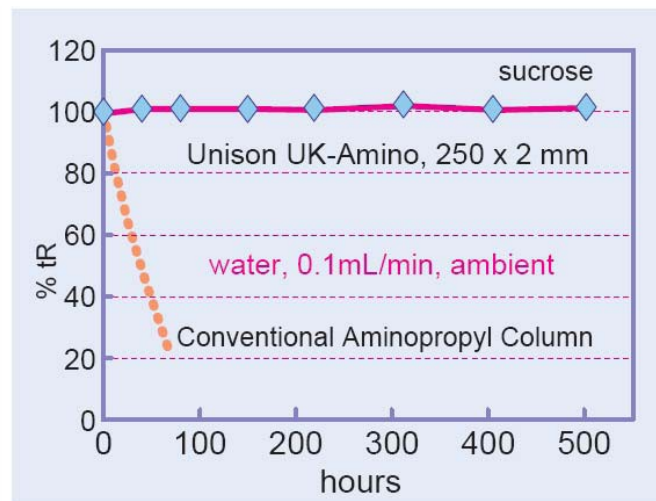
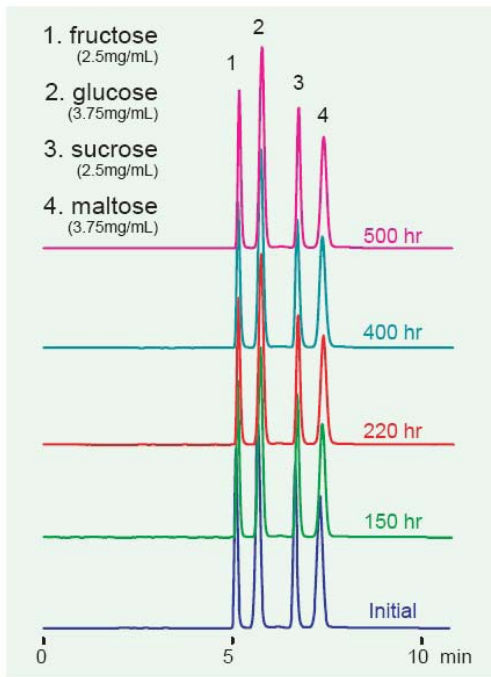


UNISON UK - Amino

For Aqueous Elutions and Exceptional Separation Balance



Analytical Conditions
Unison UK-Amino, 250 x 2 mm
acetonitrile /water = 75 /25
0.2mL/min (8MPa)
37 deg.C, 4uL, ELSD

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- Revolutionary aqueous durability
- Aqueous to non-aqueous
- High speed normal phase separation
- 3µm particle size
- Superior resolution LC/MS applicable

Aqueous durable silica-based aminopropyl columns have been used for a long time 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 eluant. 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 amino columns.

UK-Amino's design not only provides analytical power, but the 3µm 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 phase conditions, and separation optimisation is possible when compared to ODS columns using reversed-phase mode. Significantly improved results can be expected from the UK-Amino column.

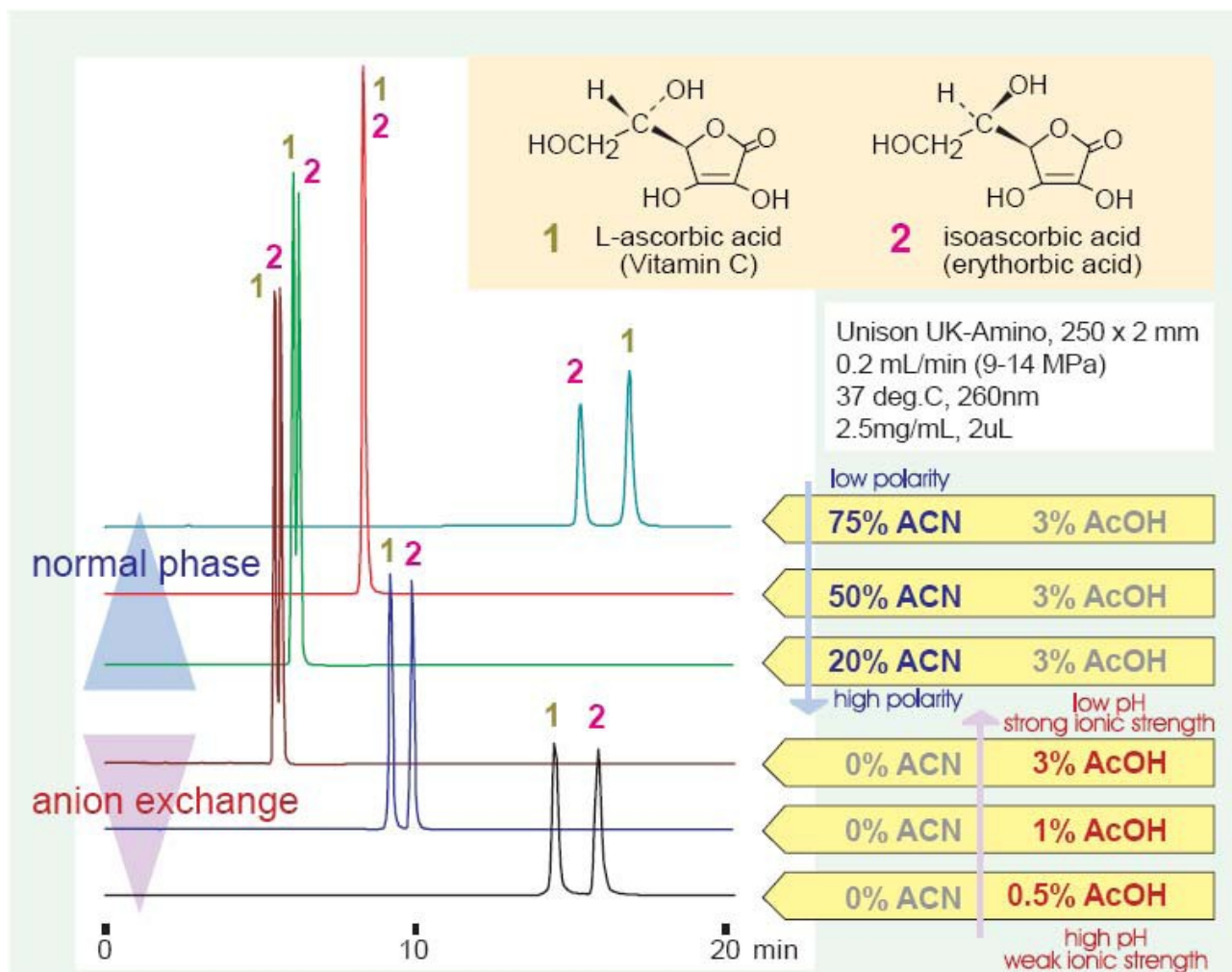
Normal Phase and Anion Exchange Modes

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

In the normal phase mode, retention deteriorates as the polarity in the mobile phase rises. However, as the acetonitrile partition rises, retention increases and the two com -

pounds completely separate at 75% acetonitrile. Moreover, the elution order is reversed from anion exchange mode due to the difference in interactions.

In anion exchange mode, retention deteriorates as the ionic strength increases and pH-driven ionic interactions grow weaker (in this case, high acidic density = low pH). In this example, two compounds are completely separated with only a 0.5% acetic acid aqueous solution.

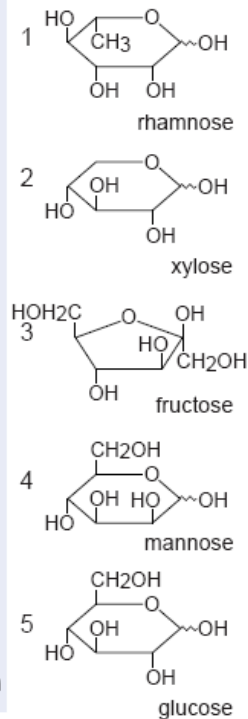
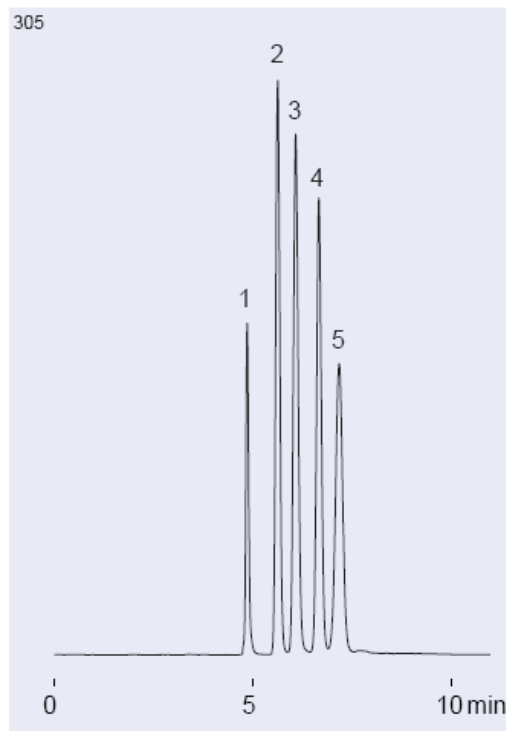


Normal Phase Separation of Saccharides

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

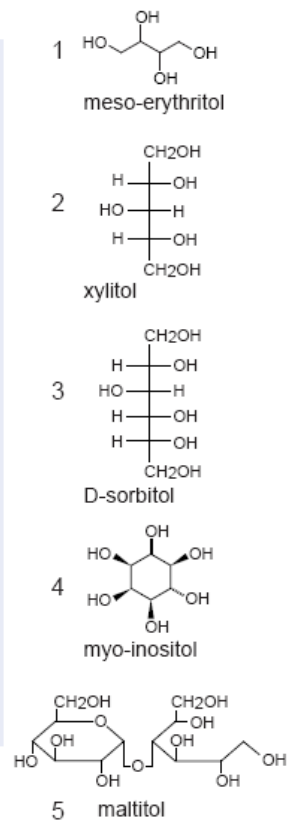
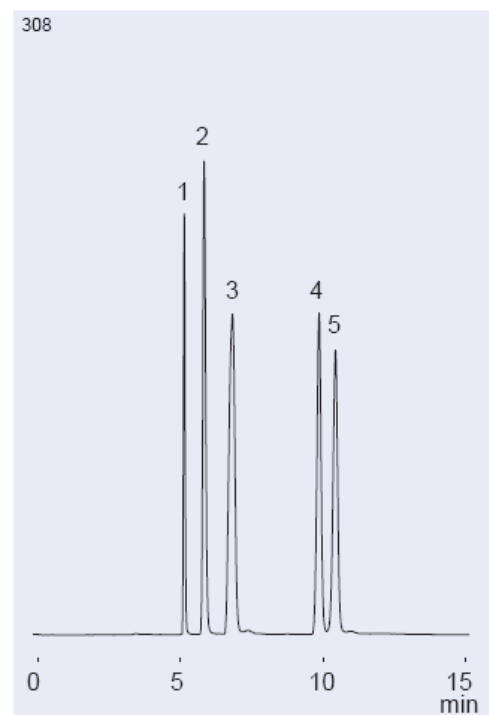
Monosaccharides

Unison UK-Amino, 250 x 2 mm
acetonitrile /water = 80 /20, 0.2 mL/min
37 °C, ELSD



Sugar Alcohols

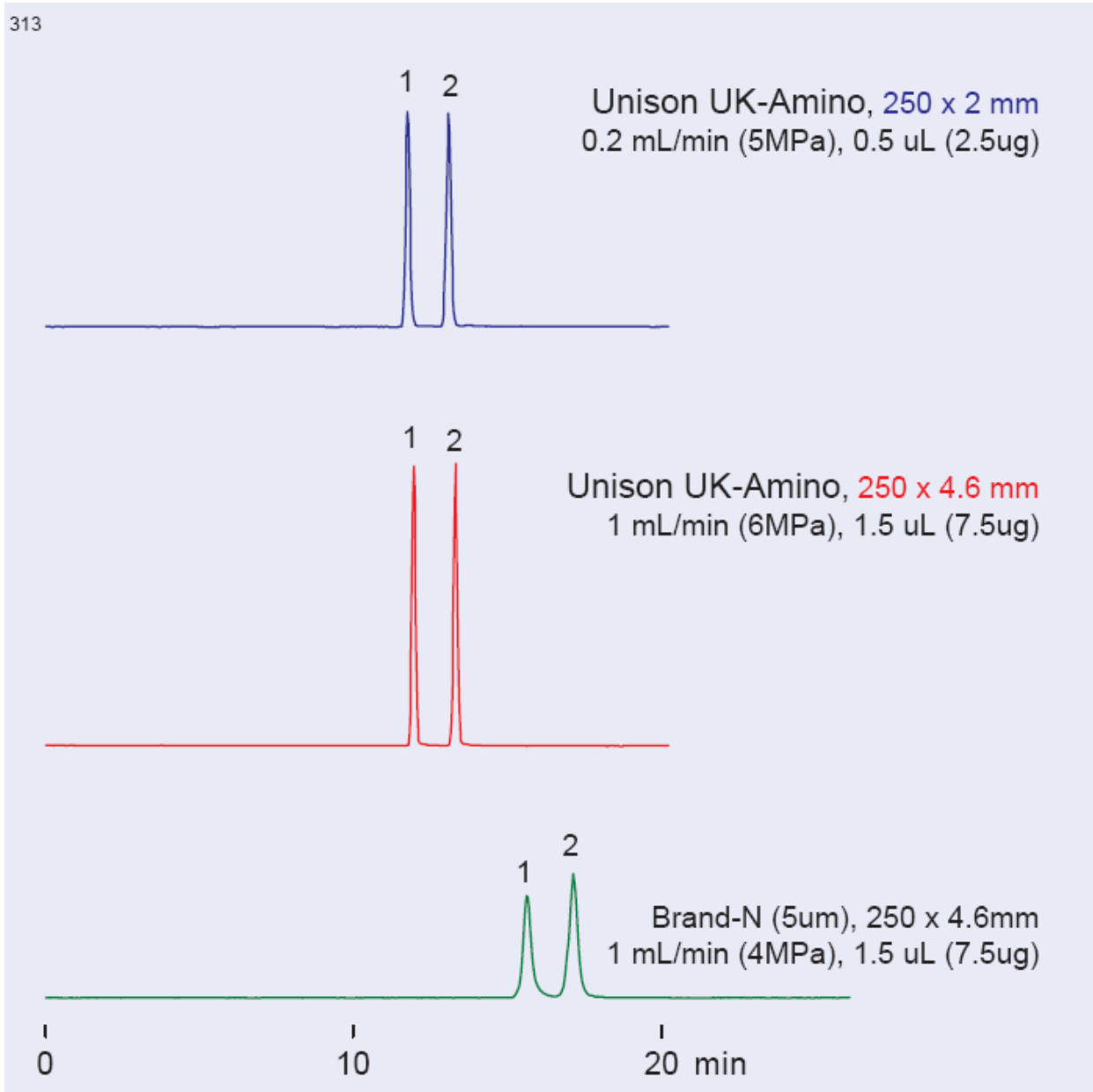
Unison UK-Amino, 250 x 2 mm
acetonitrile /water = 80 /20, 0.2 mL/min
37 °C, ELSD



Normal Phase Separation of Saccharides

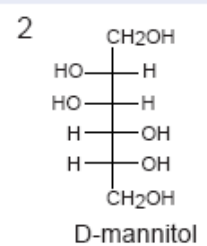
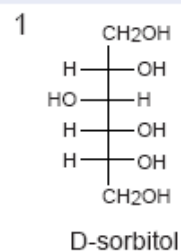
Sorbitol and Mannitol

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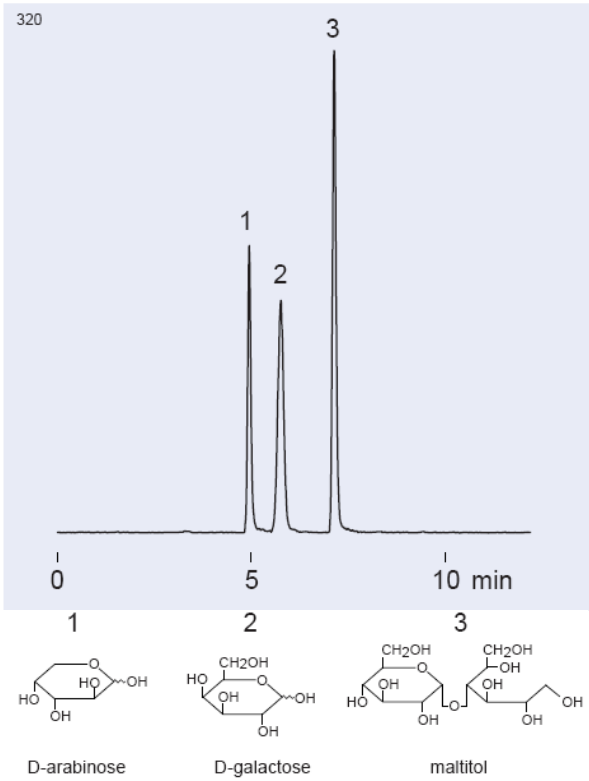
Shaper peak shape is possible with sugar alcohols by raising the column temperature settings.

acetonitrile / water = 90 / 10; 50°C, ELSD



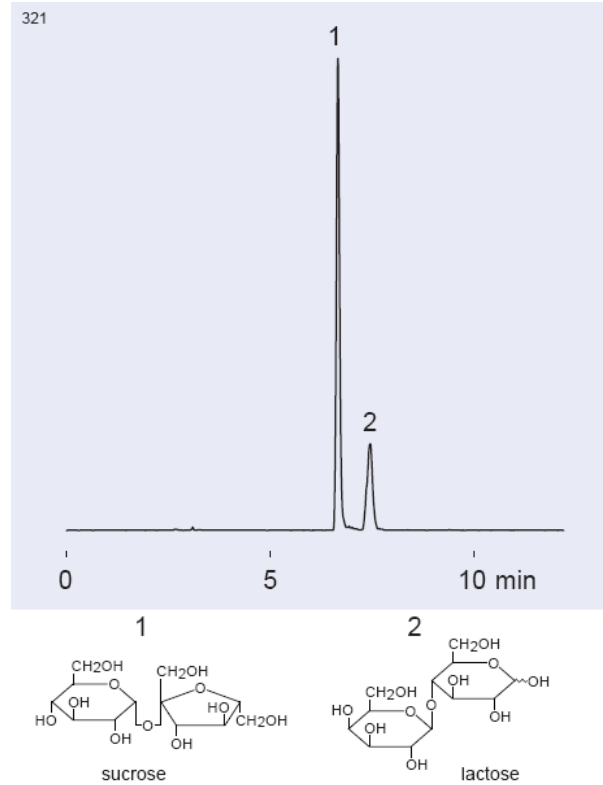
Arbinose, Galactose, Maltitol

Unison UK-Amino, 250 x 4.6mm
acetonitrile / water = 75 / 25
1 mL/min, 35°C, ELSD



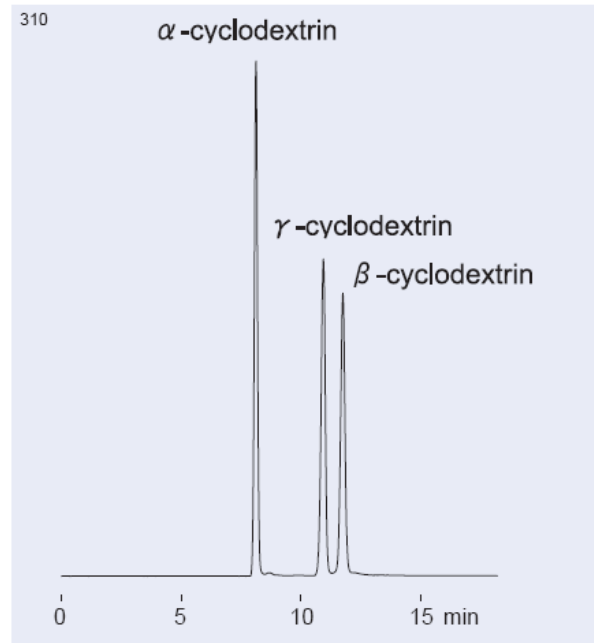
Sucrose and Lactose in Cafe au Lait

Unison UK-Amino, 250 x 4.6mm
acetonitrile / water = 75 / 25
1 mL/min, 35°C, ELSD



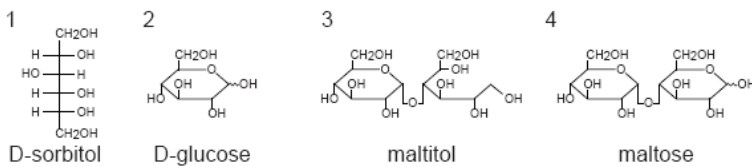
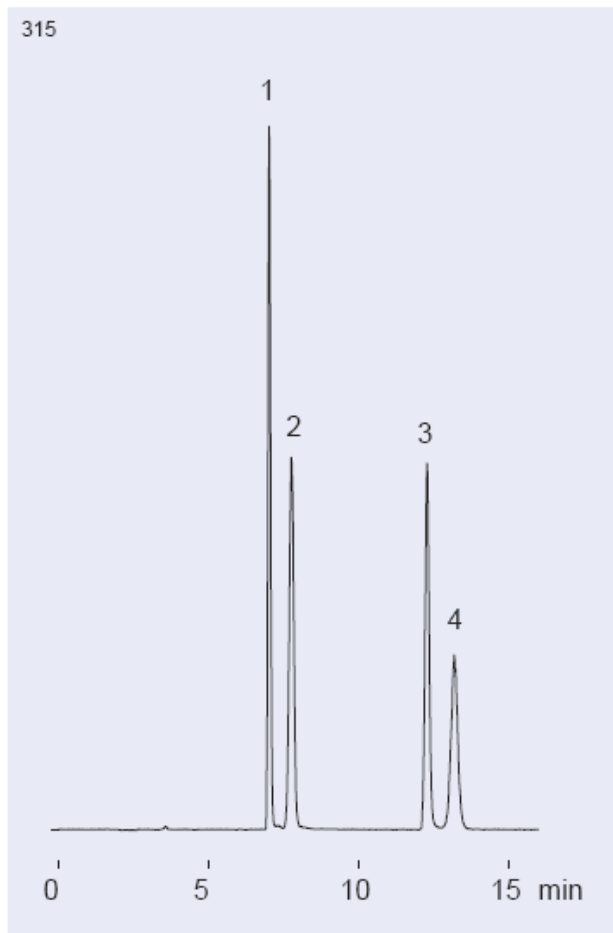
Cyclodextrins

Unison UK-Amino, 250 x 2mm
acetonitrile / water = 70 / 30
0.2 mL/min, 35°C, ELSD



Reducing Sugar and Alcohol

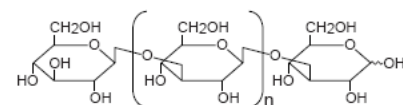
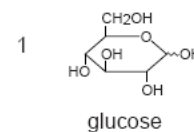
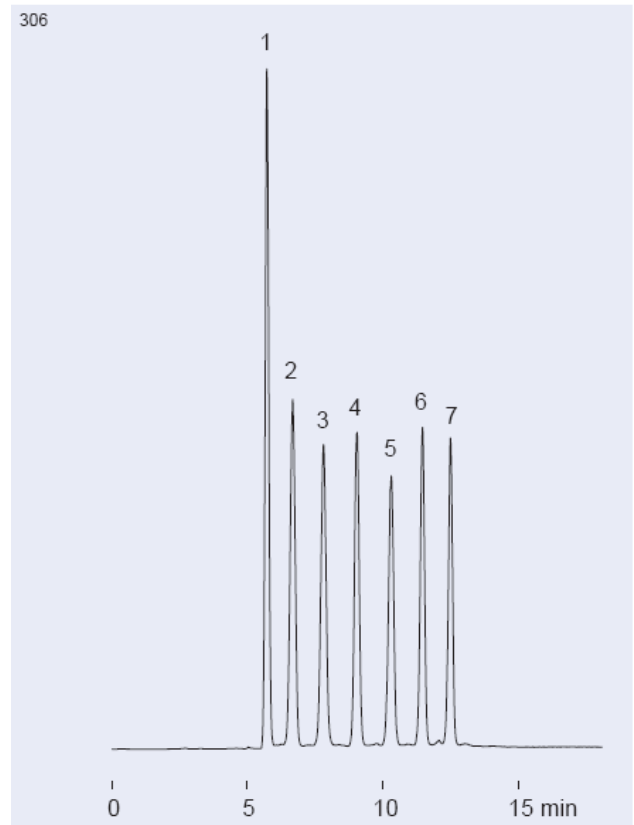
Unison UK-Amino, 250 x 4.6mm
acetonitrile / water = 83 / 17
1 mL/min, 50°C, ELSD



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

Laminarioligosaccharides

Unison UK-Amino, 250 x 2mm
A: acetonitrile, B: water, 24-40%B (0.15min)
0.2 mL/min, 37°C, ELSD



- 2. laminaribiose (n=0)
- 3. laminaritriose (n=1)
- 4. laminaritetraose (n=2)
- 5. laminaripentaose (n=3)
- 6. laminarihexaose (n=4)
- 7. laminariheptaose (n=5)

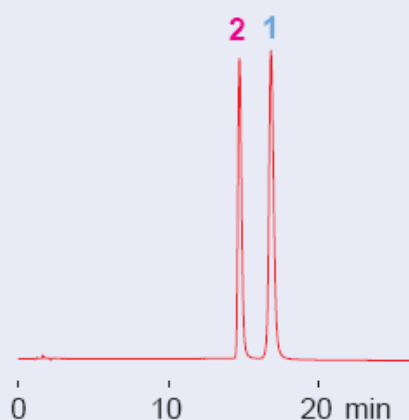
Aqueous Normal Phase Separation

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.

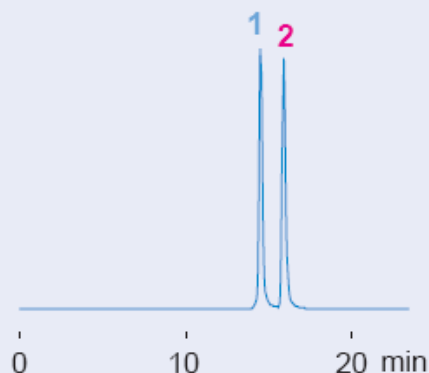
Moreover, separation mode differences allow column users to select different elution orders and separation modes to suit their needs.

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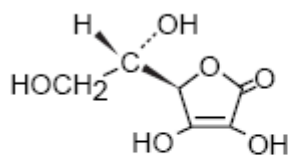
normal phase

Unison UK-Amino, 150 x 2 mm
acetonitrile / water / acetic acid = 80 / 20 / 2
0.2mL/min (5MPa),
37deg.C, 260nm,
1uL(1.3ug)

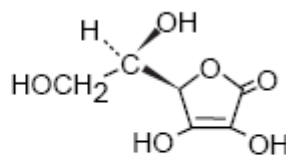


anion exchange

Unison UK-Amino, 250 x 2 mm
water / acetic acid = 100 / 0.5
0.2mL/min (14MPa),
37deg.C, 260nm,
0.2uL(0.5ug)



1 L-ascorbic acid
(Vitamin C)

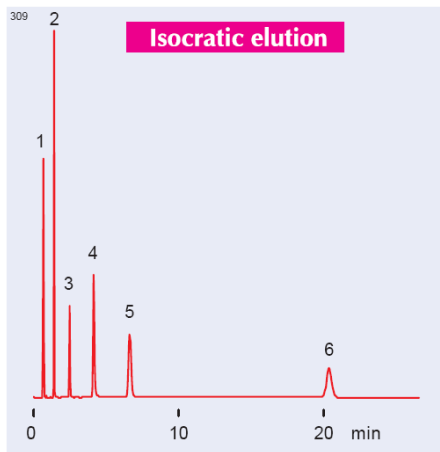


2 isoascorbic acid
(erythorbic acid)

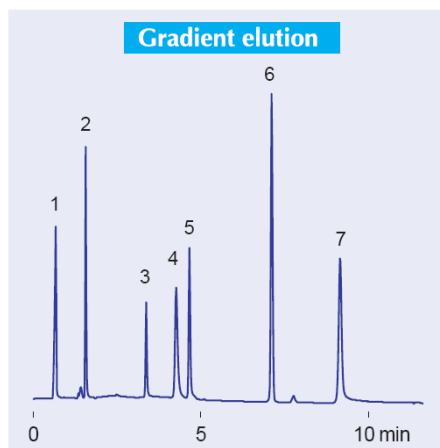
Aqueous Normal Phase Separation of Water-soluble vitamins

Water soluble vitamins can be analysed simply by using acetic acid in the mobile phase. This eliminates the need for ion-pairing required by reversed-phase separation.

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



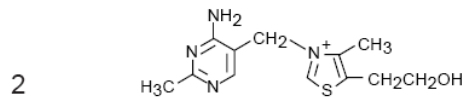
Unison UK-Amino, 100 x 4.6 mm
 A: ACN / acetic acid = 100 / 5
 B: water / acetic acid = 100 / 5
 2-70 %B (0-10min)
 1mL/min, 37°C, 260 nm



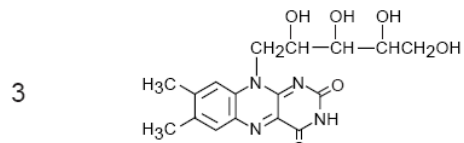
Moreover, gradient elution enables high speed analysis for a wide range of vitamins.



nicotinamide



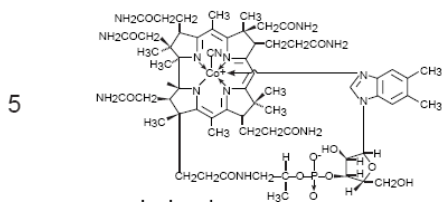
thiamine



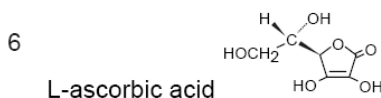
riboflavin



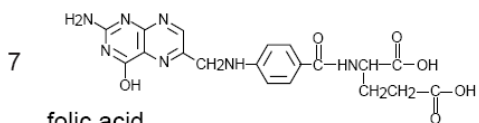
nicotinic acid



cyanocobalamin



L-ascorbic acid



folic acid

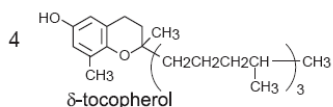
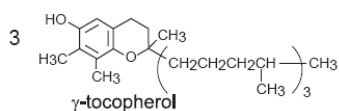
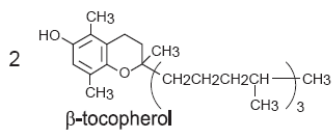
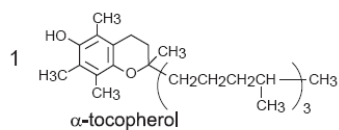
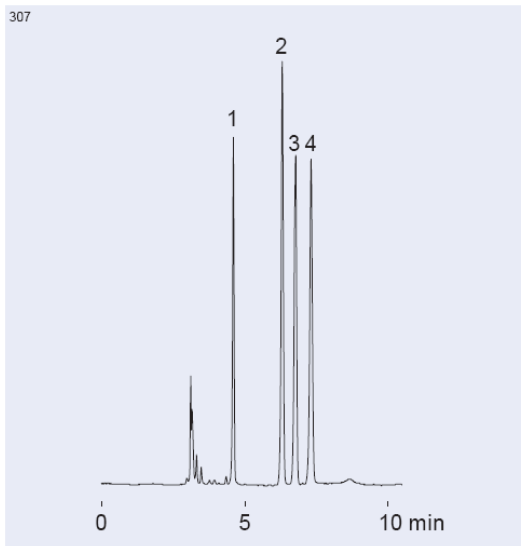
Non-Aqueous Normal Phase Separation

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 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.

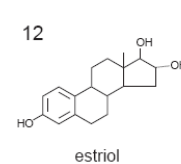
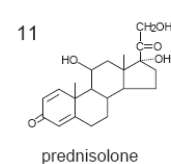
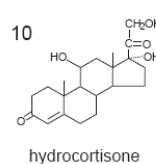
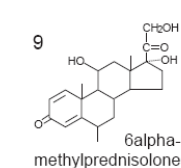
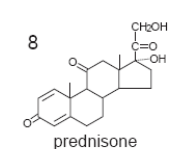
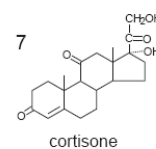
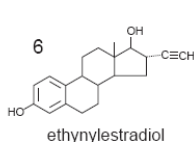
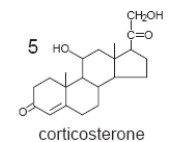
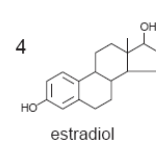
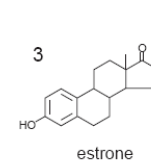
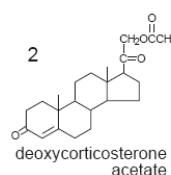
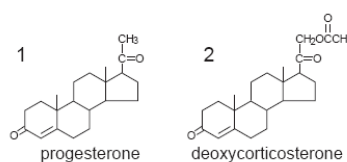
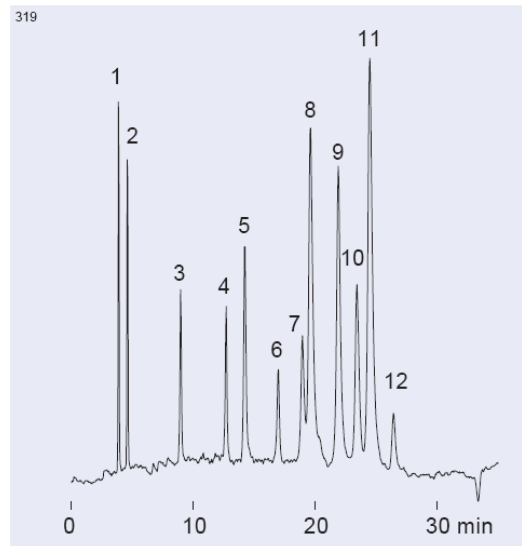
Tocopherols

Unison UK-Amino, 250 x 4.6 mm
Hexane / ethyl acetate / acetic acid = 80 / 20 / 0.1
1 mL/min, 37 °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 °C, 260 nm



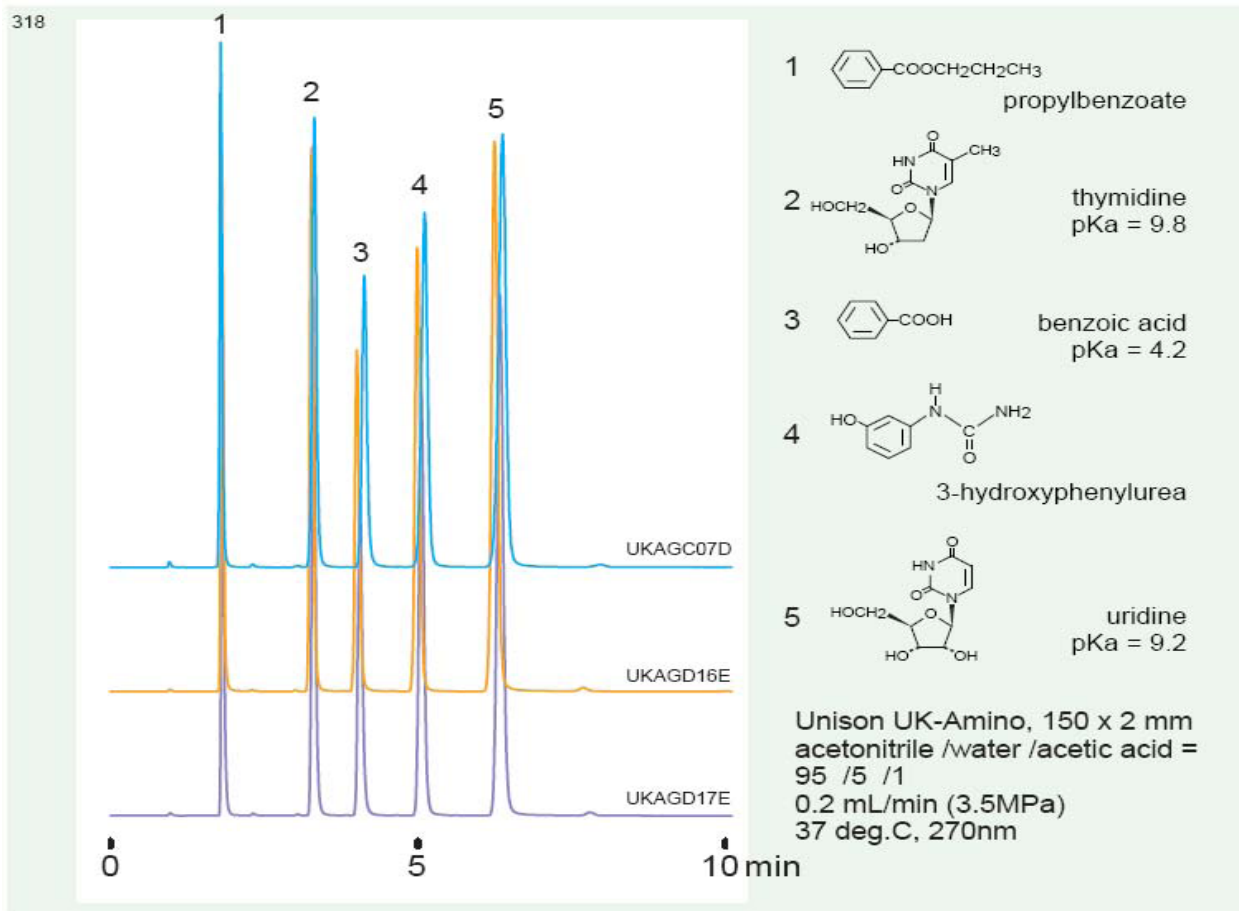
Batch to Batch Reproducibility

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

repeatable separations as the interactions are complicated due to the presence of both normal phase and anion exchange modes.

Conventional aminopropyl stationary phases struggle to achieve solute retention and

Unison UK-Amino addresses this problem with a novel stationary phase design which



OTHER FORMATS AVAILABLE FROM NANO TO PREP

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