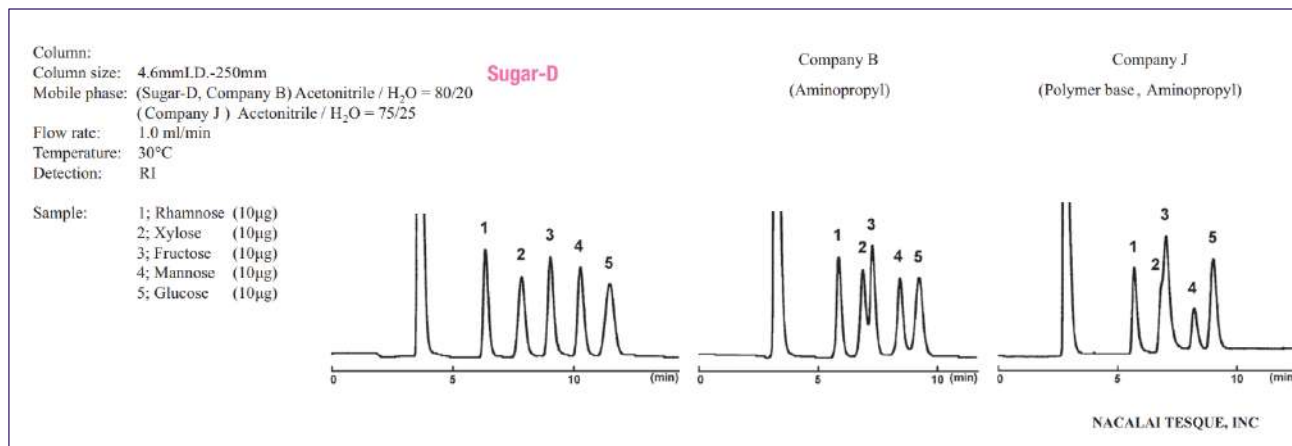
• Sucrose and Turanose



• Maltose and Lactose



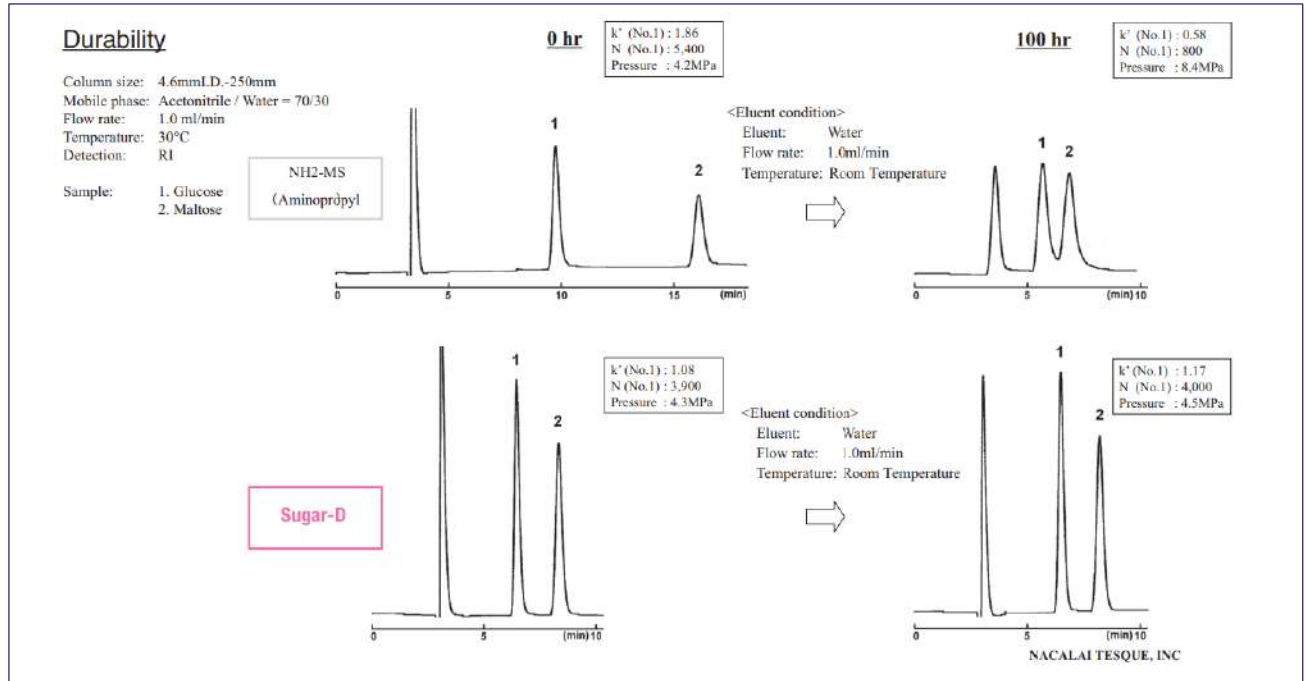
• Different selectivity compared to competitor aminopropyl column



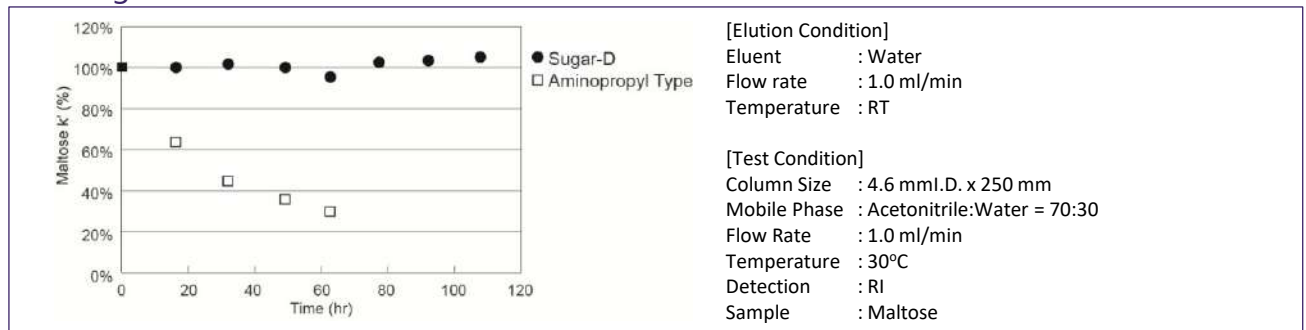
Superior durability

The stationary phases of COSMOSIL Sugar-D is not easily hydrolyzed, so even using water as the mobile phase does not affect it much.

• Comparison to aminopropyl columns

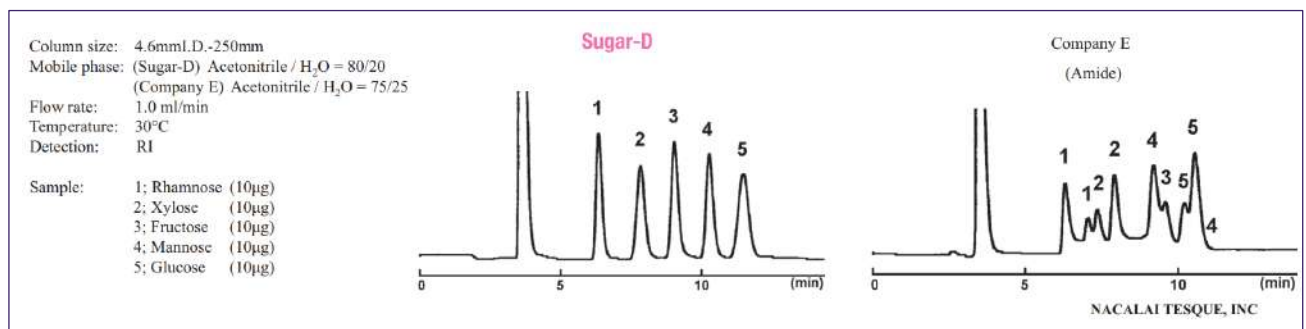


• Change in retention factor



Anomers remain unseparated

When analyzing sugars with amide columns, anomers may separate unless harsh conditions, such as high temperature and basic solvents, are employed. COSMOSIL Sugar-D does not separate anomers, even under mild conditions.

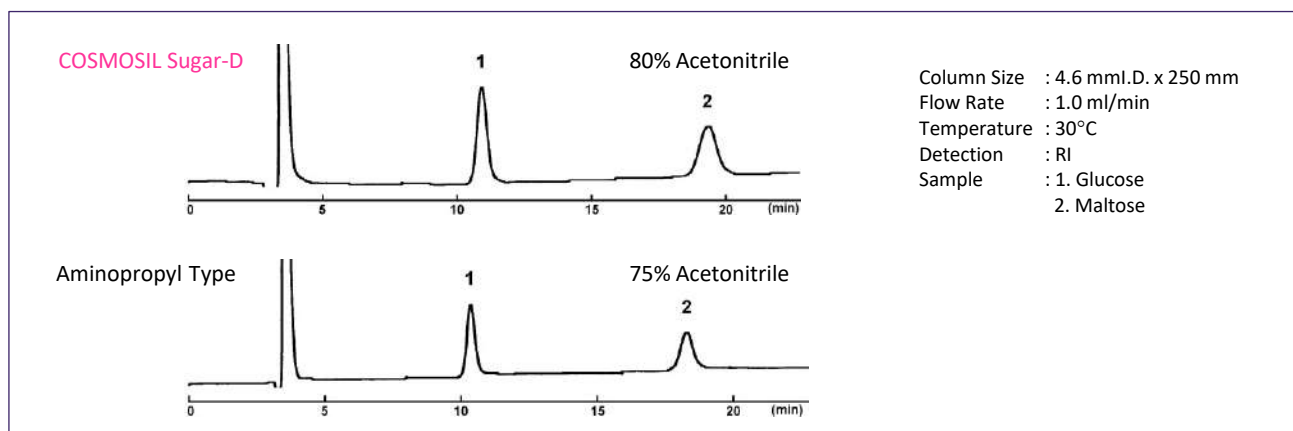


FAQ

Mobile Phase	
Q1	Usable pH Range
A1	When using a buffer, a pH of 2 to 7.5 is recommended. Under acidic conditions, retention generally becomes shorter, so a neutral pH is recommended.
Q2	Buffers
A2	If a column is used with a buffer, we recommend using it exclusively for buffered mobile phases. Buffers and acids can permanently change separation characteristics, leading to unexpected behavior when using a non-buffered mobile phase. Always filter buffers with a 0.5 µm or finer filter before use.
Q3	Organic Solvent
A3	Please use an aprotic, water-soluble organic solvent, such as acetonitrile. Protic solvents like methanol may cause shortened retention.
Q4	Difference in Retention from Aminopropyl Columns
A4	Compared to conventional aminopropyl columns, Sugar-D exhibits slightly lower retention. When transferring methods from aminopropyl columns, increasing the organic solvent ratio by 5 to 10% should result in similar retention time. (See below for an example.)
Column Conditioning	
Q1	Equilibration Time
A1	Compared to C18 columns, HILIC mode columns (including Sugar-D) require longer equilibration time for reproducible analysis.
Q2	Retention Time
A2	During initial use, a column's retention may increase gradually. To stabilize, wash overnight with 100% water.
Washing and Storage	
Q1	Washing
A1	The baseline may destabilize due to impurities adsorbed to the column. To resolve this, please wash with 50:50 acetonitrile/water. If the problem persists, wash again with an increased ratio of water (up to 100%).
Q2	Storage
A2	Wash with a solvent that does not contain buffer or acid, then replace with 90:10 acetonitrile/water. Tightly plug the ends and store in a cool place at room temperature.

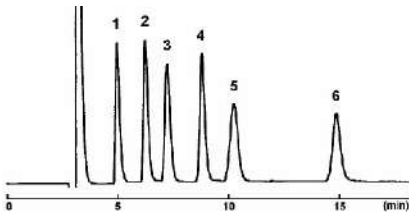
Retention Comparison

The conventional aminopropyl column is slightly more retentive than Sugar-D. The retention time can be adjusted by increasing the concentration of acetonitrile in the mobile phase by 5%-10%.



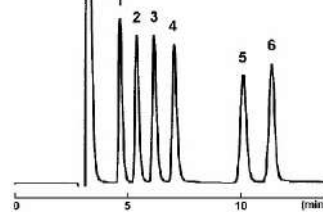
• Separation of Saccharides

Mono- and Oligosaccharides



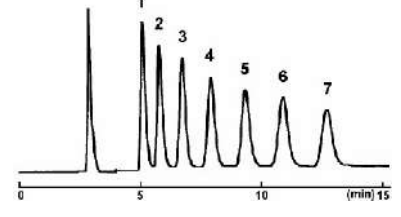
Column Size : 4.6 mm I.D. x 250 mm
 Mobile Phase : Acetonitrile:Water = 75:25
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : 1. Rhamnose (10 µg)
 2. Fructose (10 µg)
 3. Glucose (10 µg)
 4. Sucrose (10 µg)
 5. Maltose (10 µg)
 6. Raffinose (10 µg)

Sugar Alcohols



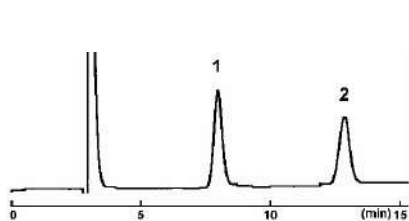
Column Size : 4.6 mm I.D. x 250 mm
 Mobile Phase : Acetonitrile:Water = 75:25
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : 1. Glycerol (10 µg)
 2. meso-Erythriol (10 µg)
 3. Xylitol (10 µg)
 4. Glucitol (10 µg)
 5. Maltitol (10 µg)
 6. Inositol (10 µg)

Oligomaltoses



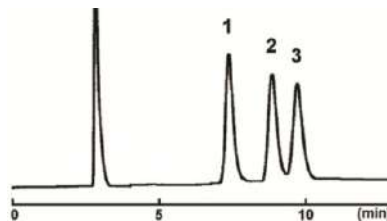
Column Size : 4.6 mm I.D. x 250 mm
 Mobile Phase : Acetonitrile:Water = 65:35
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : 1. Glucose (10 µg)
 2. Maltose (10 µg)
 3. Maltotriose (10 µg)
 4. Maltotetraose (10 µg)
 5. Maltopentaose (10 µg)
 6. Maltohexaose (10 µg)
 7. Maltoheptaose (10 µg)

Acidic Sugars



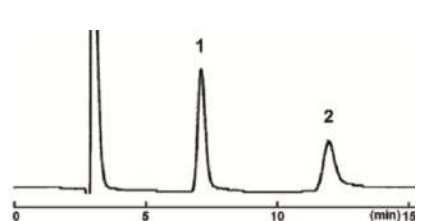
Column Size : 4.6 mm I.D. x 250 mm
 Mobile Phase : Acetonitrile: 20 mmol/l PBS (pH7) = 70:30
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : 1. Glucose (10 µg)
 2. Glucuronic Acid (10 µg)

Cyclodextrins



Column Size : 4.6 mm I.D. x 250 mm
 Mobile Phase : Acetonitrile: Water = 65:35
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : 1. α-Cyclodextrin (10 µg)
 2. β-Cyclodextrin (10 µg)
 3. γ-Cyclodextrin (10 µg)

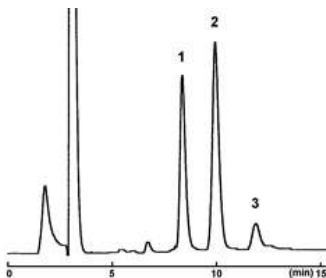
Amino Sugars



Column Size : 4.6 mm I.D. x 250 mm
 Mobile Phase : Acetonitrile: 20 mmol/l PBS (pH7) = 70:30
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : 1. Mannose (10 µg)
 2. Mannosamine (10 µg)

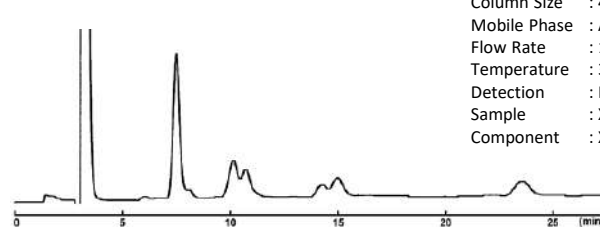
• Health Food Compositions

Fructo Oligosaccharides



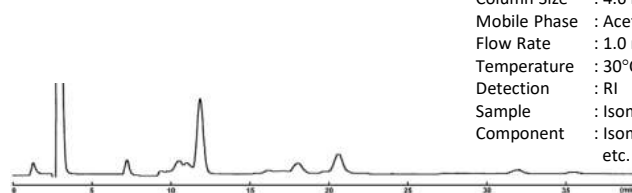
Column Size : 4.6 mm I.D. x 250 mm
 Mobile Phase : Acetonitrile: Water = 70:30
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : Fructo Oligosaccharides (50 µg)
 Component : 1. 1-Ketose
 2. Nystose
 3. 1-Frucrofuransyl-D-nystose

Xylo Oligosaccharides



Column Size : 4.6 mm I.D. x 250 mm
 Mobile Phase : Acetonitrile: Water = 75:25
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : Xylo Oligosaccharides (50 µg)
 Component : Xylobiose, Xylotriose, etc.

Isomalto Oligosaccharides



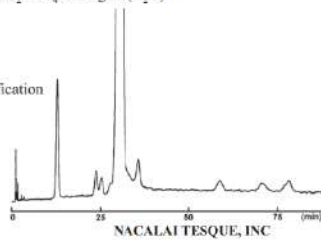
Column Size : 4.6 mm I.D. x 250 mm
 Mobile Phase : Acetonitrile: Water = 75:25
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : Isomalto Oligosaccharides (50 µg)
 Component : Isomaltose, Isomaltotriose, Panose, etc.

• Drugs

Type 2 Diabetes Drug: Acarbose

Column: COSMOSIL Sugar-D
 Column size: 4.6mm I.D.-250mm
 Mobile phase: Acetonitrile/ Buffer = 82/18
 Buffer: KH_2PO_4 600mg, Na_2HPO_4 279mg / L(H_2O)
 Flow rate: 2.5 ml/min
 Temperature: 40°C
 Detection: UV210nm

Sample: Acarbose for peak identification
 (20mg/ml)
 Inj. Vol.: 10µl

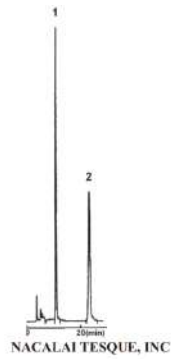


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Anticancer Drugs

Column: Sugar-D
 Column size: 4.6mm I.D.-150mm
 Mobile phase: Acetonitrile/ H_2O = 80/20
 Flow rate: 0.3 ml/min
 Temperature: Room temperature
 Detection: UV226nm

Sample: 1; Cisplatin (CDDP) (1.46µg)
 2; Guanosine (0.50µg)



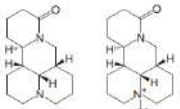
Data courtesy of Dr.K.Kofuji, Hokuriku University

NACALAI TESQUE, INC
 AP-0380

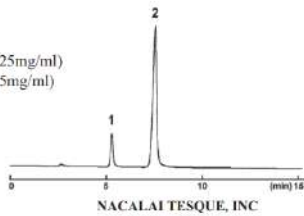
Herbal Medicine Components (Matrine, Oxymatrine)

Column: COSMOSIL Sugar-D
 Column size: 4.6mm I.D.-250mm
 Mobile phase: Acetonitrile/ 2-Propanol / 3% (w/v) Phosphoric acid
 = 85/ 5/ 10
 Flow rate: 1.0 ml/min
 Temperature: 30°C
 Detection: UV210nm

Sample: 1; Matrine (0.025mg/ml)
 2; Oxymatrine (0.15mg/ml)
 Inj. Vol.: 5.0µl



1; Matrine 2; Oxymatrine

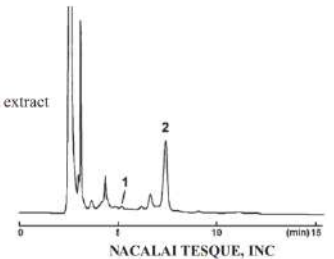


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Herbal Medicine Components (Matrine, Oxymatrine)

Column: COSMOSIL Sugar-D
 Column size: 4.6mm I.D.-250mm
 Mobile phase: Acetonitrile/ 2-Propanol / 3% (w/v) Phosphoric acid
 = 85/ 5/ 10
 Flow rate: 1.0 ml/min
 Temperature: 30 °C
 Detection: UV210nm

Sample: Sophora Subprostrata Root extract
 1; Matrine
 2; Oxymatrine
 Inj. Vol.: 5.0µl



Sample courtesy of a customer

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• Sugars in honey and syrup

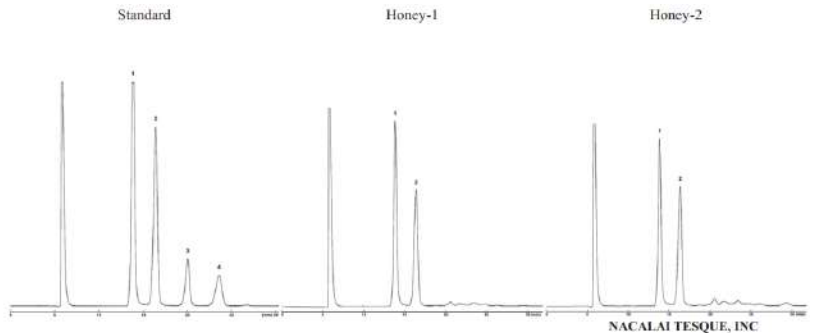
Honey

Column: COSMOSIL Sugar-D
 Column size: 4.6mm I.D.-250mm
 Mobile phase: Acetonitrile/ H_2O = 75/25
 Flow rate: 0.5 ml/min
 Temperature: 30 °C
 Detection: RI

Sample: Honey (50mg/ml)

Standard
 1; D(-)-Fructose (30mg/ml)
 2; D(+)-Glucose (24mg/ml)
 3; Sucrose (6mg/ml)
 4; Maltose (6mg/ml)

Test solution: Acetonitrile/ H_2O = 40/60
 Inj. Vol.: 15µl

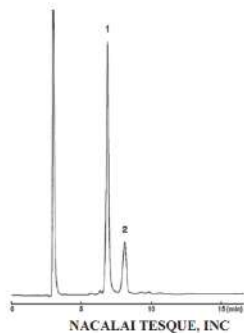


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 AP-1530

Agave Syrup

Column: COSMOSIL Sugar-D
 Column size: 4.6mm I.D.-250mm
 Mobile phase: Acetonitrile/ H_2O = 75/25
 Flow rate: 1.0 ml/min
 Temperature: 30 °C
 Detection: RI

Sample: Agave syrup (50mg/ml)
 1; D(-)-Fructose
 2; D(+)-Glucose
 Inj. Vol.: 5.0µl

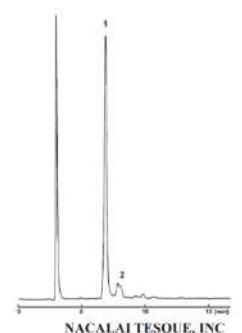


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 AP-1540

Apple Syrup

Column: COSMOSIL Sugar-D
 Column size: 4.6mm I.D.-250mm
 Mobile phase: Acetonitrile/ H_2O = 75/25
 Flow rate: 1.0 ml/min
 Temperature: 30 °C
 Detection: RI

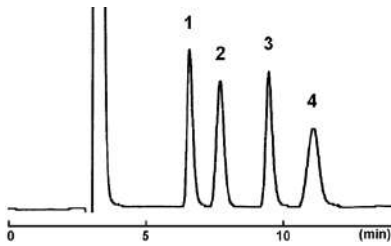
Sample: Apple syrup (50mg/ml)
 1; D(-)-Fructose
 2; D(+)-Glucose
 Inj. Vol.: 5.0µl



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 AP-1539

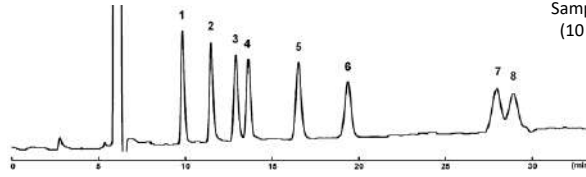
Sugars in drinks

Components of SOFT DRINK



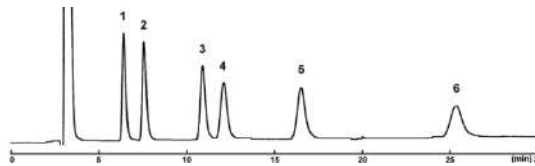
Column Size : 4.6 mmI.D. x 250 mm
 Mobile Phase : Acetonitrile: Water = 75:25
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : 1. Fructose (10 µg)
 2. Glucose (10 µg)
 3. Sucrose (10 µg)
 4. Maltose (10 µg)

Components of ISOTONIC DRINK



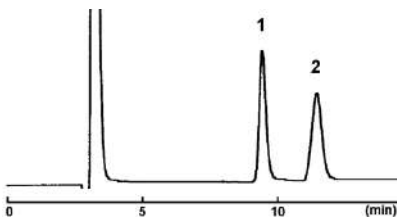
Column Size : (4.6 mmI.D. x 250 mm) x2
 Mobile Phase : Acetonitrile: Water = 75:25
 Flow Rate : 1.0 ml/min
 Temperature : 50°C
 Detection : RI
 Sample : 1. *meso*-Erythritol
 (10 µg each)
 2. Fructose
 3. Glucitol
 4. Glucose
 5. Sucrose
 6. Maltose
 7. Maltotriitol
 8. Maltotiose

Components of GUM



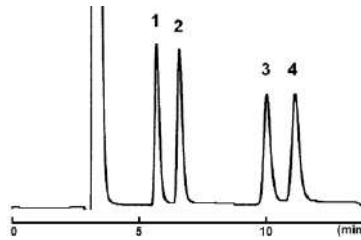
Column Size : 4.6 mmI.D. x 250 mm
 Mobile Phase : Acetonitrile: Water = 75:25
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : 1. Xylitol
 (10 µg each)
 2. Mannitol
 3. Maltitol
 4. Palatinit
 5. Maltotriitol
 6. Maltotetraitol

Components of CHOCOLATE



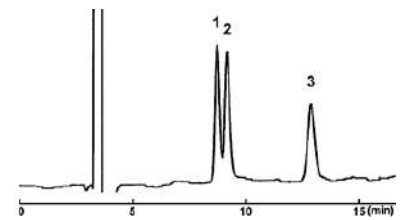
Column Size : 4.6 mmI.D. x 250 mm
 Mobile Phase : Acetonitrile: Water = 75:25
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : 1. Sucrose (10 µg)
 2. Lactose (10 µg)

Components of ANTICARIES AGENTS



Column Size : 4.6 mmI.D. x 250 mm
 Mobile Phase : Acetonitrile: Water = 75:25
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : 1. *meso*-Erythritol (10 µg)
 2. Xylitol (10 µg)
 3. Palatinose (10 µg)
 4. Maltitol (10 µg)

Components of INFUSION



Column Size : 4.6 mmI.D. x 250 mm
 Mobile Phase : Acetonitrile: Water = 75:25
 Flow Rate : 1.0 ml/min
 Temperature : 30°C
 Detection : RI
 Sample : 1. Xylitol (10 µg)
 2. Fructose (10 µg)
 3. Glucose (10 µg)

Ordering Information

For more information, please visit our website by scanning the QR code below.



COSMOSIL Sugar-D



COSMOSIL PBr
 COSMOCORE PBr



COSMOSIL Cholester
 COSMOCORE Cholester



COSMOSIL Application
 (HPLC / UHPLC / SFC)

