

The times they are a-changin', from 5um to 3um ... Unison series

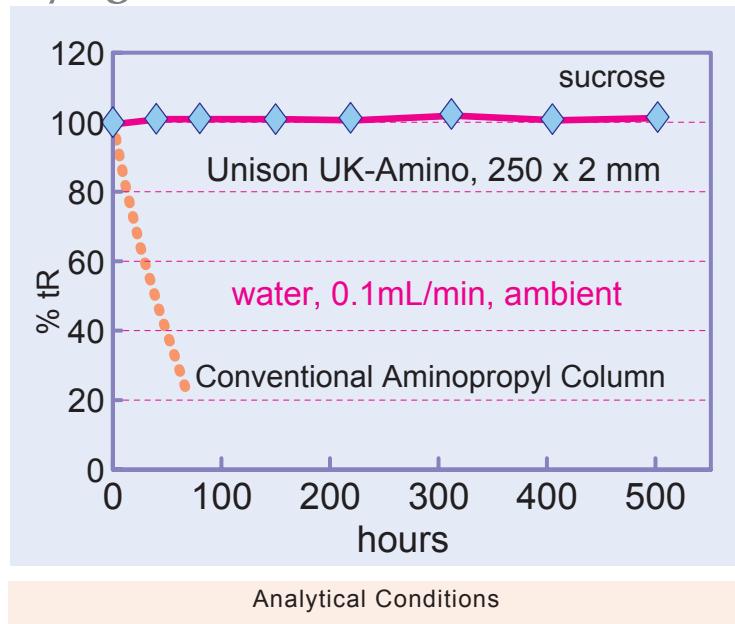
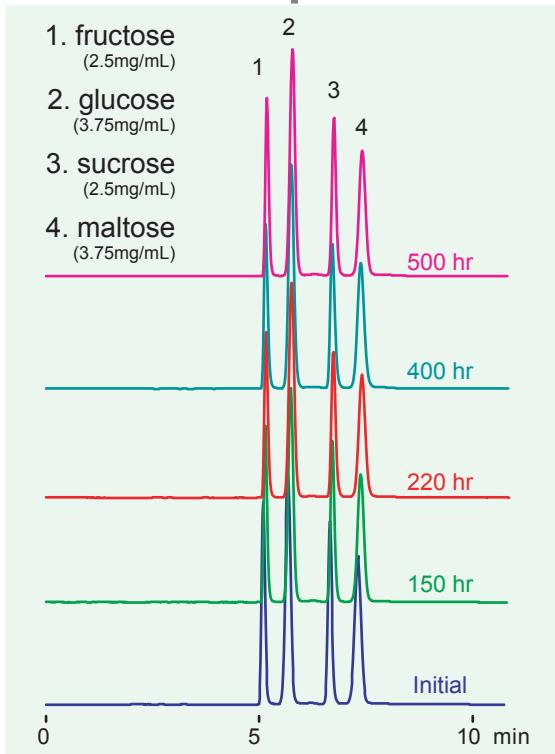
Aminopropyl type, Normal phase HPLC column

Unison UK-Amino

Revolutionary aqueous durability for aminopropyl phase
Aqueous to non-aqueous Normal Phase Separation
3um particle high-speed and superior resolution
LC-MS applicable

Pure spherical porous silica / 3um particle / Aminopropyl phase

Unequalled durability against water elution



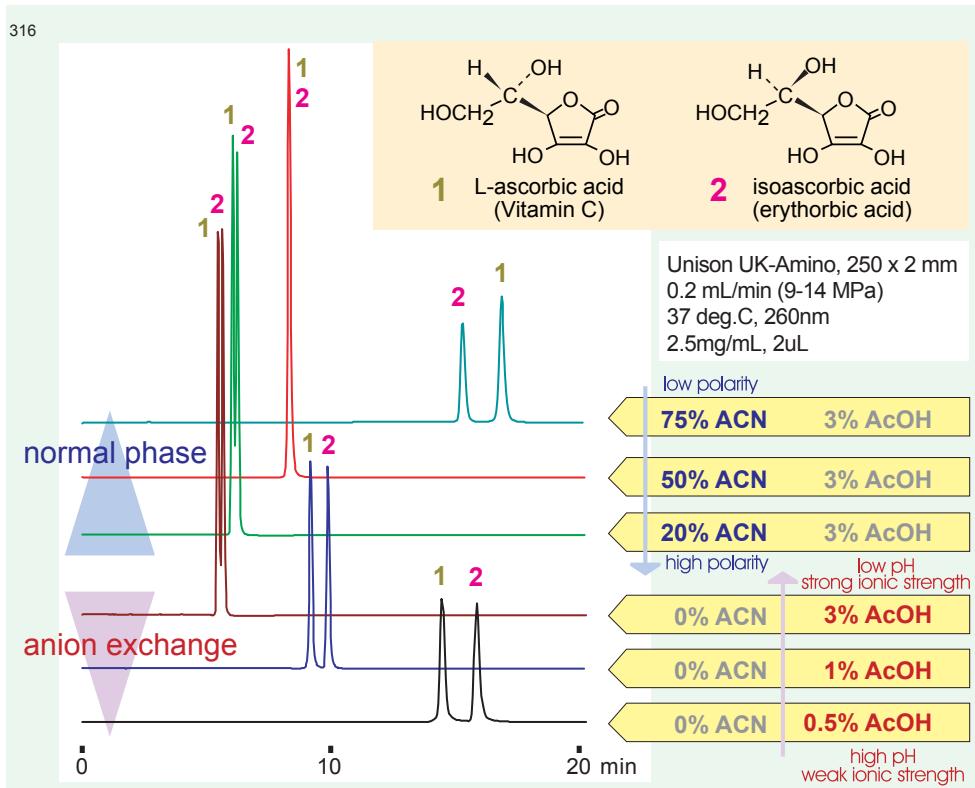
Aqueous durable silica-based aminopropyl columns have been used for a long time as a normal phase column for carbohydrate separation. However, these aminopropyl columns have a fatal flaw: "column bleeding" or the rapid deterioration in retention as a result of ligand desorption under aqueous elution.

Our newly-designed Unison UK-Amino offers a different approach from conventional columns: high durability against aqueous eluent. As the above chromatogram demonstrates, conventional columns experience a significant decline in retention when an aqueous mobile phase elutes through the column. UK-Amino, on the other hand, does not show any change in separation or retention. This is a significant development in the history of aminopropyl columns.

UK-Amino's design not only provides analytical power, but the 3um particle high-resolution column has other benefits including the minimization of LC-MS and LC-ELSD noise levels. UK-Amino can be applied to aqueous normal phases conditions, and separation optimization is possible while comparing to ODS columns using reversed-phase mode. One can expect significant results from this normal phase column of UK-Amino.

Normal Phase and Anion Exchange Modes

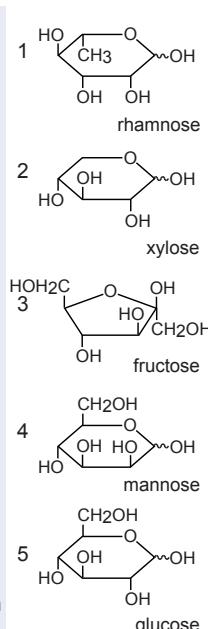
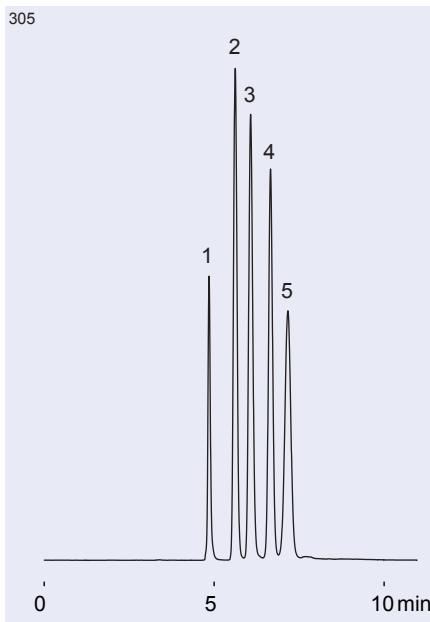
Aminopropyl stationary phases generally employ both a normal phase separation mode and an anion exchange mode derived from amino groups. There are two methods using Unison UK-Amino to separate ascorbic acid and its isomer isoascorbic acid (erythorbic acid).



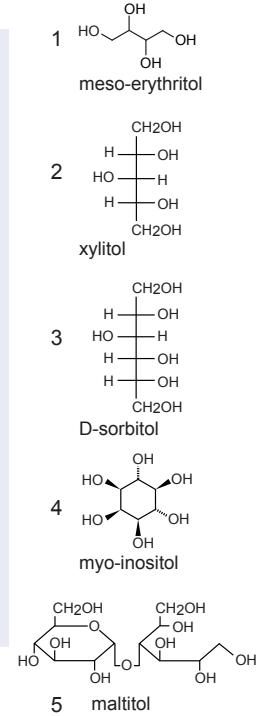
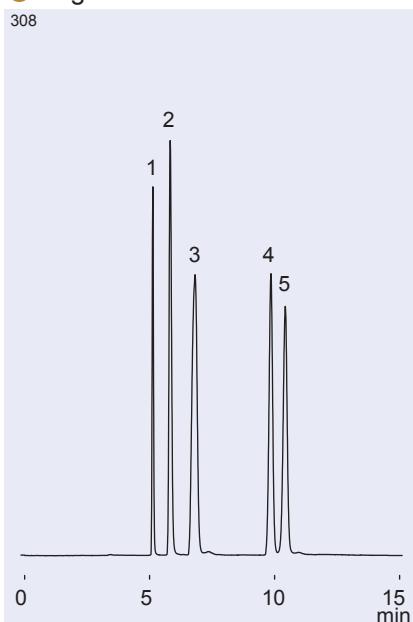
Normal Phase Separation of Saccharides

Unison UK-Amino provides excellent peak shape with 3um particle for hydrophilic monosaccharides and sugar alcohols separation.

Monosaccharides

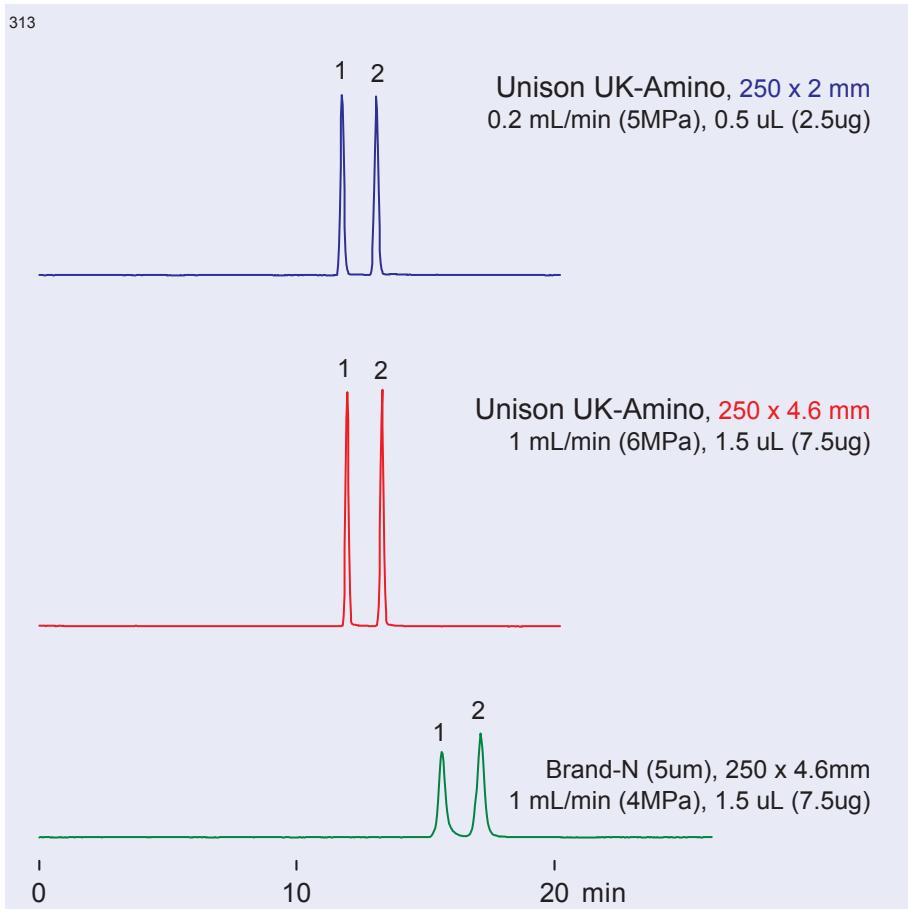


Sugar Alcohols

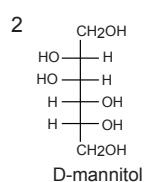
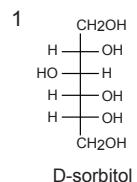


Normal Phase Separation of Saccharides

Sorbitol and Mannitol

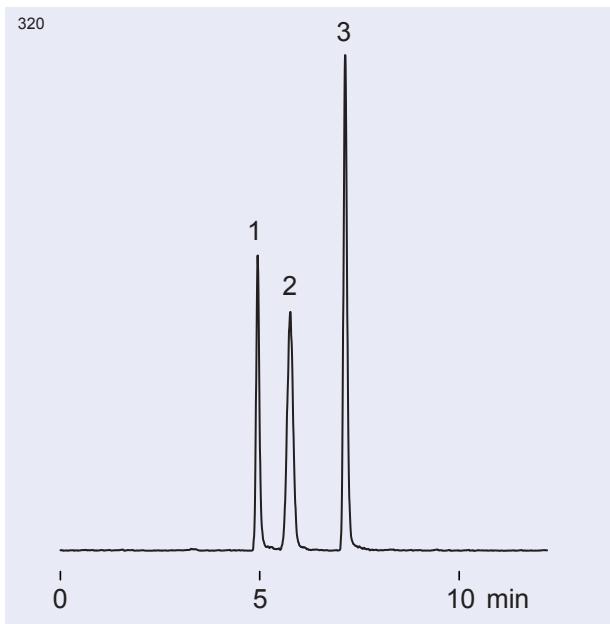


Sharp peak shape is possible with sugar alcohols by raising the column temperature settings.

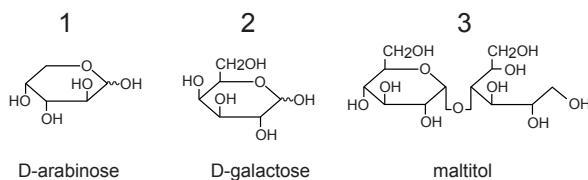


acetonitrile / water = 90 / 10
50 deg.C, ELSD

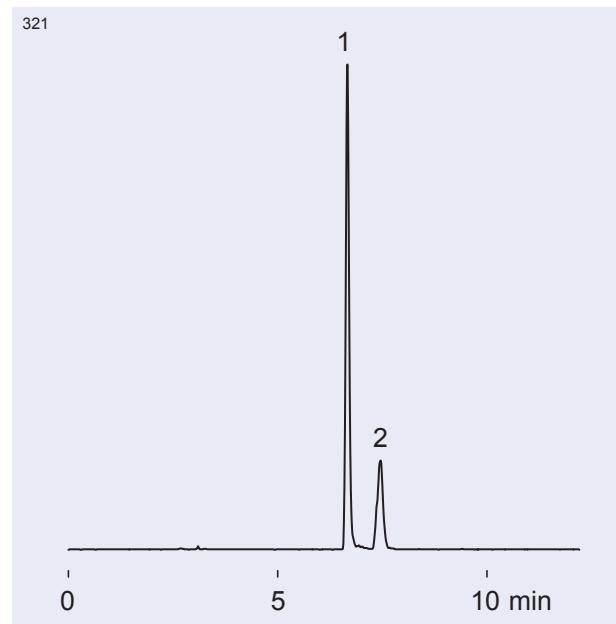
Arabinose, Galactose, Maltitol



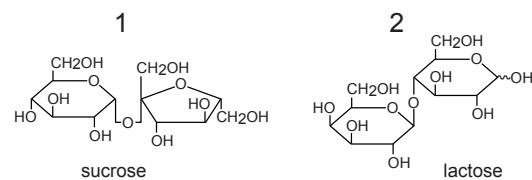
Unison UK-Amino, 250 x 4.6 mm
acetonitrile /water = 75 /25, 1 mL/min, 37 deg.C, ELSD



Sucrose and Lactose in Cafe au Lait

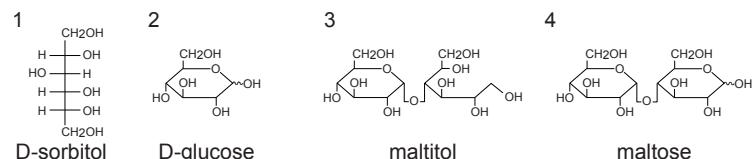
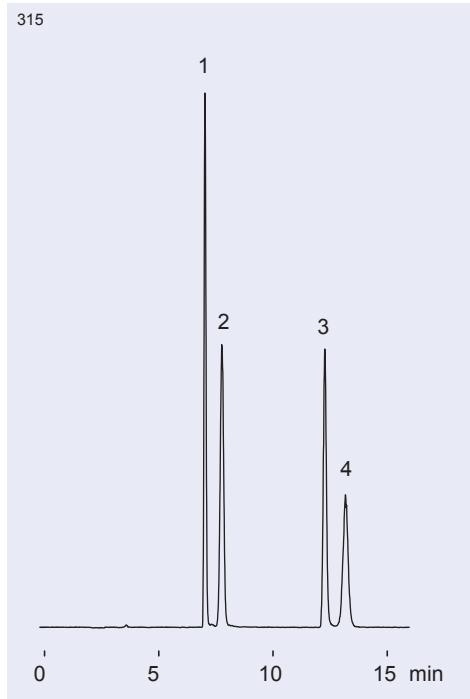


Unison UK-Amino, 250 x 4.6 mm
acetonitrile /water = 75 /25, 1 mL/min, 37 deg.C, ELSD



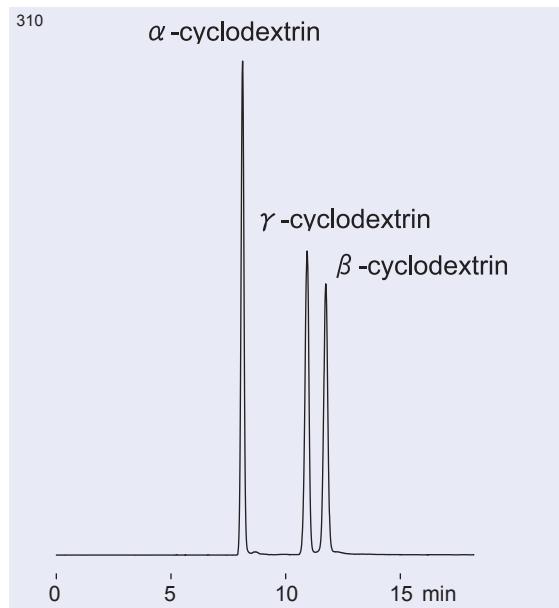
Normal Phase Separation of Saccharides

Reducing Sugar and its Reduced Alcohol

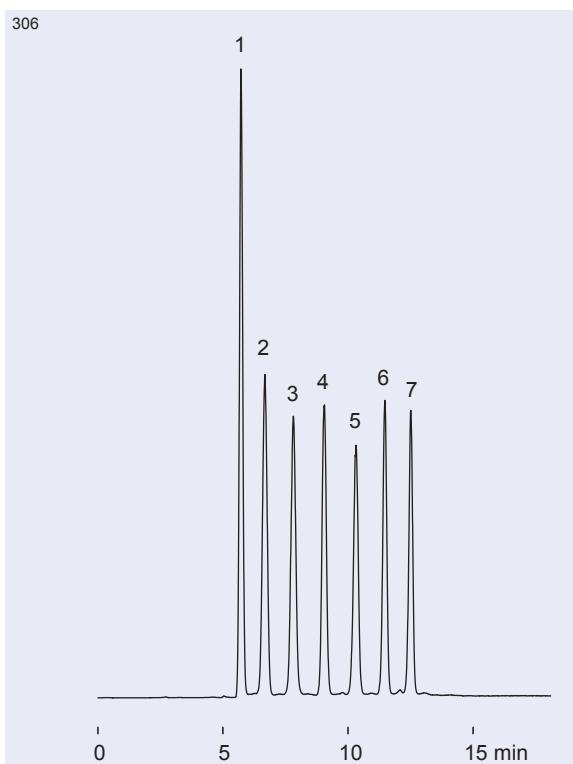


Unison UK-Amino, 250 x 4.6 mm,
acetonitrile / water = 83 / 17, 1.0 mL/min, 50 deg.C, ELSD

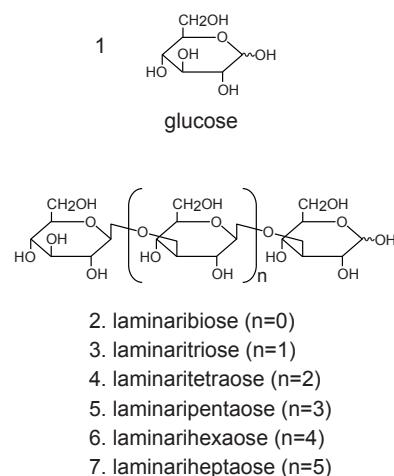
Cyclodextrins



Laminariorigosaccharides



Unison UK-Amino provides exceptional separation efficiency for oligosaccharides and other chemical compounds with relatively higher molecular weights.

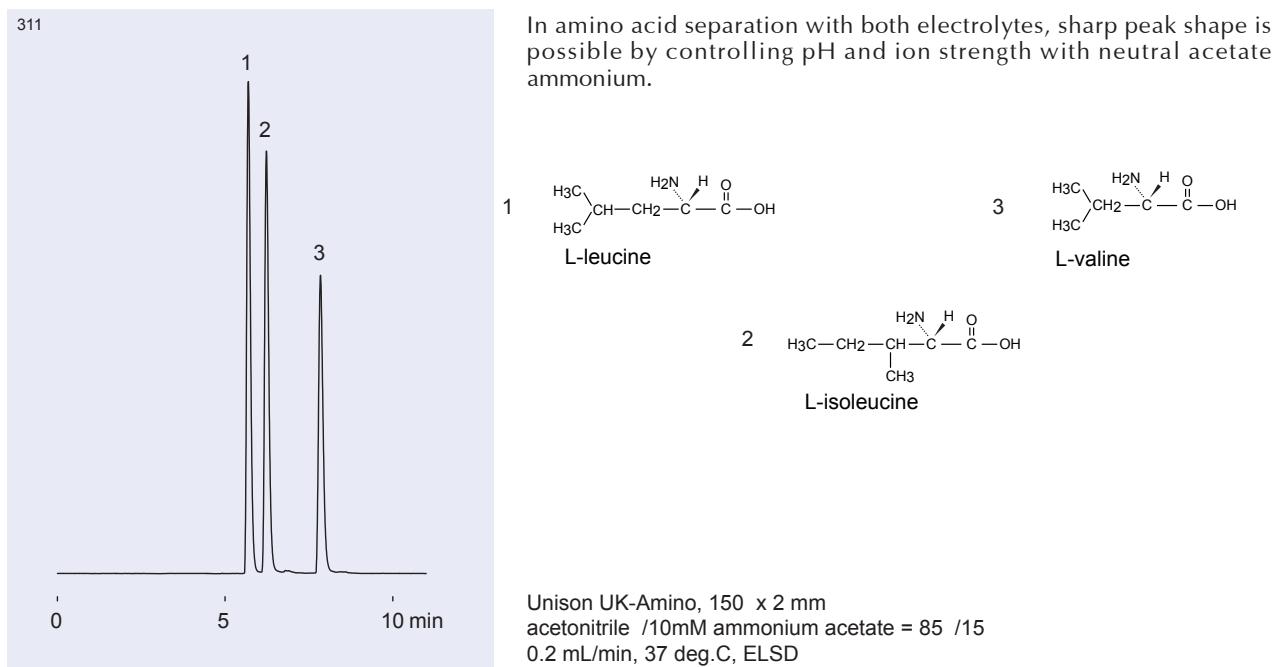


Unison UK-Amino, 250 x 2 mm
A: acetonitrile, B: water, 25-40 %B (0-15min)
0.2 mL/min, 37 deg.C, ELSD

Aqueous Normal Phase Separation

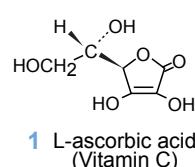
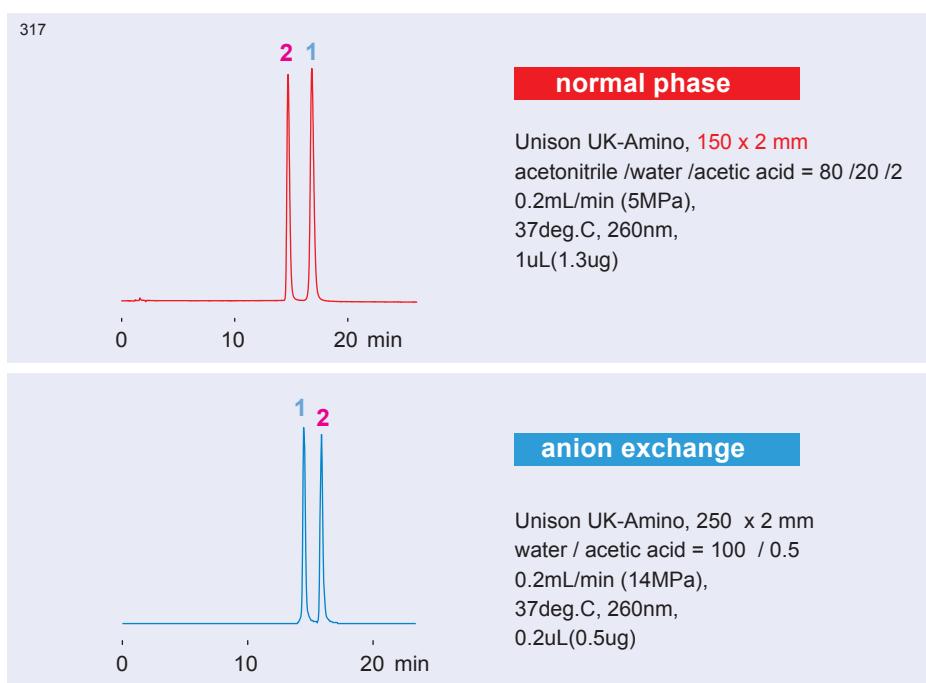
Unison UK-Amino can conduct aqueous normal phase separation even with chemical compounds other than carbohydrates. The column can optimally handle various compounds with its combination of electrostatic interactions and anion exchange mode. In that case, LC-UV/VIS, LC-ELSD and LC-MS is possible by optimizing the organic solvent strength and type, and by adjusting the buffer pH and ionic strength.

● Branched-Chain Amino Acids



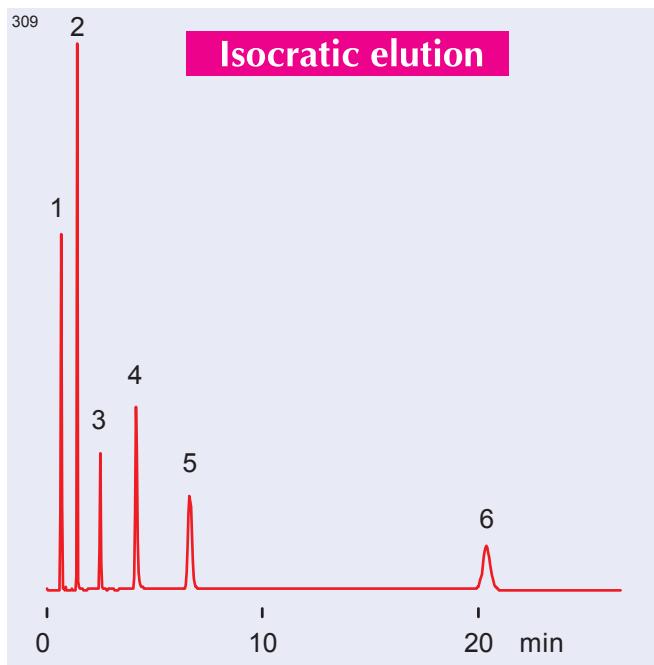
● Ascorbic Acid and Erythorbic Acid

Ascorbic acid and its isomer erythorbic acid can be separated in either normal phase or ion exchange modes. Unison UK-Amino can be used with acetic acid, a mild pH adjusting agent. Moreover, separation mode differences allow column users to select different elution orders and separation modes to suit their needs.



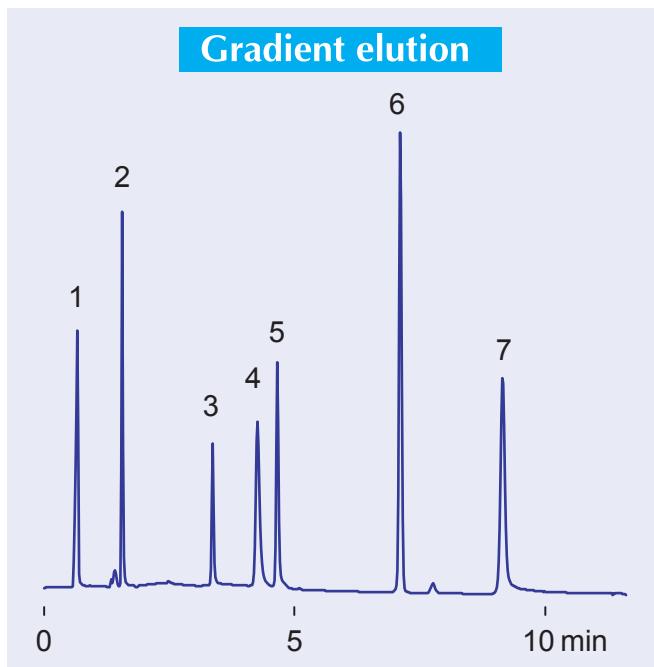
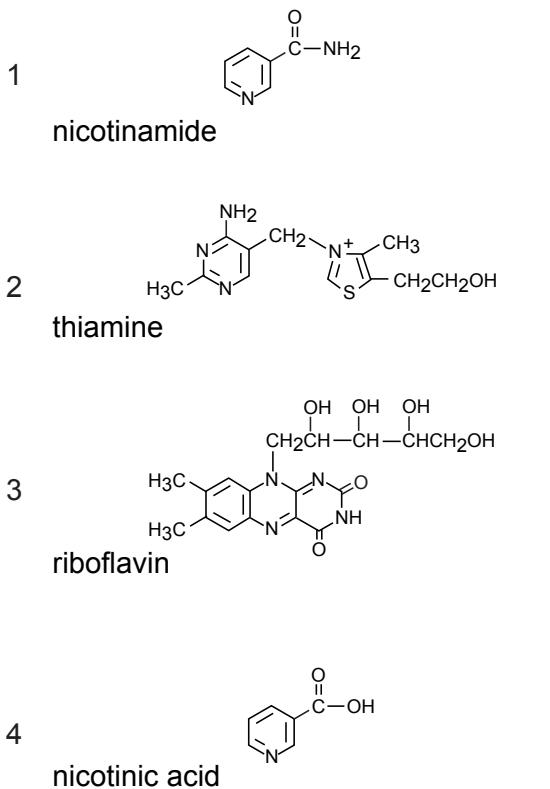
Aqueous Normal Phase Separation (Water-soluble vitamins)

Water-Soluble Vitamins

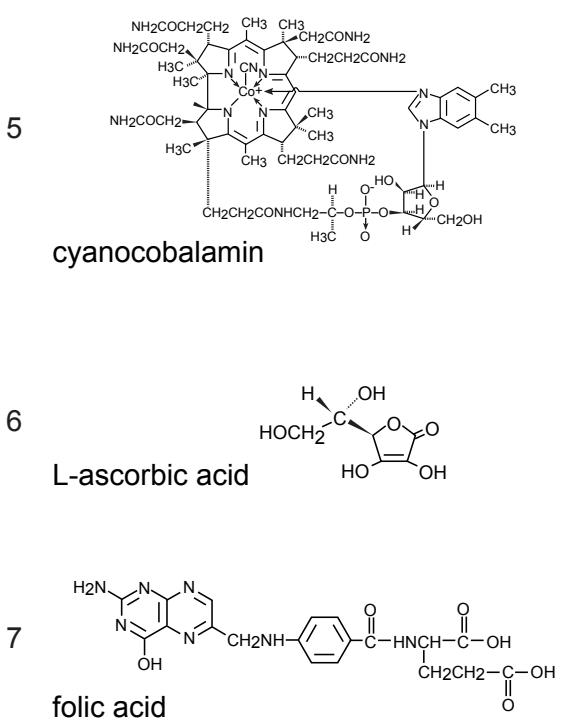


Unison UK-Amino, 100 x 4.6 mm
ACN / water / acetic acid = 90 / 10 / 5
1mL/min, 37 deg.C, 260 nm

Simple analysis is obtainable using acetic acid with water soluble vitamins. There is no need for ion-pair mode via reversed-phase separation. Moreover, gradient elution enables high speed analysis for a wide range of vitamins



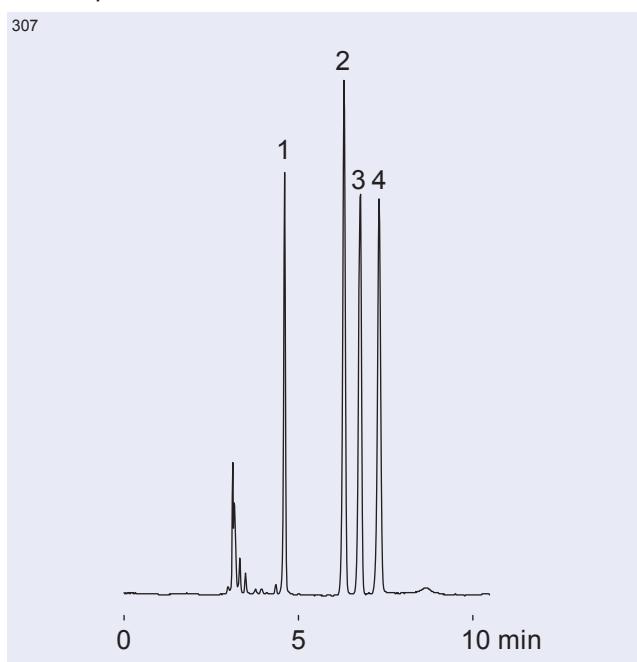
Unison UK-Amin, 100 x 4.6 mm
A: ACN / acetic acid = 100 / 5
B: water / acetic acid = 100 / 5
2-70 %B (0-10min)
1mL/min, 37 deg.C, 260 nm



Non-Aqueous Normal Phase Separation

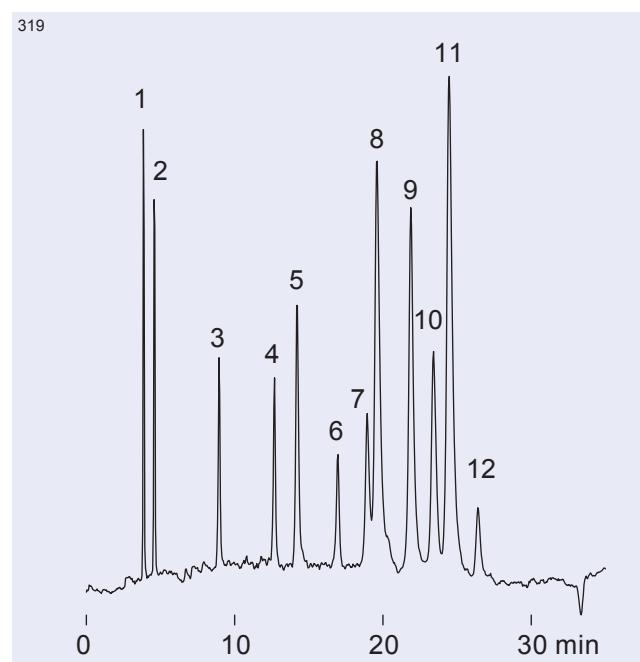
Unison UK-Amino has a highly polar stationary phase enabling non-aqueous normal phase separation similar to silica columns. However, the presence of a dissociative group (amino group) and bound water in the stationary phase side means that highly reproducible analysis is possible by adding acetic acid and other pH modifiers.

● Tocopherols

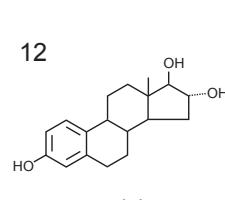
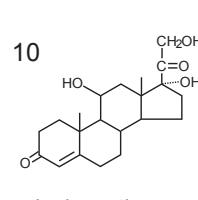
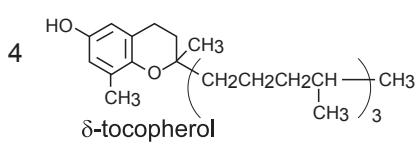
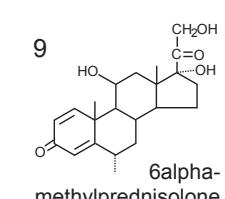
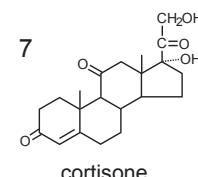
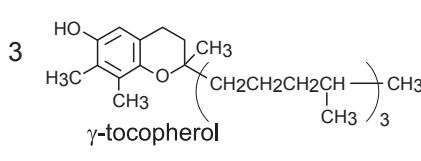
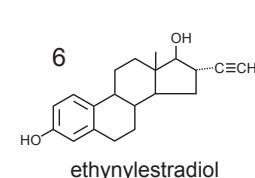
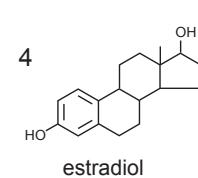
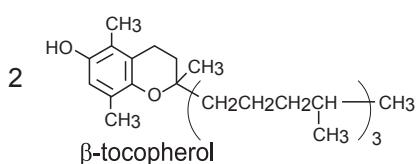
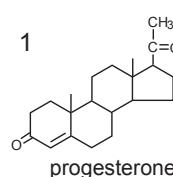
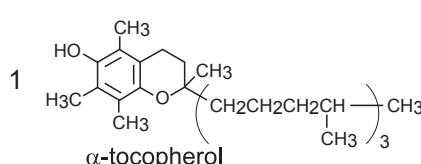


Unison UK-Amino, 250 x 4.6 mm
hexane / ethyl acetate / acetic acid = 80 / 20 / 0.1
1 mL/min, 37 deg.C, 295 nm

● Steroids

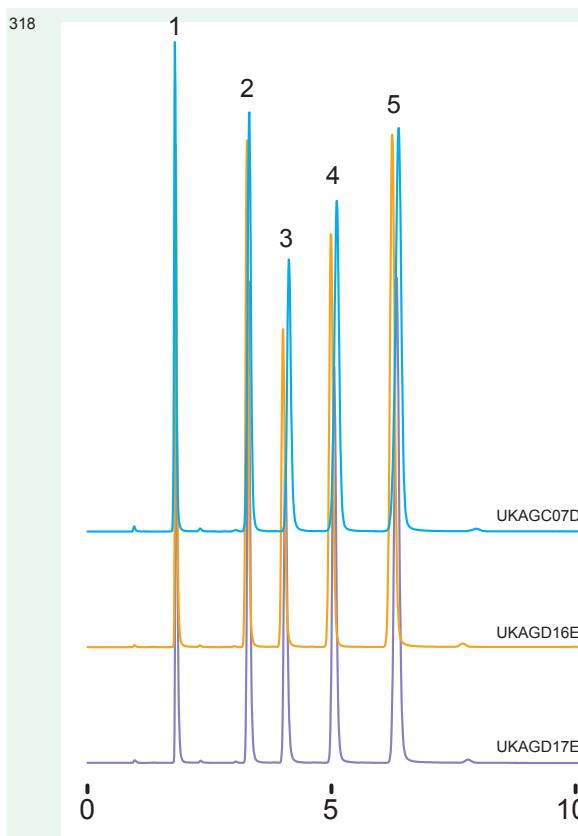


Unison UK-Amino, 250 x 4.6 mm
A: hexane /acetic acid = 100 /0.1
B: ethanol /acetic acid = 100 /1
10-30%B (0-30 min), 1 mL/min, 37 deg.C, 260 nm



Batch-to-Batch Reproducibility

Unison UK-Amino stationary phase has an excellent batch-to-batch reproducibility for normal phase + anion exchange mode.



1 propylbenzoate
2 thymidine
3 benzoic acid
4 3-hydroxyphenylurea
5 uridine

pKa = 9.8
pKa = 4.2
pKa = 9.2

Unison UK-Amino, 150 x 2 mm acetonitrile /water /acetic acid = 95 /5 /1
0.2 mL/min (3.5MPa)
37 deg.C, 270nm

Conventional aminopropyl stationary phases struggle to achieve solute retention and repeatable separations as the interactions are complicated due to the presence of both normal phase and anion exchange modes. Unison UK-Amino addresses this problem with a novel stationary phase design to provides excellent reproducibility.

Ordering Information

Unison UK-Amino

Particle Size: 3um, Stationary Phase: Aminopropyl

3 μ m

Length (mm)	Product Code / Price in JPY					
	1 mm I.D.	2 mm I.D.	3 mm I.D.	4.6 mm I.D.	6 mm I.D.	10 mm I.D.
10	-	UKA20 / 45,000	UKA30 / 45,000	UKA00 / 45,000	-	-
20	-	UKA29 / 45,000	UKA39 / 45,000	UKA09 / 45,000	-	-
30	UKA11 / 42,000	UKA21 / 38,000	UKA31 / 38,000	UKA01 / 38,000	UKA61 / 42,000	UKAP1 / 68,000
50	UKA12 / 45,000	UKA22 / 42,000	UKA32 / 42,000	UKA02 / 42,000	UKA62 / 45,000	UKAP2 / 80,000
75	UKA13 / 48,000	UKA23 / 45,000	UKA33 / 45,000	UKA03 / 45,000	UKA63 / 48,000	UKAP3 / 95,000
100	UKA14 / 53,000	UKA24 / 48,000	UKA34 / 48,000	UKA04 / 48,000	UKA64 / 53,000	UKAP4 / 120,000
150	UKA15 / 58,000	UKA25 / 53,000	UKA35 / 53,000	UKA05 / 53,000	UKA65 / 58,000	UKAP5 / 150,000
250	UKA16 / 75,000	UKA26 / 68,000	UKA36 / 68,000	UKA06 / 68,000	UKA66 / 75,000	UKAP6 / 180,000
500	-	-	-	UKA07 / 110,000	-	-

Guard Cartridge UK-Amino

Sep. column I.D	Prod.Code	Price in JPY	Note
For 1 mm	GCUKAC	23,000	5 x 1 mm, 3pcs
For 2 - 6 mm	GCUKAS	17,000	5 x 2 mm, 3pcs
For 10 mm	GCUKAM	23,000	10 x 8 mm, 2pcs

Guard Holder (With a column coupler)

Sep. column I.D	Prod.Code	Price in JPY
For 1 - 6 mm	GCH01S	26,000
For 10 mm	GCH02M	35,000