Aminex™ HPLC Columns

Aminex HPLC Columns, which are packed with a polymer-based matrix, are the research and industry standard for the analysis of carbohydrates, alcohols, and organic acids in food and beverage, biochemical, biofuel, biomedical, and biotechnology applications. These columns allow the use of simple isocratic methods and elution with water, organically modified water, or dilute acid. Minimal sample preparation is required, filtration through a 0.45 µm filter is usually sufficient, and no derivatization is necessary.

Three of our most popular columns and applications are highlighted here. A comprehensive list of research applications and column choices is provided in Table 1.

The Aminex HPX-87C Column is the column of choice for most general sweetener analysis. This column is optimized for analyzing monosaccharides and also provides class separation of di-, tri-, and tetrasaccharides. It is used primarily for the quantitation of glucose and fructose in high fructose corn syrup, and for general monosaccharide analysis.

Conditions	
Column	Aminex HPX-87C Column, 250 × 4.0 mm
Sample	Sugar alcohol standards
Eluant	30% acetonitrile/H_2O
Flow rate	0.2 ml/min
Temperature	70°C
Detection	RI at 64x

Peaks

1. Glucose
2. Erythritol
3. Ribitol and pentaerythritol
4. Mannitol
5. Arabitol
6. Galactitol
7. Xylitol
8. Sorbitol
9. Iditol

Separation of sugar alcohols on the Aminex HPX-87C Column containing added corn syrup. RI, refractive index.

BIO-RAD

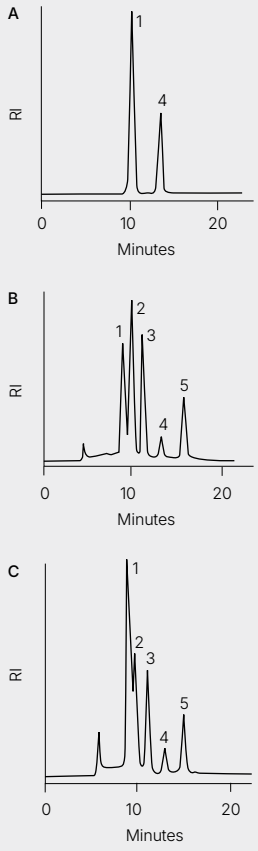
The Aminex HPX-87P Column provides excellent resolution of sucrose, lactose, and fructose in dairy products. It is useful for analyzing samples that contain different types of sweeteners.

Conditions

Column	Aminex HPX-87P Column, 300 × 7.8 mm
Sample	A. Plain yogurt, diluted 1:1, 20 µl B. Strawberry yogurt, diluted 1:2, 20 µl C. Blueberry yogurt, diluted 1:1, 20 µl
Eluant	H_2O
Flow rate	0.6 ml/min
Temperature	85°C
Detection	RI at 32x

Peaks

1. Sucrose (and maltose in C)
2. Lactose
3. Glucose
4. Galactose
5. Fructose



Carbohydrate profile of different types of yogurts. A, plain yogurt containing natural lactose and galactose; **B**, strawberry yogurt with corn sweetener added for flavor enhancement; and **C**, blueberry yogurt containing added corn syrup. RI, refractive index.

The Aminex HPX-87H Column is used for the analysis of carbohydrates found in solution with carboxylic acids, volatile fatty acids, short chain fatty acids, alcohols, ketones, and many neutral metabolic by-products. Most often used for organic acid analysis, this hydrogen-form column is also useful for fermentation monitoring, biological fluid analysis, and acetylated amino sugar separations.

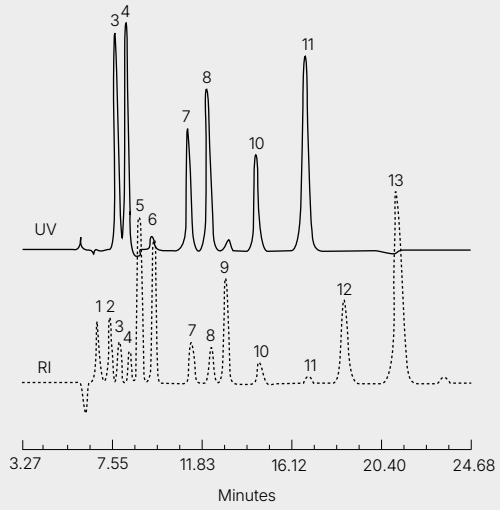
The Aminex HPX-87H Column is especially useful for profiling monosaccharides and organic acids simultaneously.

Conditions

Column	Aminex HPX-87H Column, 300 × 7.8 mm
Sample	Fermentation standards
Eluant	5 mM sulfuric acid
Flow rate	0.60 ml/min
Temperature	50°C
Detection	UV 210 nm RI

Peaks

1. Maltotriose
2. Maltose
3. Citric acid
4. Tartaric acid
5. Glucose
6. Fructose
7. Succinic acid
8. Lactic acid
9. Glycerol
10. Acetic acid
11. Pyroglutamic acid
12. Methanol
13. Ethanol



Fermentation standard separated on the Aminex HPX-87H Column.
The standard was detected with both a UV monitor and a refractometer. RI, refractive index; UV, ultraviolet.

Table 1. Aminex Column selection by application.

Phases Available	Applications	Description	Column
Monosaccharide	• Column of choice for monosaccharides and sugar alcohols from sweeteners, corn, and cane sugars • Class separation of di-, tri-, and tetrasaccharides • Primarily used for the quantitation of glucose and fructose, and for general monosaccharide analysis	8% crosslinked resin **calcium** ionic form Particle size: 9 µm pH range: 5–9 Column size: 300 × 7.8 mm	Aminex HPX-87C Catalog #1250095
Monosaccharide	• Analysis of carbohydrates found in solution with carboxylic acids, volatile fatty acids, short chain fatty acids, alcohols, ketones, and many neutral metabolic by-products • Most commonly used for organic acid analysis, fermentation monitoring, biological fluid analysis, acetylated amino sugar separations, and quantification of biomass to biofuels	8% crosslinked resin **hydrogen** ionic form Particle size: 9 µm pH range: 1–3 Column size: 300 × 7.8 mm	Aminex HPX-87H Catalog #1250140
Monosaccharide	• Monosaccharides and sugar alcohol analysis • Tailored for the separation of cellulose-derived monosaccharides • Analysis of pentoses and hexoses in wood products, especially cellobiose, glucose, xylose, galactose, arabinose, and mannose • Excellent resolution of sucrose, lactose, and fructose in dairy products	8% crosslinked resin **lead** ionic form Particle size: 9 µm pH range: 5–9 Column size: 300 × 7.8 mm	Aminex HPX-87P Catalog #1250098
Mono-, di-, and oligosaccharide	HPLC carbohydrate analysis column: • Optimized for analysis of mono- and disaccharides in starch hydrolysates • Provides high-resolution separations of oligosaccharides as large as DP-10	4% crosslinked resin **calcium** ionic form Particle size: 25 µm pH range: 5–9 Column size: 300 × 7.8 mm	Aminex HPX-42C Catalog #1250096
Mono-, di-, and oligosaccharide	HPLC carbohydrate analysis column: • Fast, high-resolution oligosaccharide analysis • Separates oligosaccharides as large as DP-11 in 25 min	4% crosslinked resin **silver** ionic form Particle size: 25 µm pH range: 6–8 Column size: 300 × 7.8 mm	Aminex HPX-42A Catalog #1250097
Mono-, di-, and oligosaccharide	HPLC carbohydrate analysis column: • Optimized for analysis of mono-, di-, and trisaccharides in samples such as corn syrup and brewing wort • High-quality separations of glucose, maltose, and maltotriose	8% crosslinked resin **potassium** ionic form Particle size: 9 µm pH range: 5–9 Column size: 300 × 7.8 mm	Aminex HPX-87K Catalog #1250142
Organic acid	• Separation of organic acids alone or in combination with carbohydrates, alcohols, fatty acids, or neutral compounds; separation of amino sugars • Analysis time: 20 min for most analyses • Sensitivity: nanogram level • Separation conditions: ambient temperature to 60˚C; flow rates of 0.4–1.0 ml/min • Column of choice when many compounds in a formulation must be analyzed or when high-resolution separations are required	8% crosslinked resin **hydrogen** ionic form Particle size: 9 µm pH range: 1–3 Column size: 300 × 7.8 mm	Aminex HPX-87H Catalog #1250140
Organic acid and alcohol	HPLC organic acid and alcohol column: • Optimized to resolve maltotriose, maltose, glucose, and fructose while separating acids and alcohols • Column of choice when analyzing sugars in a fermentation broth	8% crosslinked resin **hydrogen** ionic form Particle size: 9 µm pH range: 1–3 Column size: 150 × 7.8 mm	Fermentation monitoring Catalog #1250115
Fast carbohydrate	HPLC carbohydrate analysis column: • Designed for extremely fast separations of specific carbohydrates • Optimized for 5 min analysis of sucrose, glucose, galactose, and fructose	8% crosslinked resin **lead** ionic form Particle size: 9 µm pH range: 5–9 Column size: 100 × 7.8 mm	Fast carbohydrate analysis Catalog #1250105

continues

Table 1. Aminex Column selection by application (continued).

Phases Available	Applications	Description	Column
Fast acid, organic acid, and alcohol	HPLC organic acid and alcohol column: • Optimized for analysis of alcohols, glycols, and hydrophobic organic acids; rapid screening of fruit quality • Analysis time: decreased 4-fold when compared to research-length columns; analyses can be completed in 3–5 min • High-quality results: shorter column results in taller, narrower peaks with improved detection limits and smaller sample load requirements • Provides fast separations of specific organic acids	8% crosslinked resin **hydrogen** ionic form Particle size: 9 µm pH range: 1–3 Column size: 100 × 7.8 mm	Fast acid analysis Catalog #1250100
Sugar with high salt concentrations	• Optimized for sugar analysis in samples with high salt concentrations such as beet sugars and molasses • Compatible with salts, no need for desalting prior to analysis	8% crosslinked resin **sodium** ionic form Particle size: 9 µm pH range: 5–9 Column size: 300 × 7.8 mm	Aminex HPX-87N Catalog #1250143
Sugar alcohols and organic acids with carbohydrates	• Sugar analysis according to USP procedures • Appropriate for sugar alcohol separations and can be fine-tuned for organic acid analysis • Analysis of organic acids in combination with carbohydrates	8% crosslinked resin **calcium** ionic form Particle size: 9 µm pH range: 5–9 Column size: 250 × 4.0 mm	Aminex HPX-87C Catalog #1250094

HPLC, high performance liquid chromatography; USP, United States Pharmacopeia.

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