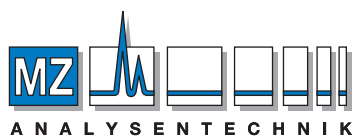


HPLC TECHNICAL INFORMATION

Vitamins



AUTHORIZED DISTRIBUTOR

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e-mail: info@mz-at.de, www.mz-at.de

Cadenza CD-C18

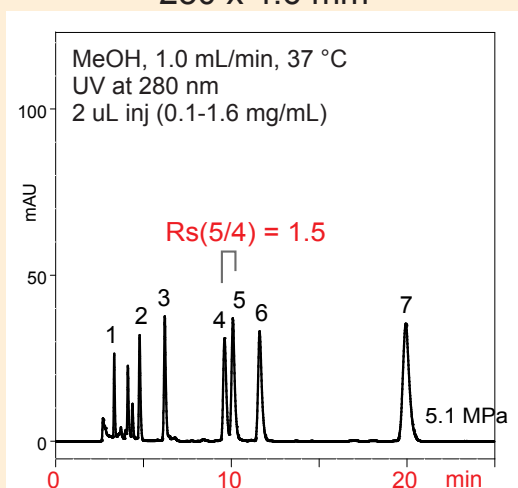
150 x 4.6 mm

Technical

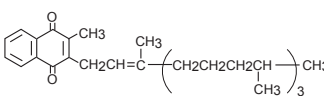
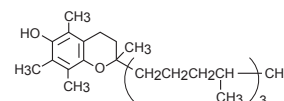
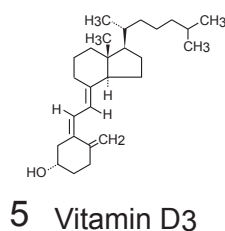
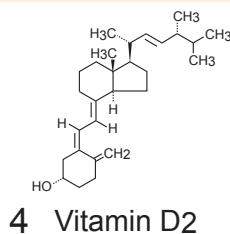
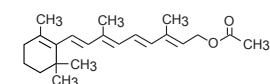
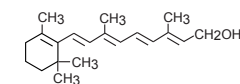
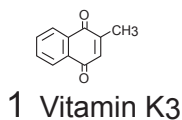
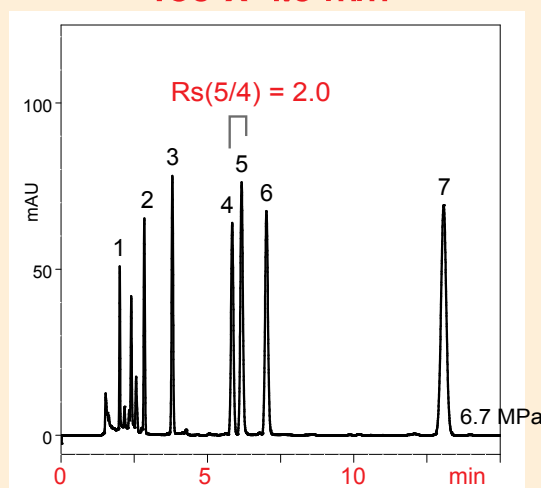
High Speed Fat-Soluble Vitamins Analysis

Achieve Higher Speeds with Cadenza 150mm than a Conventional 250mm column

Conventional ODS column
250 x 4.6 mm



Cadenza CD-C18
150 x 4.6 mm



Conventional ODS columns struggle to separate Vitamin D2 and D3 when fat-soluble vitamins are analyzed solely with methanol.

In this separation example as well, the conventional 250mm column could not completely separate D2 and D3. Cadenza CD-C18 150 x 4.6mm column, however, completely separates these vitamins. Cadenza's high molecular recognition in the stationary phase contributes to this separation of derivatives.

Cadenza offers even more benefits. Analysis time and solvent consumption are 60% of normal levels. Moreover, the overall sensitivity improves. By using Cadenza CD-C18 instead of the conventional 250mm column, you can save time and solvent while realized greater sensitivity.

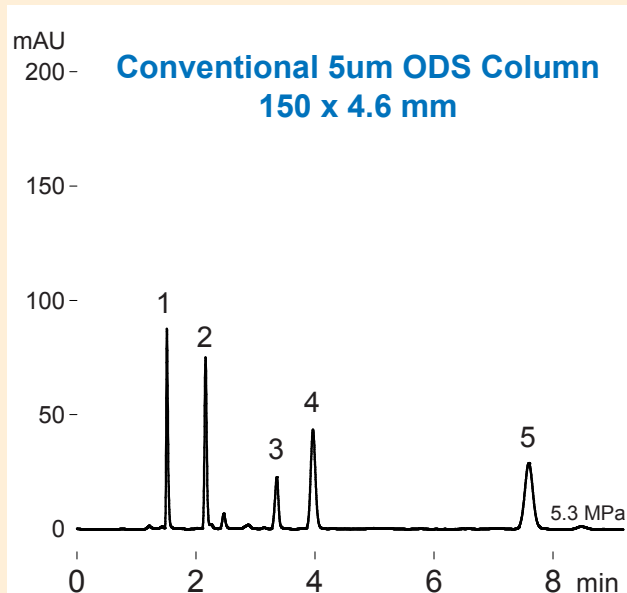
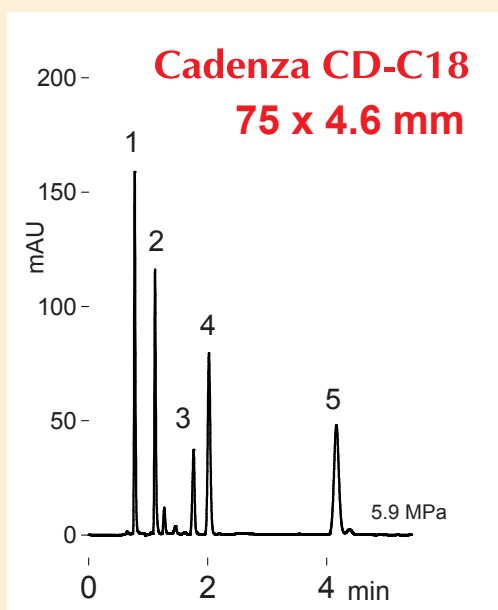
Cadenza CD-C18

75 x 4.6 mm

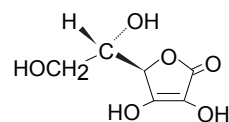
Technical

High Speed Analysis of Water-Soluble Vitamins

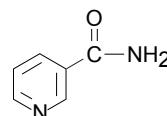
High-Speed / High-Sensitivity / Low Solvent Use



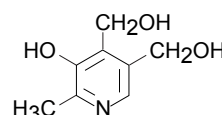
3 mM Na-heptanesulfonate, 0.05% TEA, 1% AcOH / ACN = 85 / 15
1.0 mL/min, 37 °C, UV at 254 nm
2uL inj. (0.1 - 0.4 mg/mL)



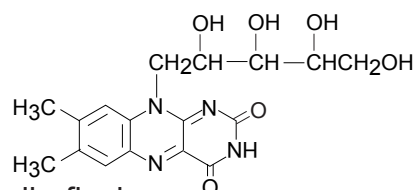
1 L-ascorbic acid



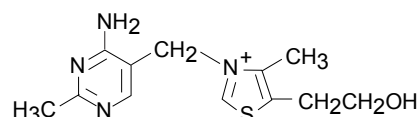
2 nicotinamide



3 pyridoxine



4 riboflavin



5 thiamine

In the reverse phase of aqueous vitamins containing ascorbic acid, it is generally ion versus chromatography.

Under the same analytical conditions as a conventional column, Cadenza CD-C18 offers the same separation with half the column length. Furthermore, run time and solvent use is cut by 50%. Peak detection sensitivity also improves dramatically.

By switching to Cadenza CD-C18, you can easily realize time and solvent savings with improved sensitivity.

Cadenza is the perfect column for quality management departments seeking to cut costs and development departments hoping to improve development speed.

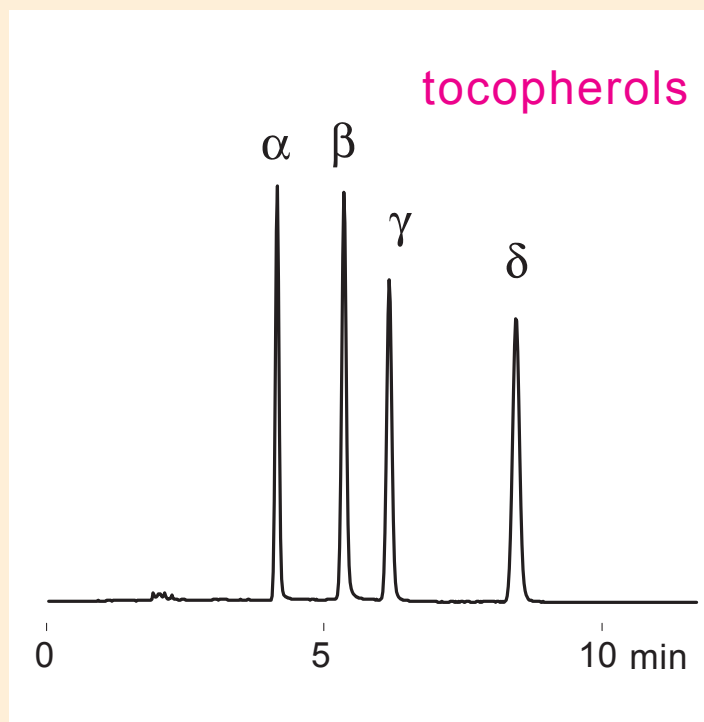
Unison UK-Silica

150 x 4.6 mm

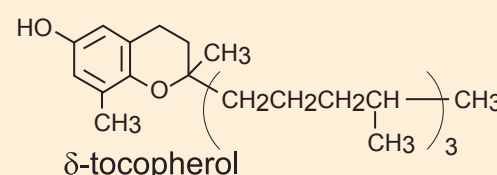
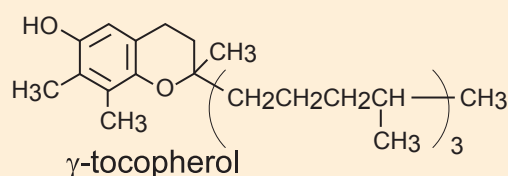
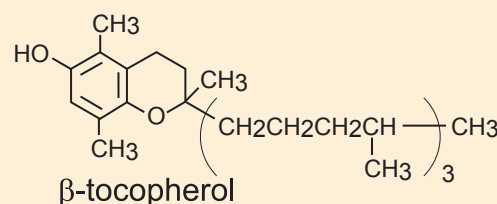
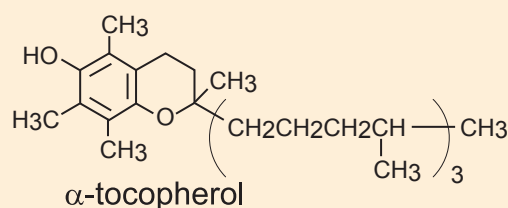
Technical

High-efficiency separation by a 3µm silica particle

Improved recognition for isomers



Unison UK-Silica, 150 x 4.6 mm
hexane / THF = 97 / 3
1.0 mL/min, 37 °C, 295 nm



The Unison series of columns provides authoritative results in normal phase separation using its silica stationary phase. This high level of performance is in addition to its extraordinary resolution, higher than conventional 5µm columns.

The example above shows a normal phase separation of the tocopherol isomers. Beta- and gamma-tocopherol are position isomers, compounds characterized as difficult to separate. Unison UK-Silica 150 x 4.6mm, however, provides excellent separation in under 10 minutes. By using the 3µm silica Unison column, you can improve your efficiency and analysis speed compared with conventional 5µm, 25cm columns.

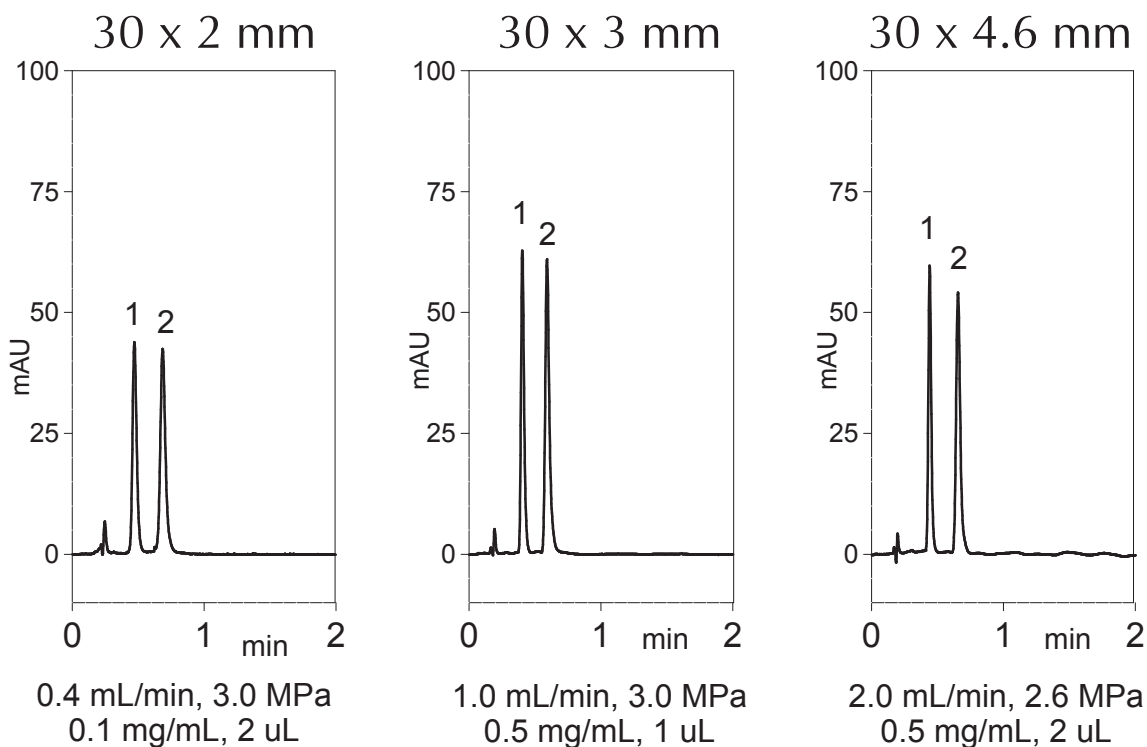
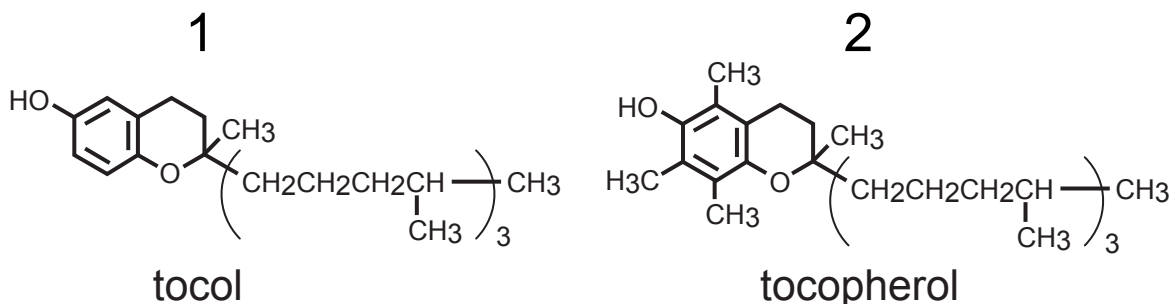
The Unison UK-Silica offers optimal solutions for specialty research areas including natural chemistry and organic combinatorial chemistry.

Cadenza CD-C18

Application

30 x 2 mm 30 x 3 mm 30 x 4.6 mm

Tocol and Tocopherol



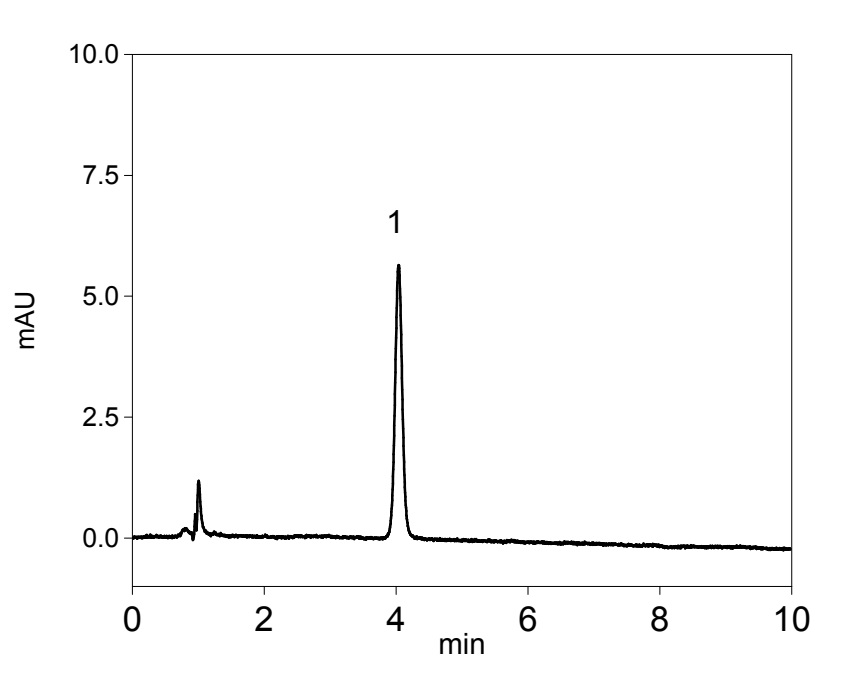
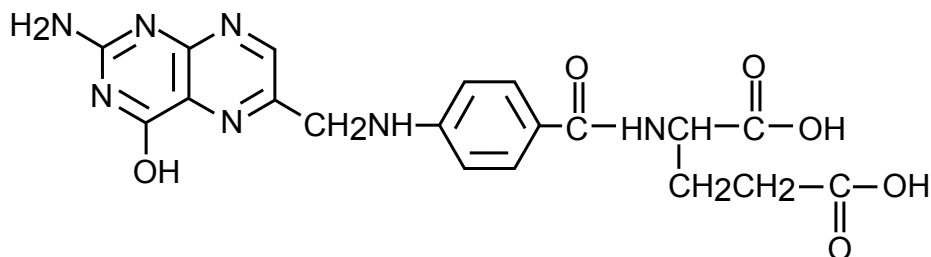
Cadenza CD-C18
 methanol
 37 °C
 UV at 290 nm

Cadenza CD-C18

75 x 3 mm

Application

Folic acid



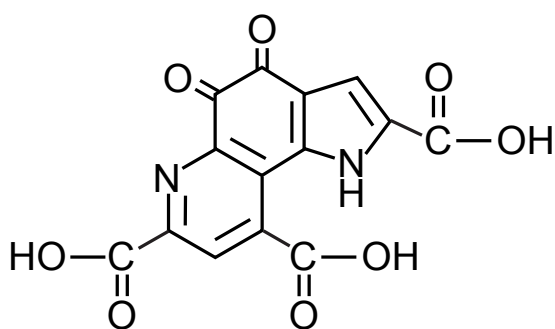
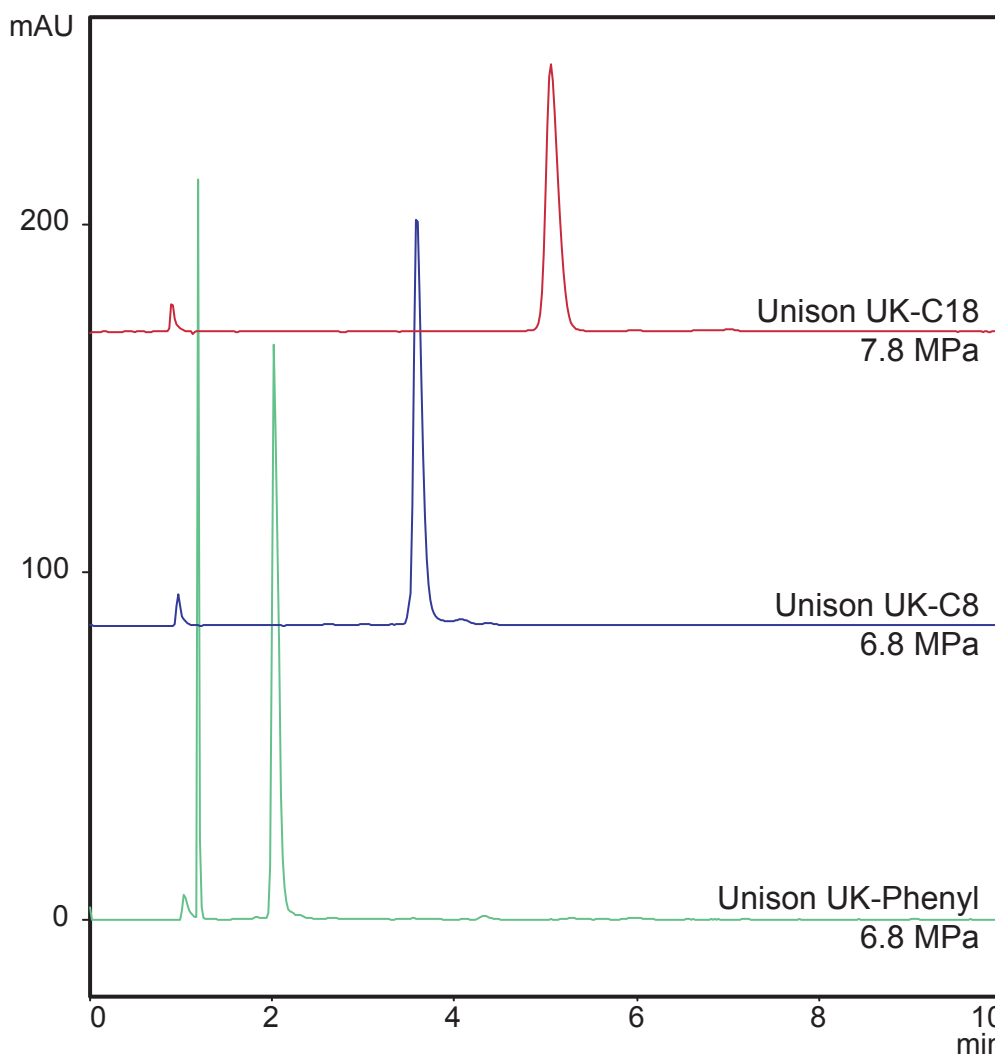
Cadenza CD-C18, 75 x 3.0 mm
 methanol / 20mM H₃PO₄ = 20 / 80
 0.4 mL/min, 7.2 MPa
 37 °C, UV at 290 nm
 folic acid 10 ug

Unison UK-C18
 Unison UK-C8
 Unison UK-Phenyl

75 x 4.6 mm

Application

PQQ (pyrroloquinoline quinone)
 新ビタミン PQQ の分析



Unison, 75 x 4.6 mm
 10mM DBA-Acetate / ACN = 85 / 15
 1.0 mL/min, 37 °C, UV at 260 nm
 PQQ 1 µg (2µL)

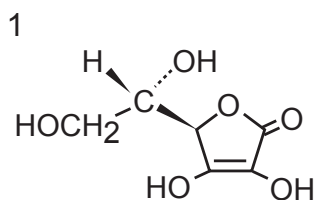
Unison UK-C18
Unison US-C18

75 x 3 mm
75 x 4.6 mm
150 x 4.6 mm

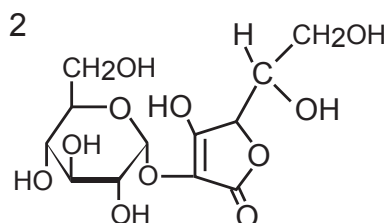
Application

Ascorbic Acid Derivative

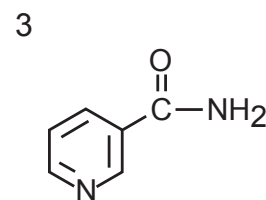
アスコルビン酸誘導体



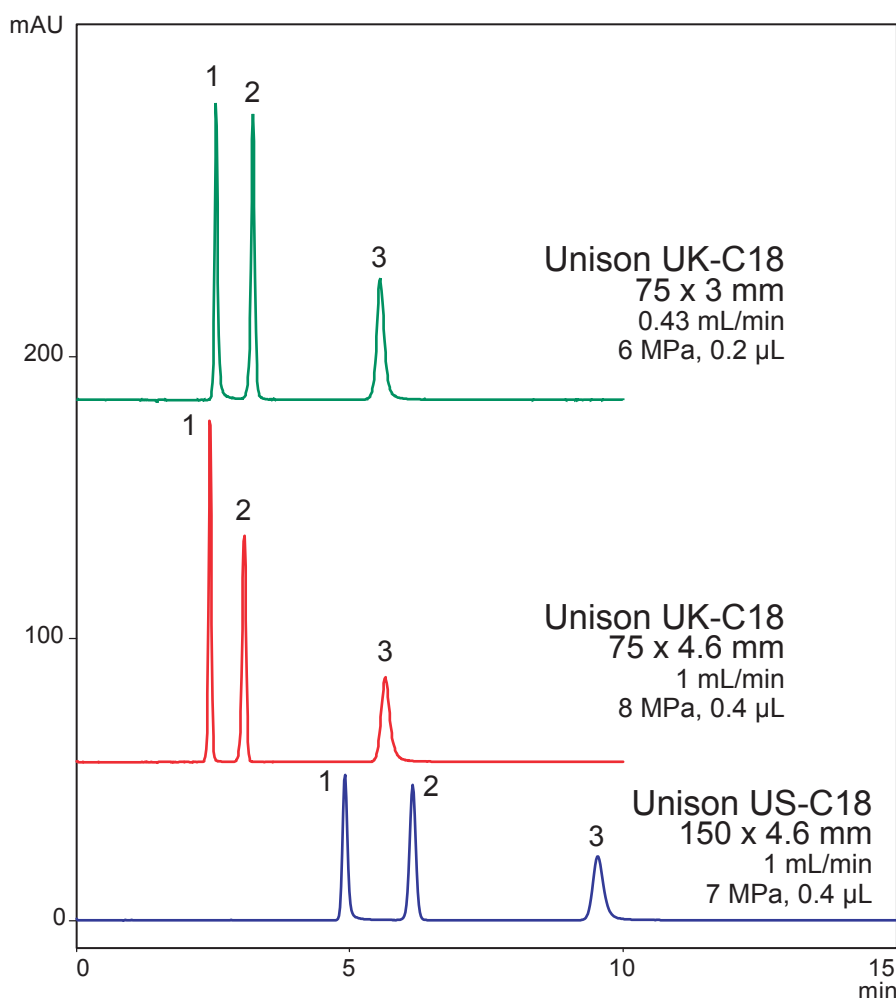
L-ascorbic acid



L-ascorbic acid 2-glucoside



nicotinamide



20mM ammonium acetate +
10mM dibutylammonium acetate
37 °C, 260 nm, 0.5 - 1.5 µg/µL

Unison UK-Silica

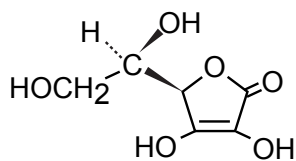
150 x 4.6 mm

Application

Ascorbic Acid Related Compounds

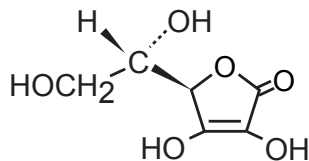
アスコルビン酸関連化合物

1



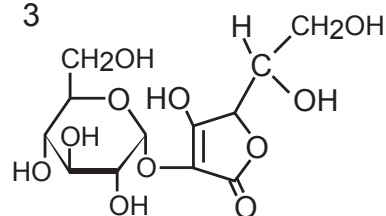
isoascorbic acid

2

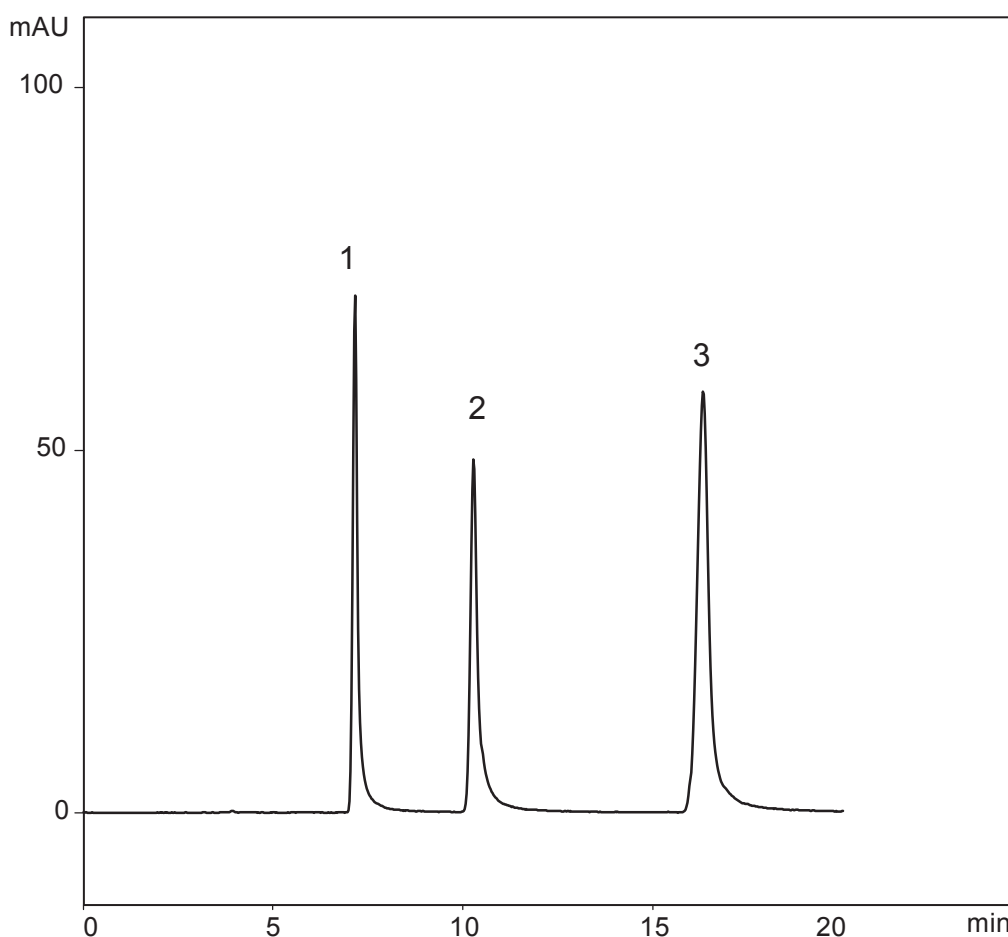


L-ascorbic acid

3



L-ascorbic acid 2-glucoside



Unison UK-Silica, 150 x 4.6mm
 50mM ammonium acetate / acetonitrile = 10 / 90
 0.8mL/min, 30 °C, 260 nm, 2 µg

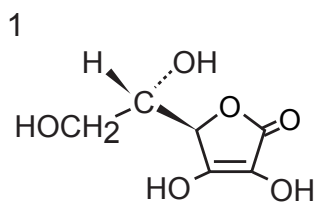
Unison UK-C18
Unison US-C18

75 x 4.6 mm
150 x 4.6 mm

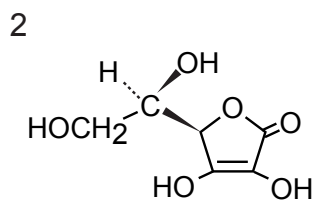
Application

Ascorbic Acid Related Compounds

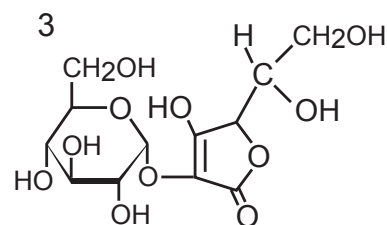
アスコルビン酸関連化合物



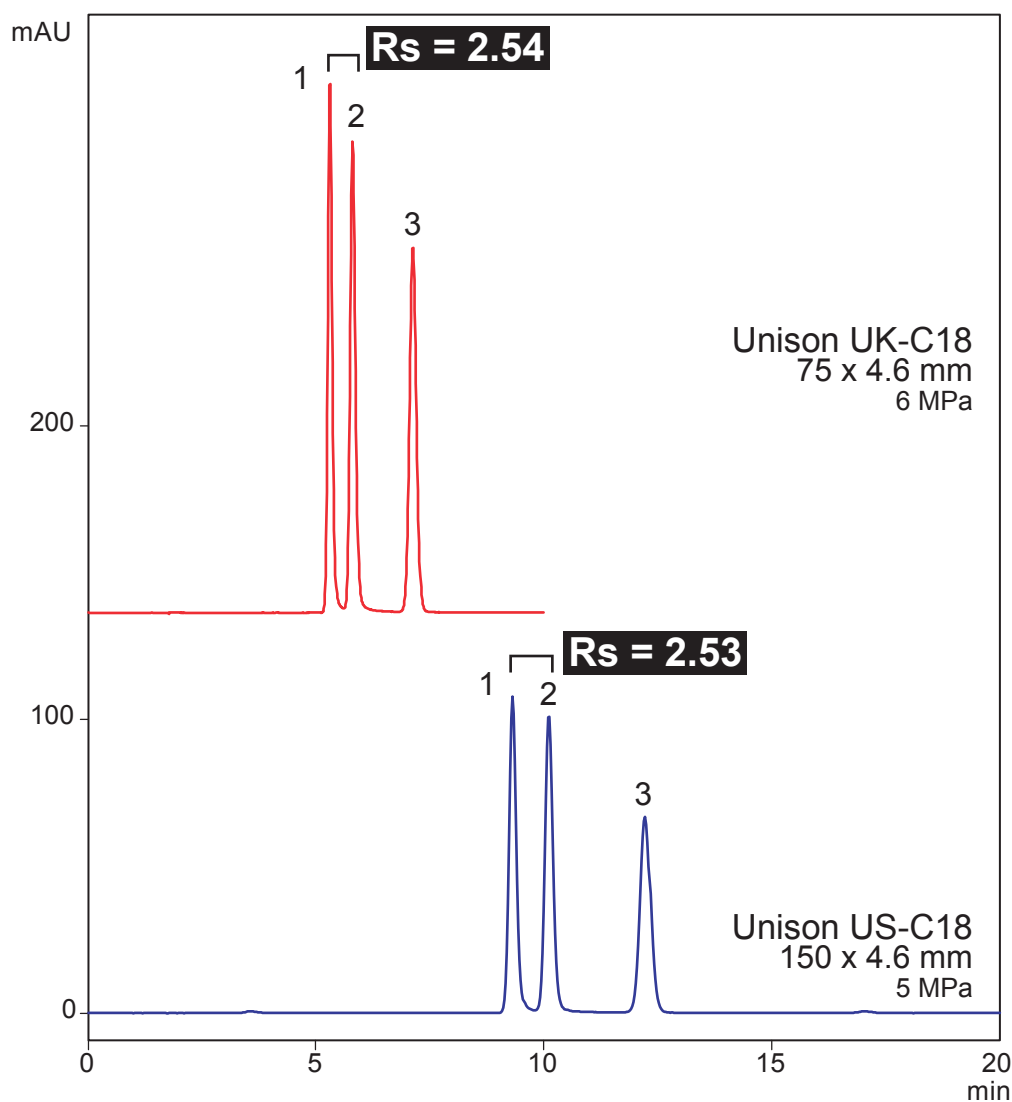
L-ascorbic acid



isoascorbic acid



L-ascorbic acid 2-glucoside



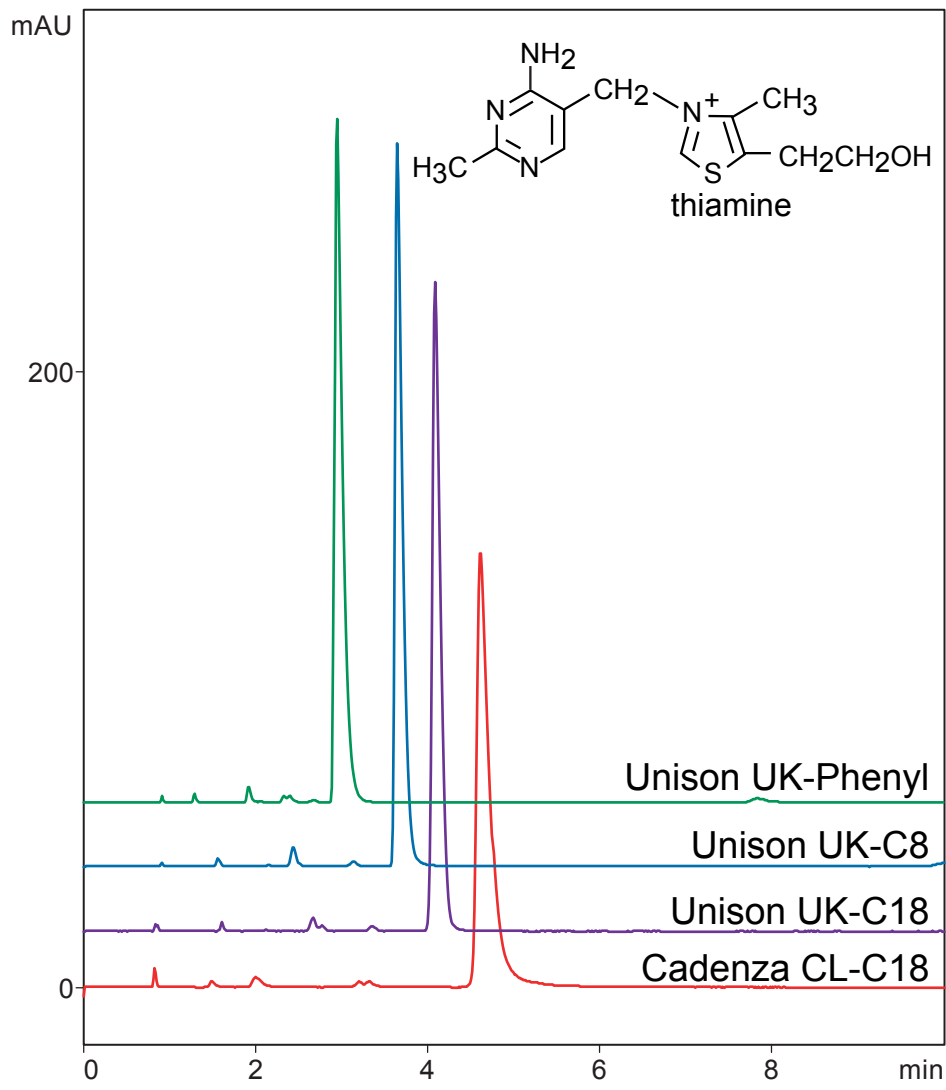
10mM dibutylammonium acetate
0.8mL/min, 30 °C, 260 nm, 2 μ g

Unison UK-Phenyl
 Unison UK-C8
 Unison UK-C18
 Cadenza CL-C18

75 x 4.6 mm

Application

Thiamine HCl (Vitamin B1) Injection Solution
 塩酸チアミン(ビタミンB1)注射液



75 x 4.6 mm
 50 mM HCOONH₄ / acetonitrile= 98 / 2
 1 mL/min, 37 °C, 260 nm, 0.2μL

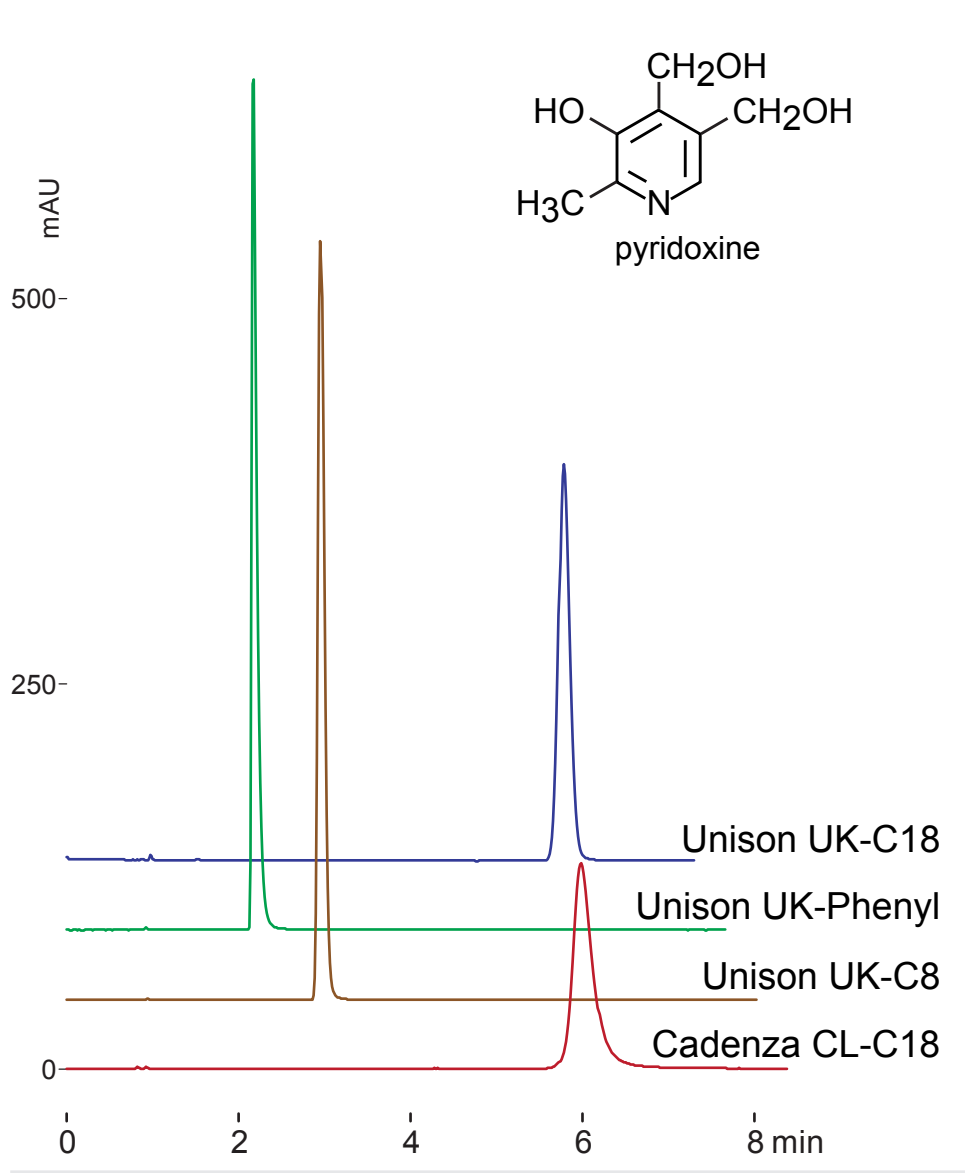
Unison UK-C18
Unison UK-C8
Unison UK-Phenyl
Cadenza CL-C18

75 x 4.6 mm

Application

Pyridoxine HCl (Vitamin B6) Injection Solution

塩酸ピリドキシン(ビタミンB6)注射液



75 x 4.6 mm
50 mM HCOONH₄
1 mL/min, 37 °C
260 nm, 0.5µL

Unison UK-Silica

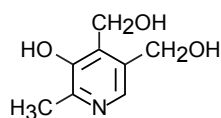
250 x 2 mm

Application

Water-Soluble Vitamins

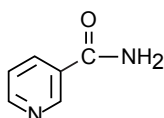
水溶性ビタミン

1



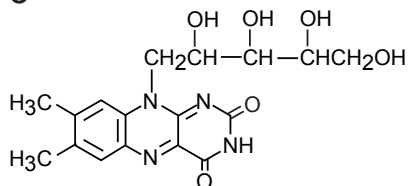
pyridoxine

2



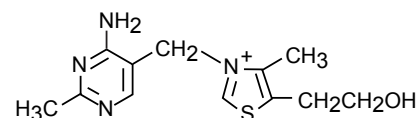
nicotinamide

3

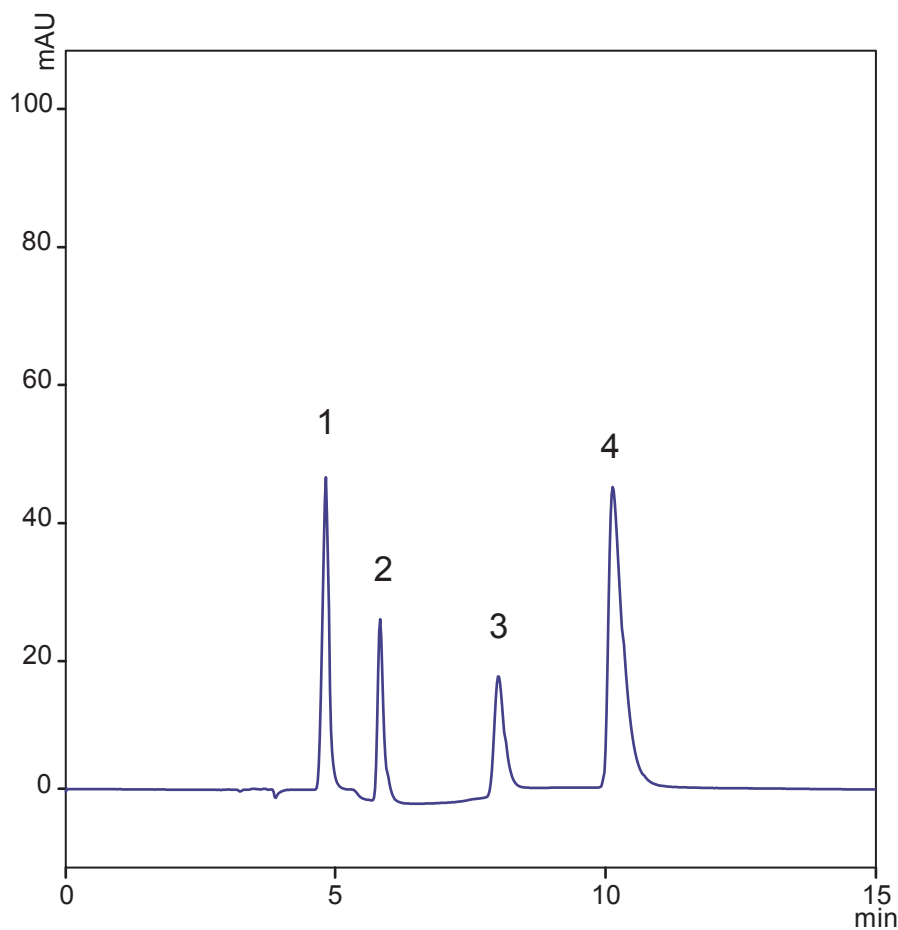


riboflavin

4



thiamine



Unison UK-Silica, 250 x 2 mm
 water / acetonitrile / TFA = 5 / 95 / 0.5
 0.2 mL/min (5MPa), 37 °C, 260 nm

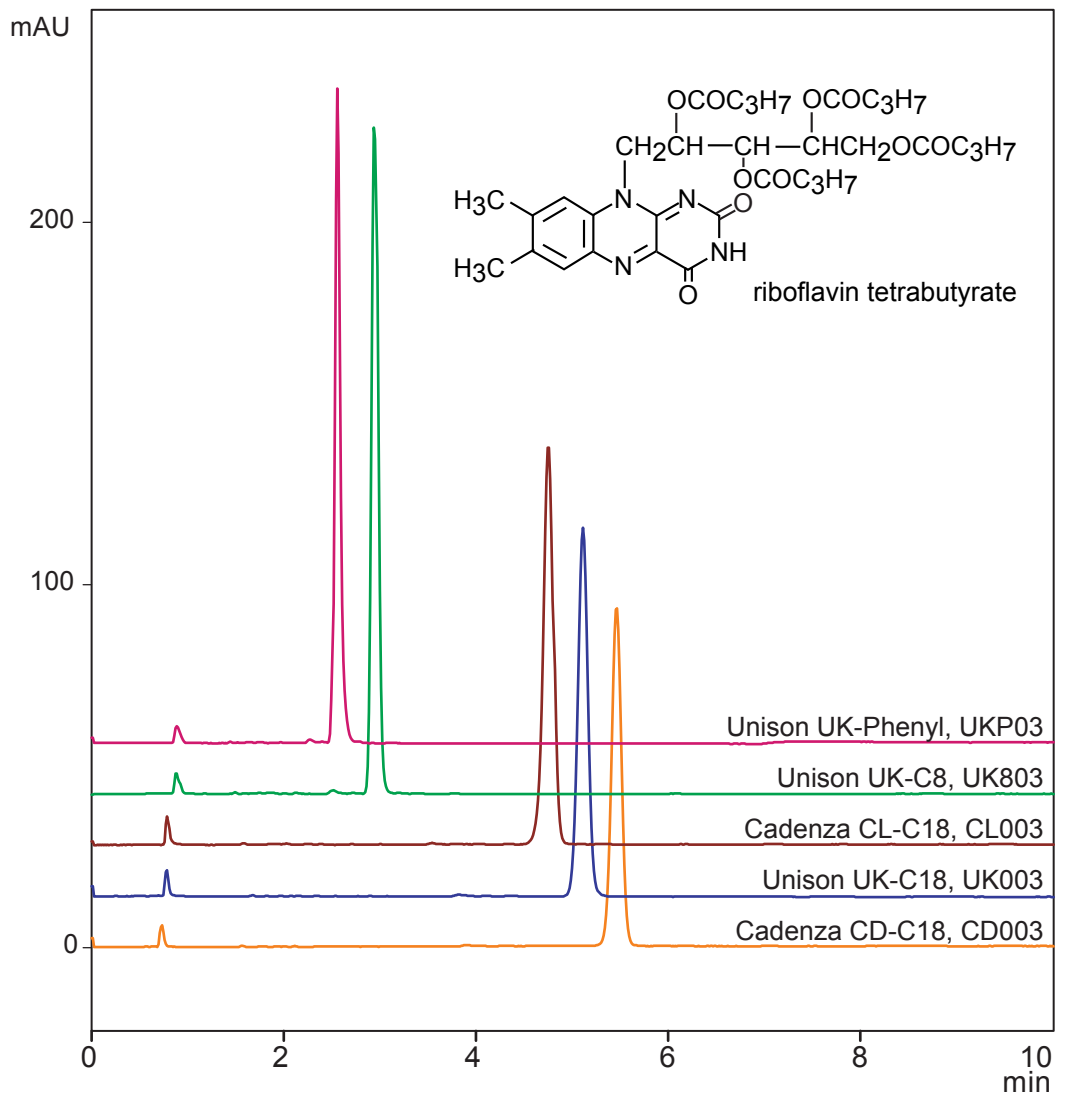
Unison UK-Phenyl
Unison UK-C8
Unison UK-C18
Cadenza CL-C18
Cadenza CD-C18

75 x 4.6 mm

Application

Riboflavin Tetrabutyrate Tablet

酪酸リボフラビン錠



75 x 4.6 mm
1% acetic acid / acetonitrile = 40 / 60
1 mL/min, 37 °C, 260 nm, 1 µg

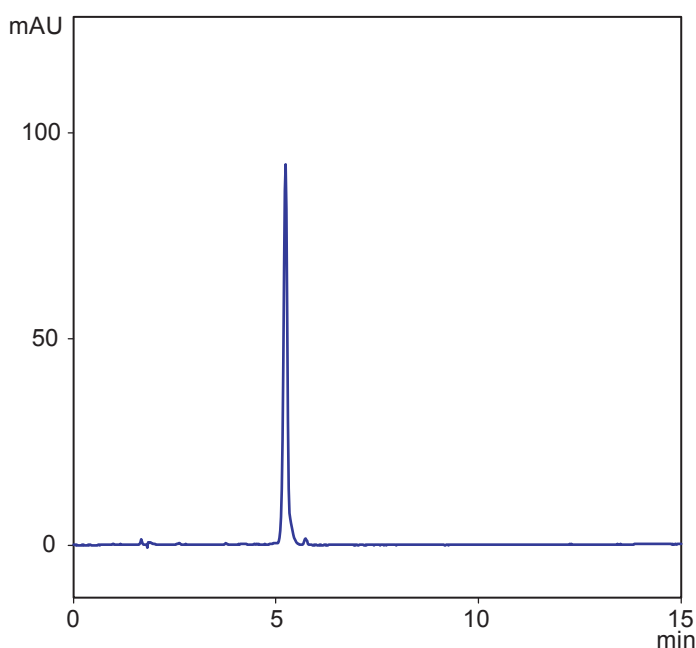
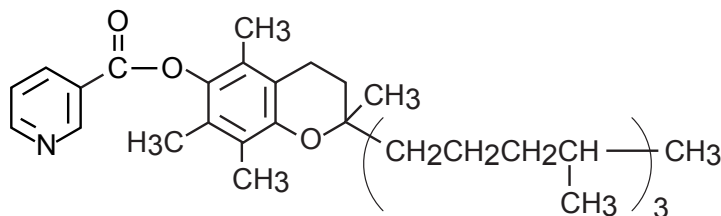
Unison UK-Silica
Cadenza CD-C18

150 x 3 mm

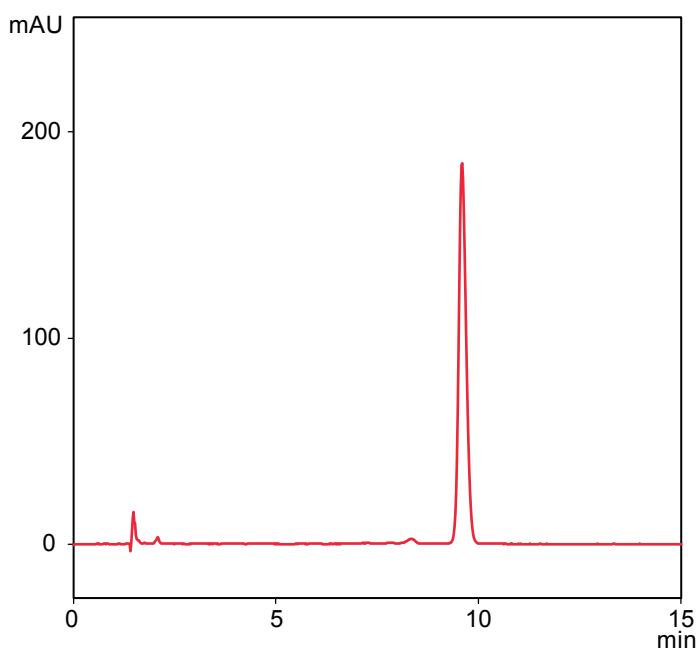
Application

Tocopherol Nicotinate Capsule

ニコチン酸トコフェロールカプセル



Unison UK-Silica, 150 x 3 mm
hexane / THF = 95 / 5
0.5 mL/min (4MPa), 37 °C, 295 nm
tocopherol nicotinate 5 μ g



Cadenza CD-C18, 150 x 3 mm
methanol, 0.5 mL/min (6MPa)
37 °C, 295 nm
tocopherol nicotinate 5 μ g

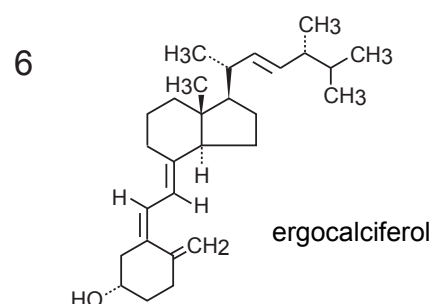
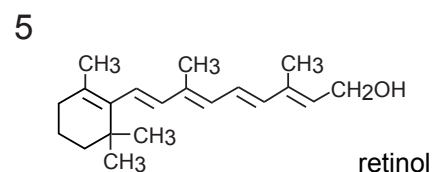
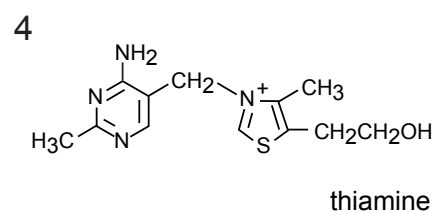
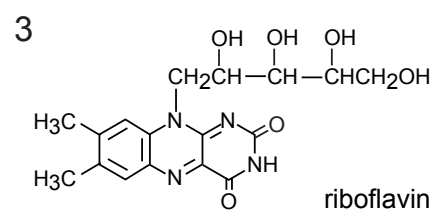
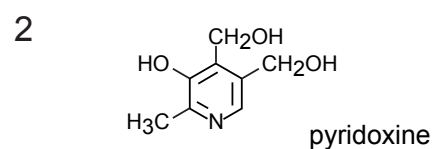
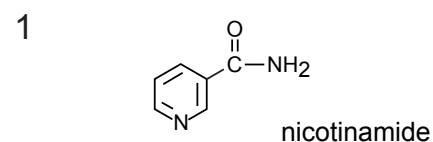
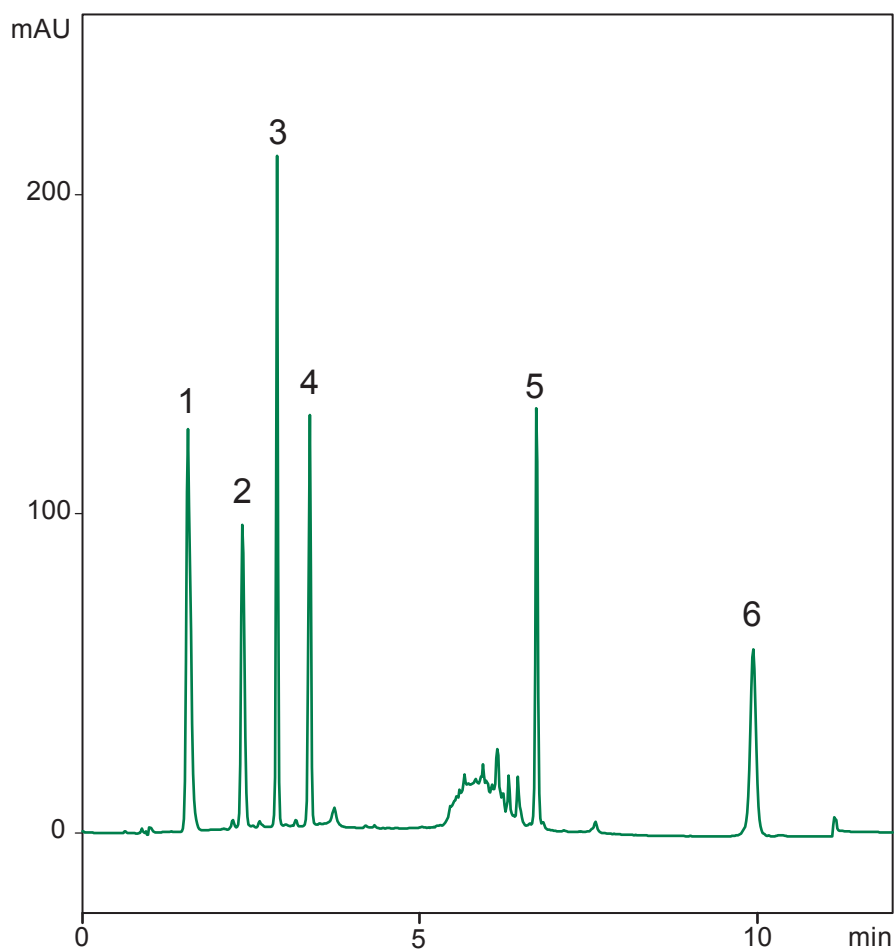
Unison UK-C18

75 x 3 mm

Application

Simultaneous Analysis Of Water-soluble And Fat-soluble Vitamins

水溶性ビタミンと脂溶性ビタミンの同時分析



Unison UK-C18, 75 x 3 mm

A: water / heptafluorobutyric acid = 100 / 0.1

B: acetonitrile

10 - 40%B (0 - 4min)

40 - 100%B (4 - 4.5min)

100%B (4.5 - 10min)

0.5 mL/min, 37 °C, 260 nm, 0.24 - 2.4µg(2µL)

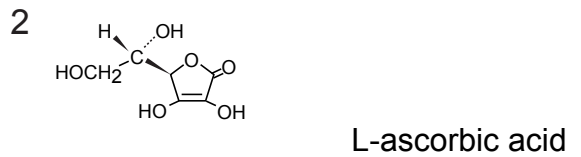
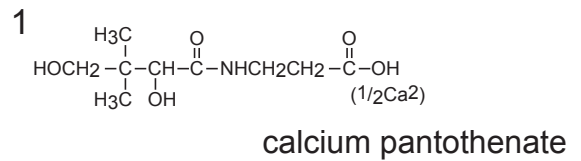
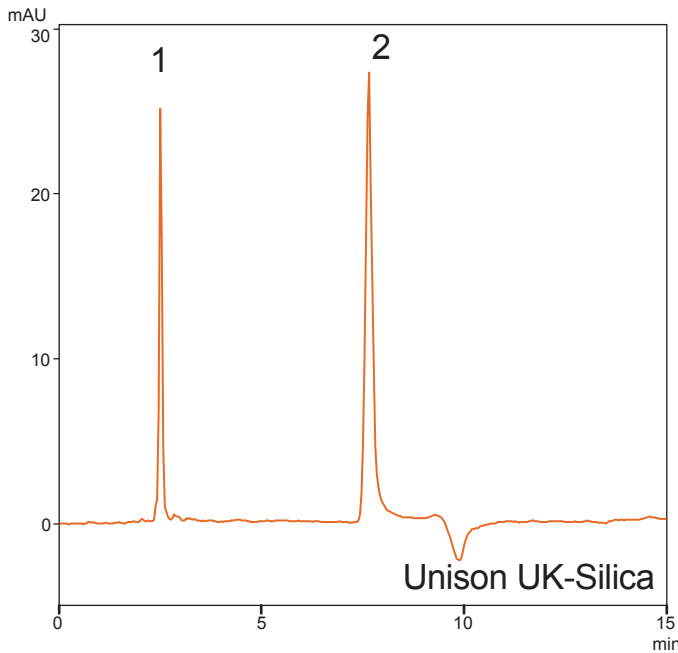
Unison UK-Silica
 Unison UK-Phenyl
 Unison UK-C8
 Unison UK-C18
 Cadenza CL-C18

150 x 4.6 mm
 75 x 4.6 mm

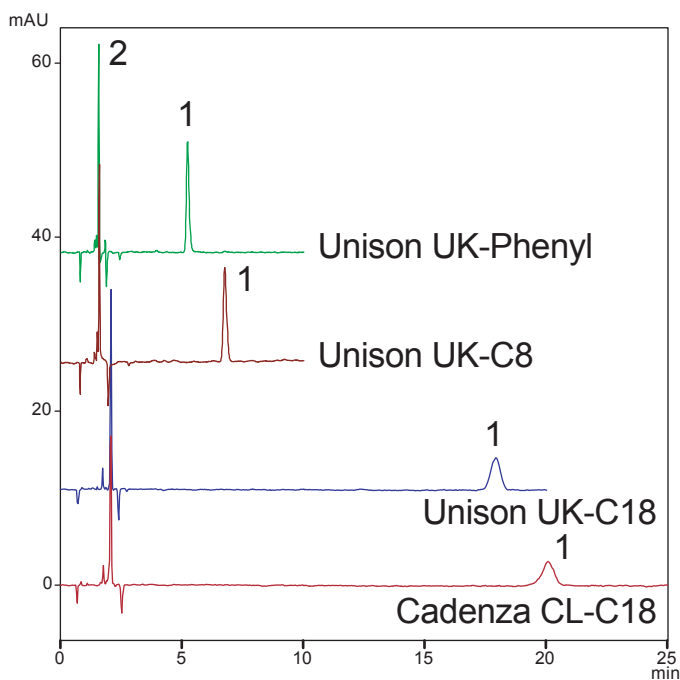
Application

Calcium Pantothenate and Ascorbic Acid

パントテン酸カルシウムとアスコルビン酸



Unison UK-Silica, 150 x 4.6 mm
 50mM ammonium acetate / acetonitrile
 = 10 / 90
 1 mL/min, 37 °C, 210 nm, 2µL(1-2µg)



75 x 4.6 mm
 20mM NaH₂PO₄ +
 10mM dibutylammonium acetate
 1 mL/min, 37 °C, 210 nm, 2µL(0.5-1µg)

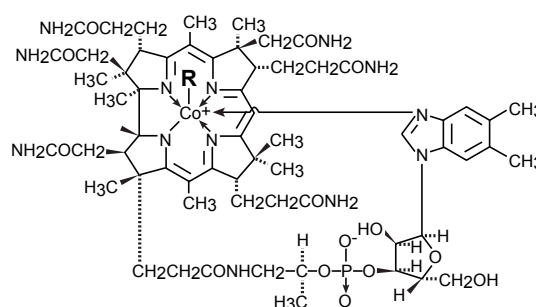
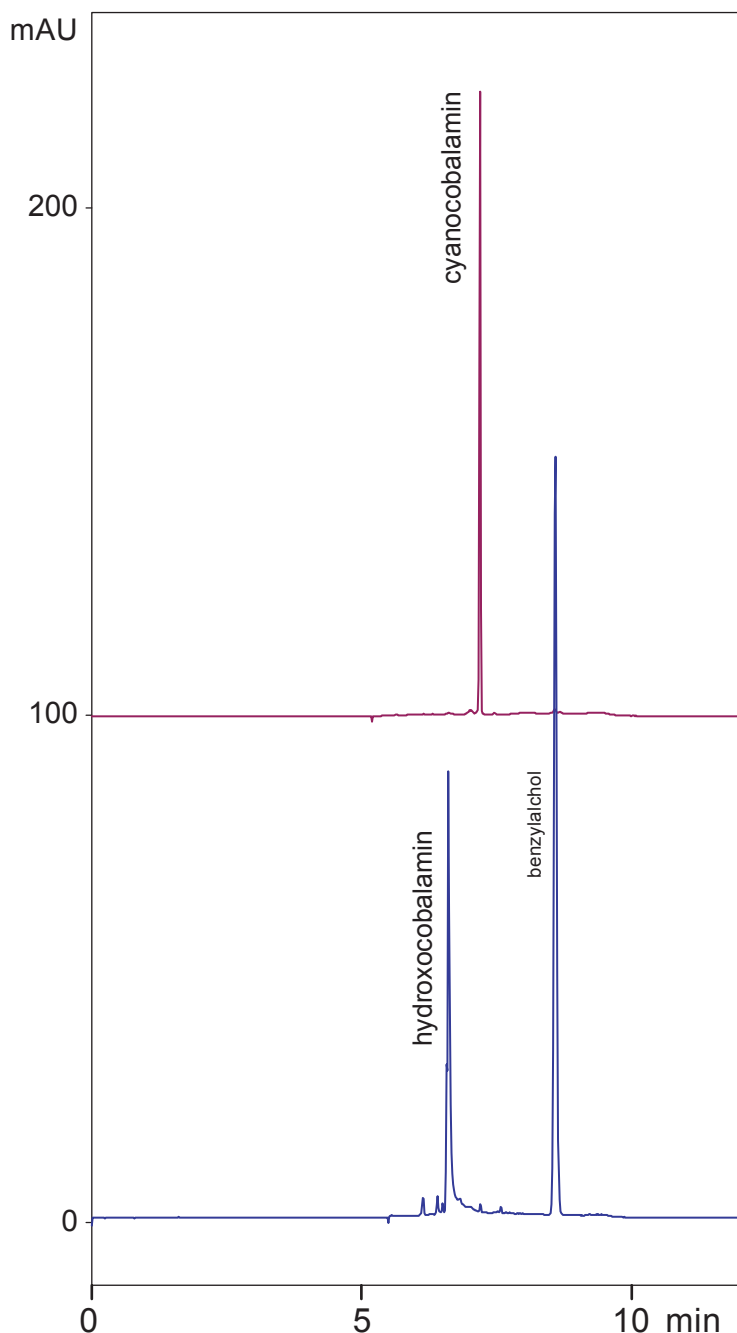
Unison UK-C18

75 x 4.6 mm

Application

Vitamin B12 Related Compounds

ビタミンB12関連化合物



R = -CN cyanocobalamin
 = -OH hydroxocobalamin

Unison UK-C18, 75 x 4.6 mm
 A: water / formic acid = 100 / 0.1
 B: acetonitrile / formic acid = 100 / 0.1
 0%B(0-3min), 0-30%B(3-8min)
 1 mL/min (6MPa), 37 °C, 260 nm

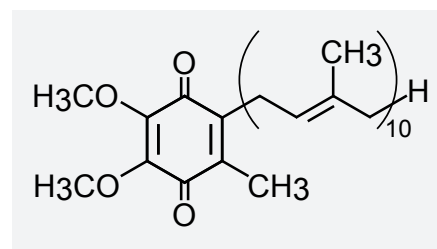
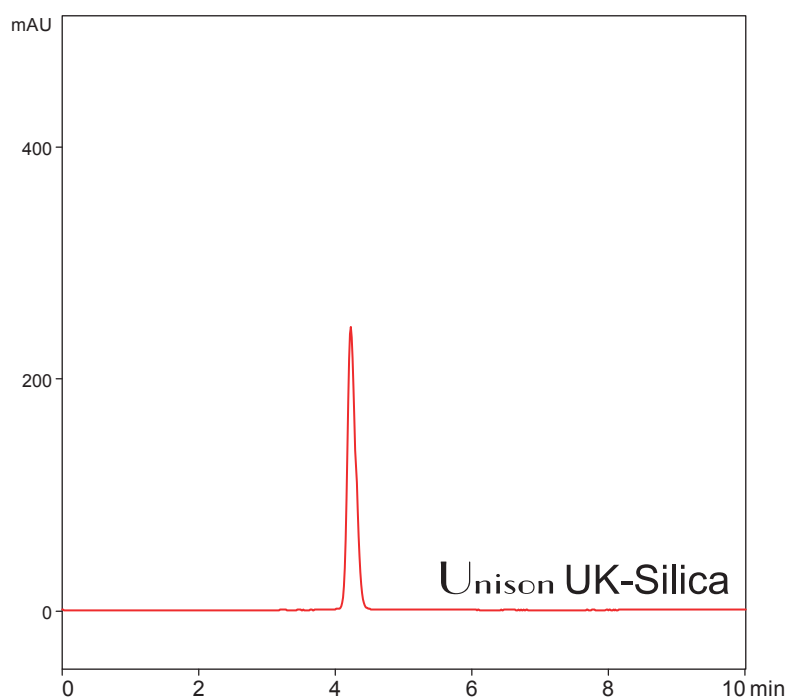
Unison UK-Silica
 Unison UK-C8
 Unison UK-C18
 Cadenza CL-C18
 Cadenza CD-C18

150 x 3 mm
 75 x 3 mm

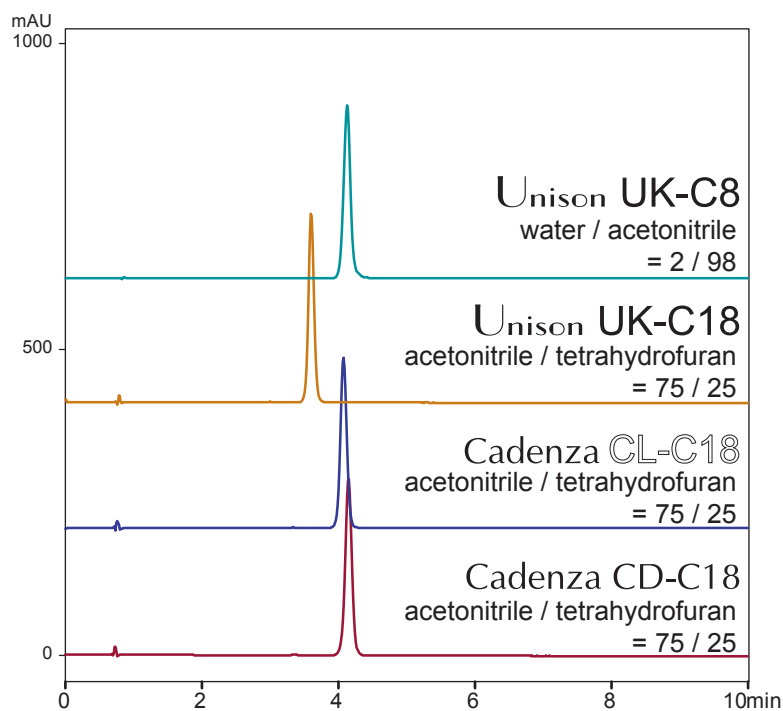
Application

Coenzyme Q10

コエンザイムQ10



Unison UK-Silica
 150 x 3 mm
 hexane / IPA = 998 / 2
 0.5 mL/min, 37 deg.C
 270 nm, 2ug (2uL)



75 x 3 mm
 0.5 mL/min, 37 deg.C
 270 nm, 2ug (2uL)

Unison UK-C8

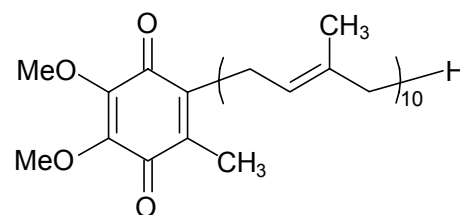
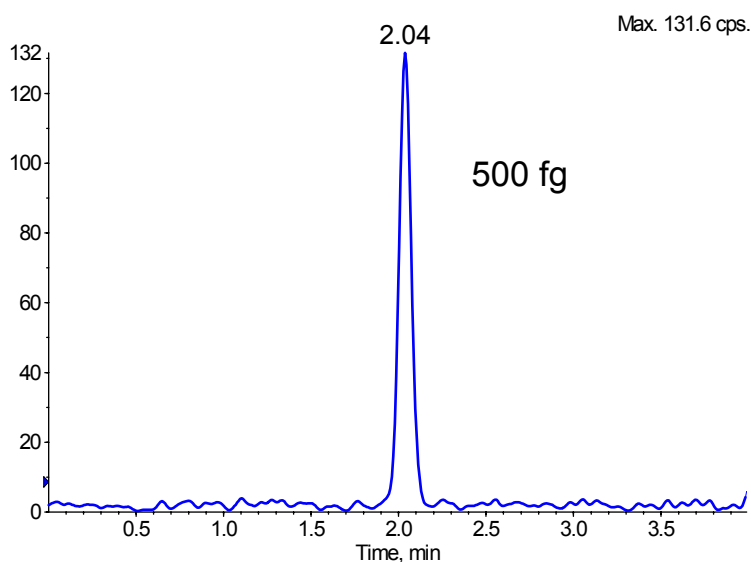
75 x 3 mm

Application

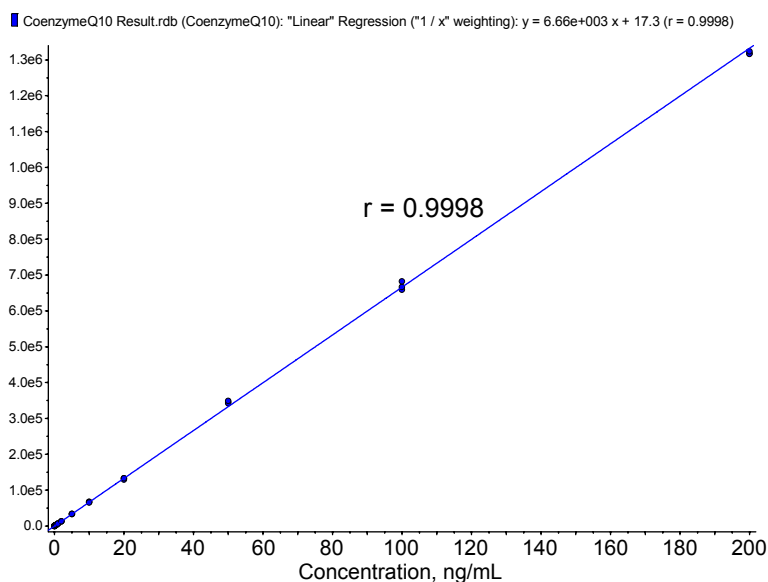
LC-MS Application for Coenzyme Q10

LC-MSアプリケーション (コエンザイム Q10)

API4000 (TAKARA BIO INC.)



Coenzyme Q10
Mw. 863.36



Unison UK-C8, 75 x 3 mm

0.1% formic acid / acetonitrile / isopropanol = 1 / 5 / 5

0.8 mL/min, 10 uL(50 fg/uL)

API4000: APCI, MRM Positive, Q1/Q3 : 863.5 / 197

Courtesy of J.Watanabe, TAKARA BIO INC.

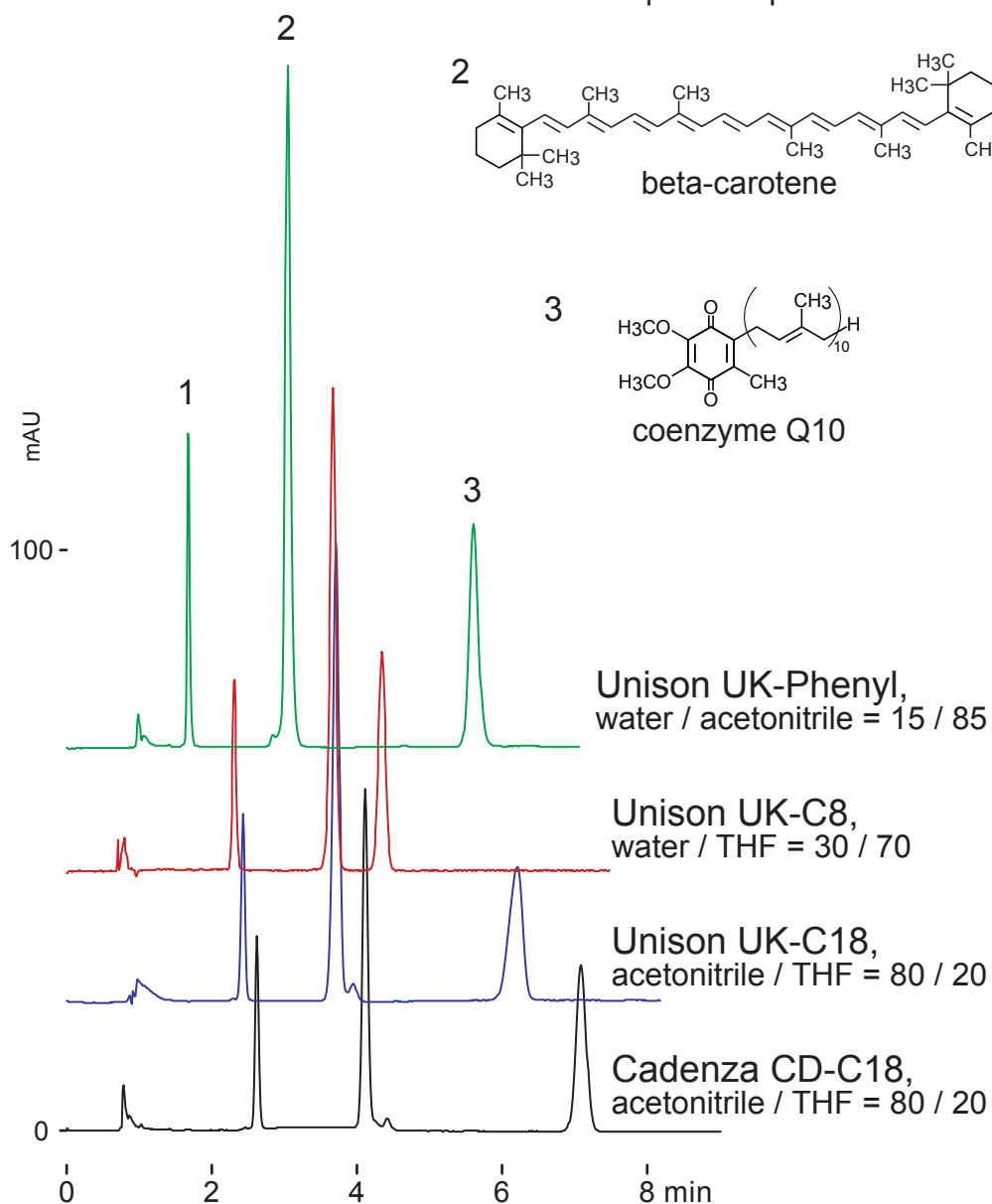
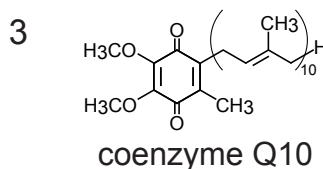
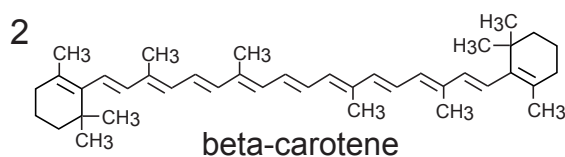
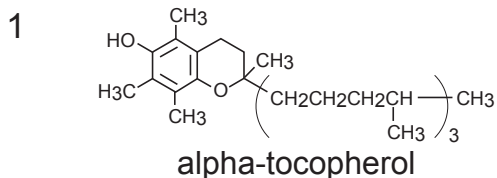
Unison UK-Phenyl
 Unison UK-C8
 Unison UK-C18
 Cadenza CD-C18

75 x 4.6 mm

Application

Fat-Soluble Vitamins

脂溶性ビタミン



75 x 4.6 mm,
 1 mL/min, 280 nm
 37 degC, 2 uL (0.8-1.6ug)

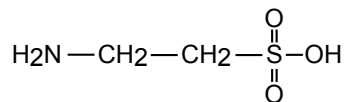
Unison UK-C18

75 x 4.6 mm

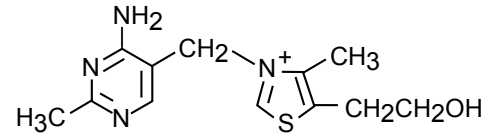
Application

ELSD application - taurine and water-soluble vitamins

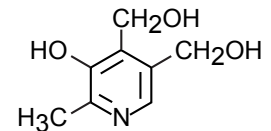
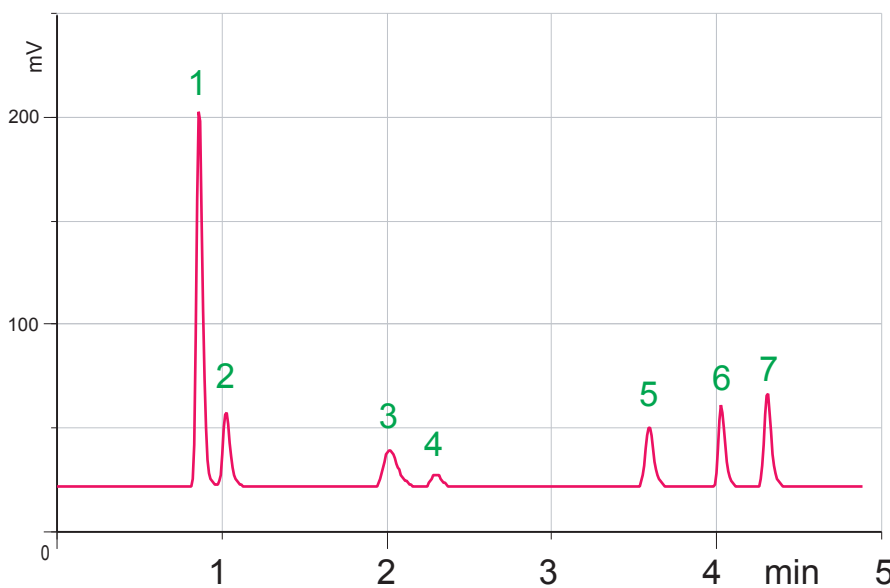
ELSD検出器によるタウリンと水溶性ビタミンの同時分析



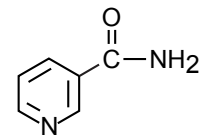
1 taurine



2 thiamine (B1)



3 pyridoxine (B6)



4 nicotinamide (B3)

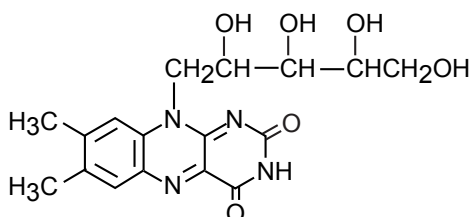
Unison UK-C18, 75 x 4.6 mm

A: 5mM HCOONH4

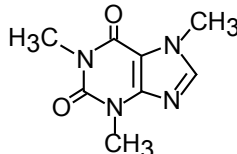
B: methanol

10-50%B (0-2min), 50%B (2-5min)

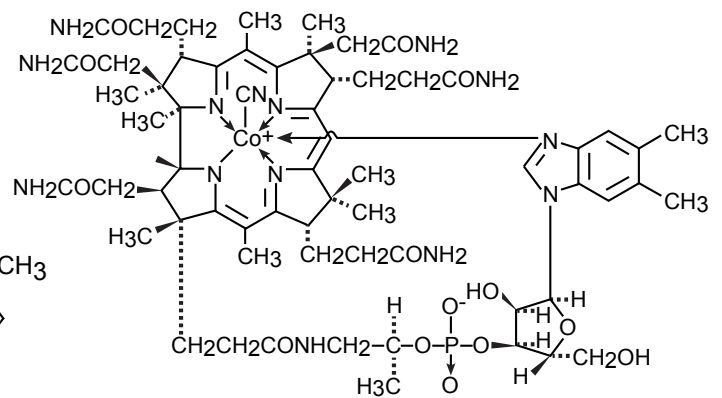
1 mL/min, 10uL(500ng), ELSD(SofTA)



7 riboflavin (B2)



6 caffeine



5 cyanocobalamin (B12)

Courtesy of Mr. Y.Sakai, M&S Instruments Trading Inc., Japan

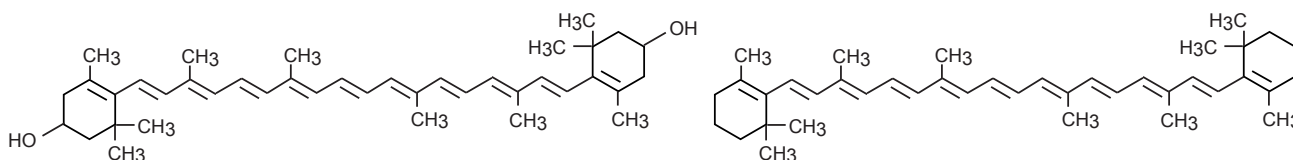
Unison UK-C18

100 x 4.6 mm

Application

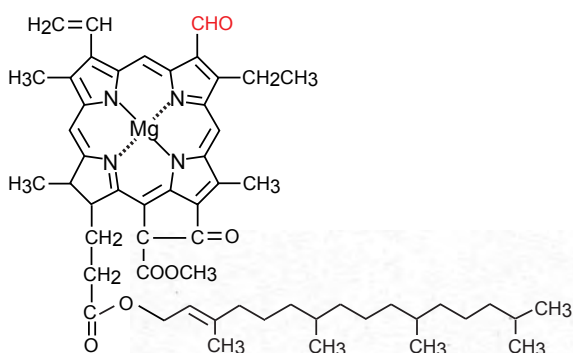
Chlorophyll and Carotenoid

壬生葉アセトン抽出物中のクロロフィルとカロテノイド

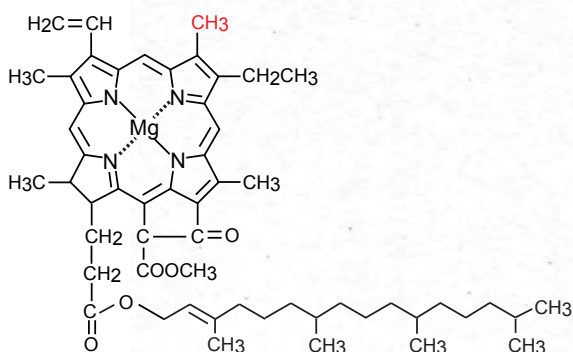


1 lutein (xanthophyll)

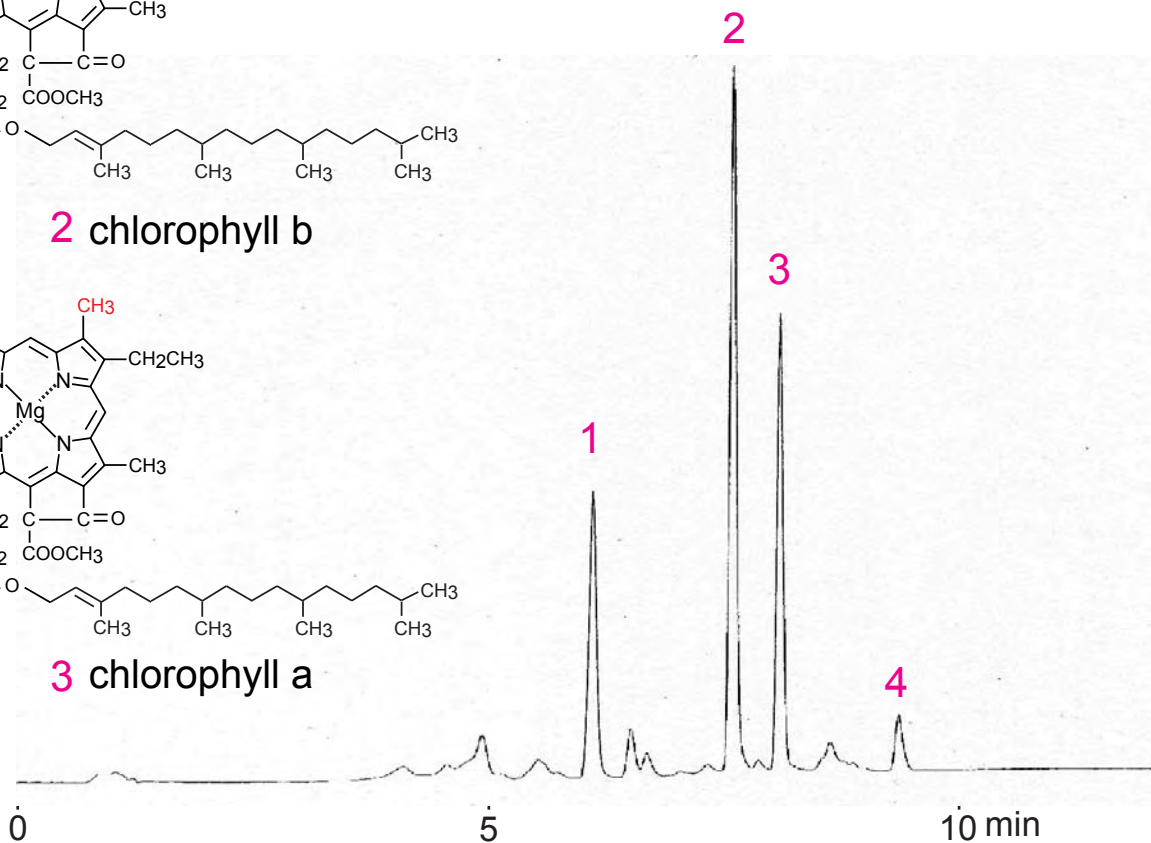
4 β -carotene



2 chlorophyll b



3 chlorophyll a



Unison UK-C18, 100 x 4.6 mm

A: methanol / water = 90 / 10, B: ethyl acetate

0-100%B (0-7min), 100%B (7min -), 1 mL/min, ambient, VIS 450 nm

acetone extracts from *Brassica campestris*

Courtesy of K. Nakanishi, Tokushima Prefectural Industrial Technology Center, Japan

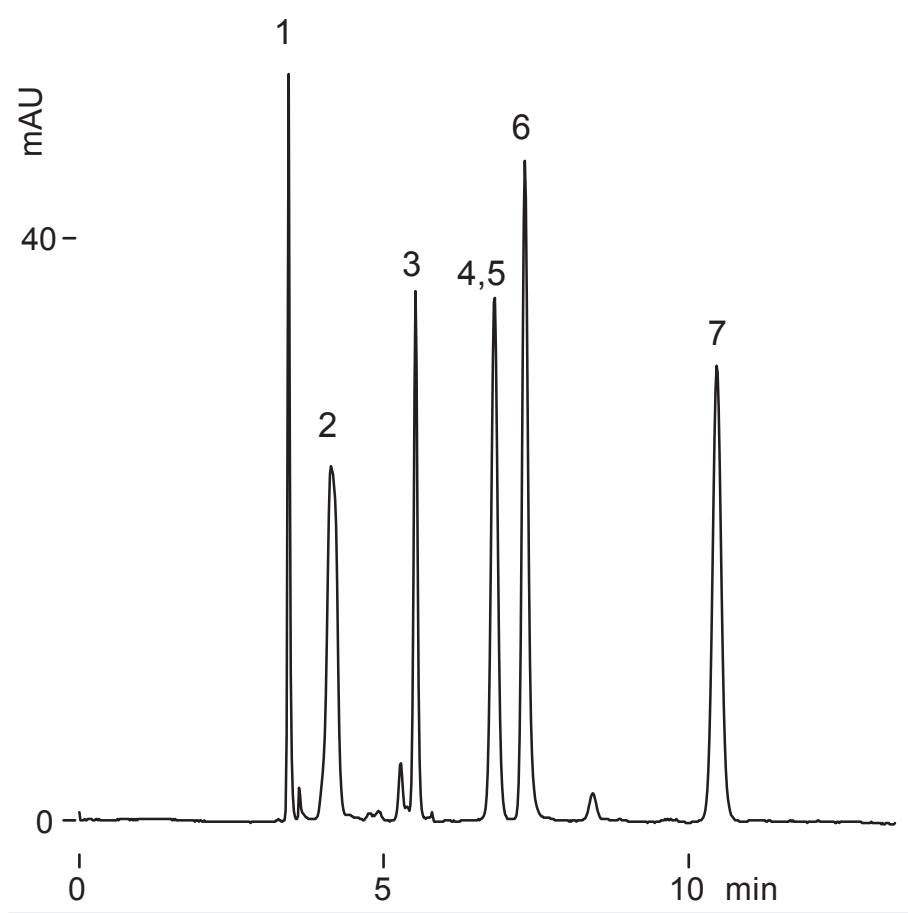
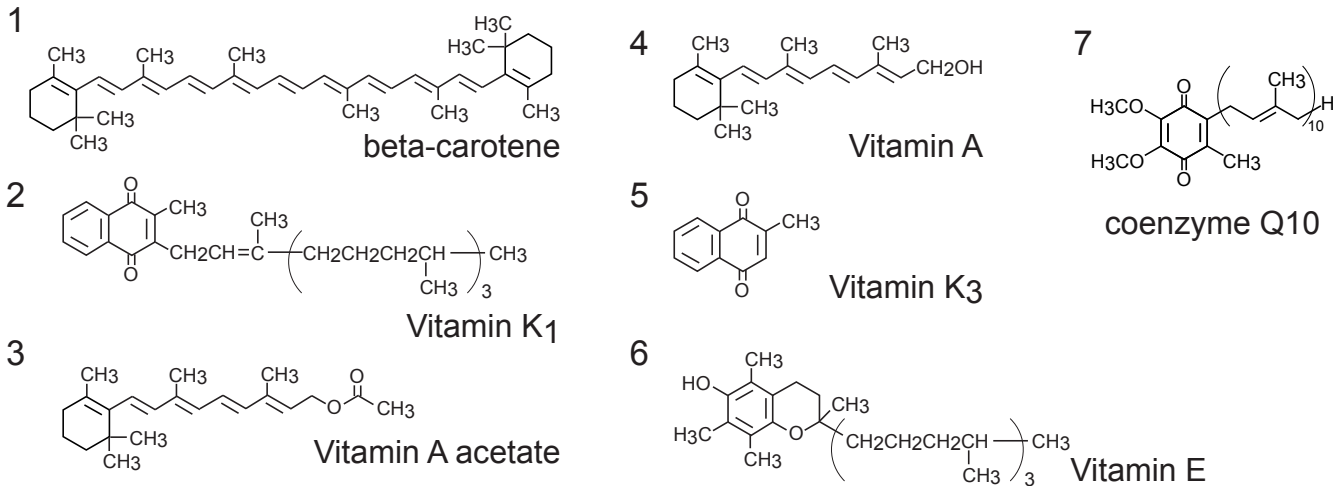
Unison UK-Silica

250 x 4.6 mm

Application

Fat-Soluble Vitamins

脂溶性ビタミン



Unison UK-Silica, 250 x 4.6 mm
 hexane / ethyl acetate / tetrahydrofuran = 97 / 2 / 1
 1 mL/min, 37 deg.C, 280 nm, 2 uL(0.2-3ug)

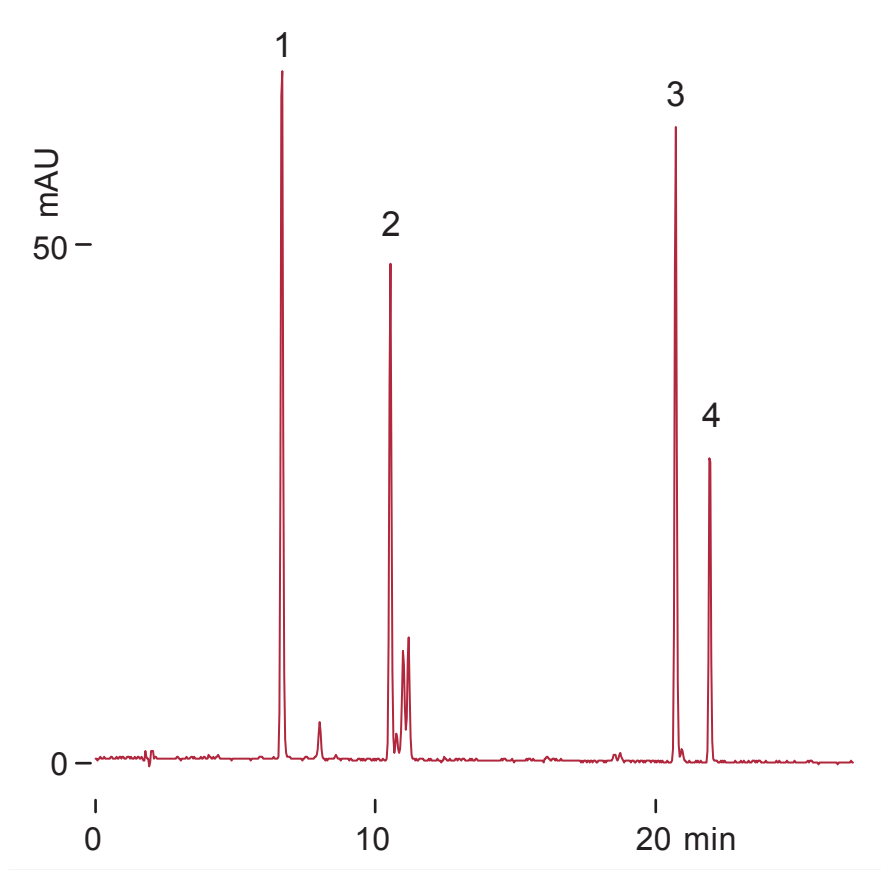
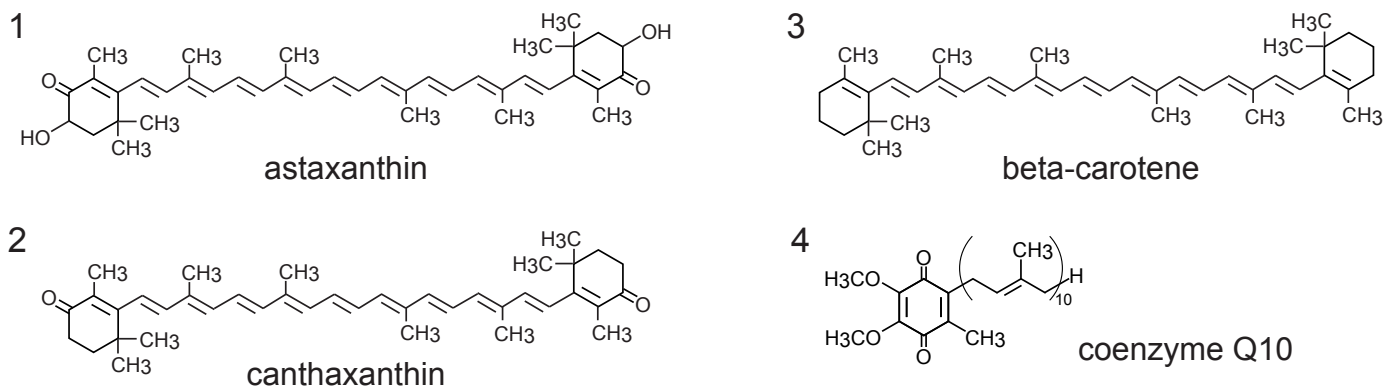
Cadenza CD-C18

150 x 4.6 mm

Application

Carotinoids

カロチノイド



Cadenza CD-C18, 150 x 4.6 mm
 A: water / methanol = 50 / 50, B: tetrahydrofuran
 40 - 80 %B (0-25min), 0.8 mL/min,
 37 deg.C, 470 nm, 5uL (0.1-20 ug)

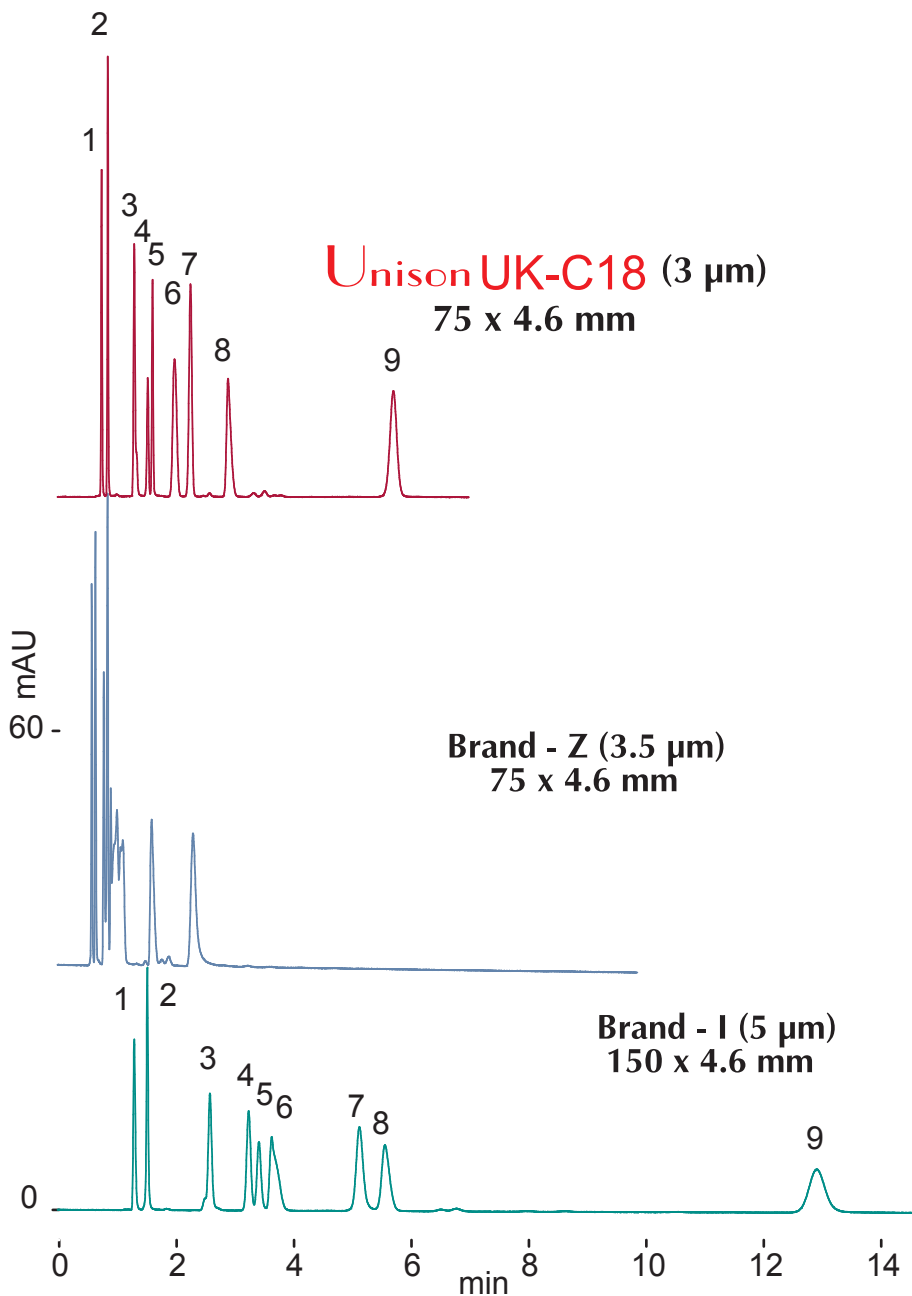
Unison UK-C18

75 x 4.6 mm

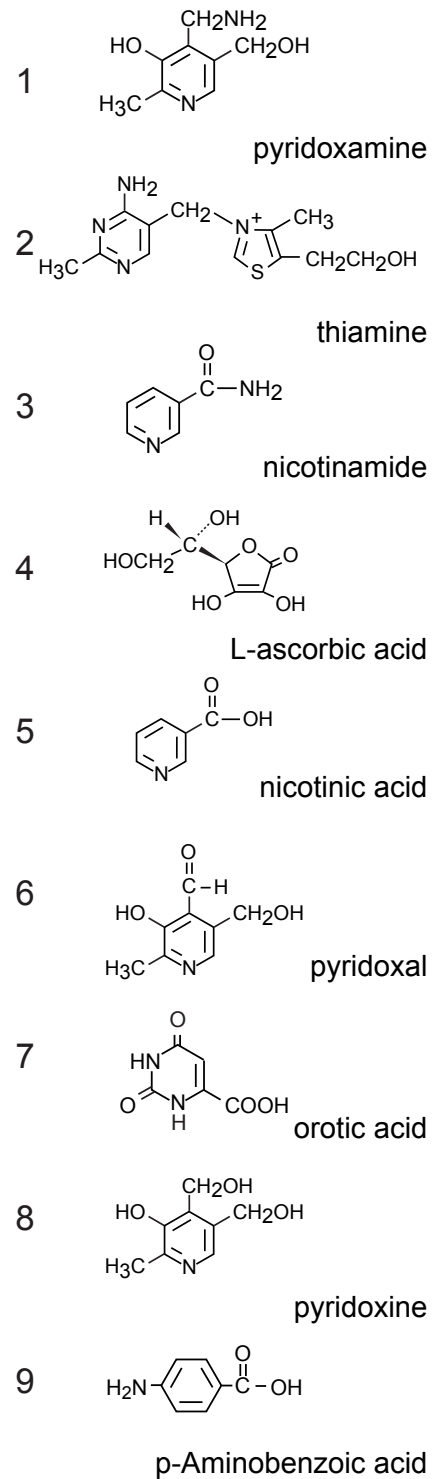
Application

Water-Soluble Vitamins

水溶性ビタミン



20 mM H₃PO₄
1.0 mL/min, 37 deg.C
260 nm

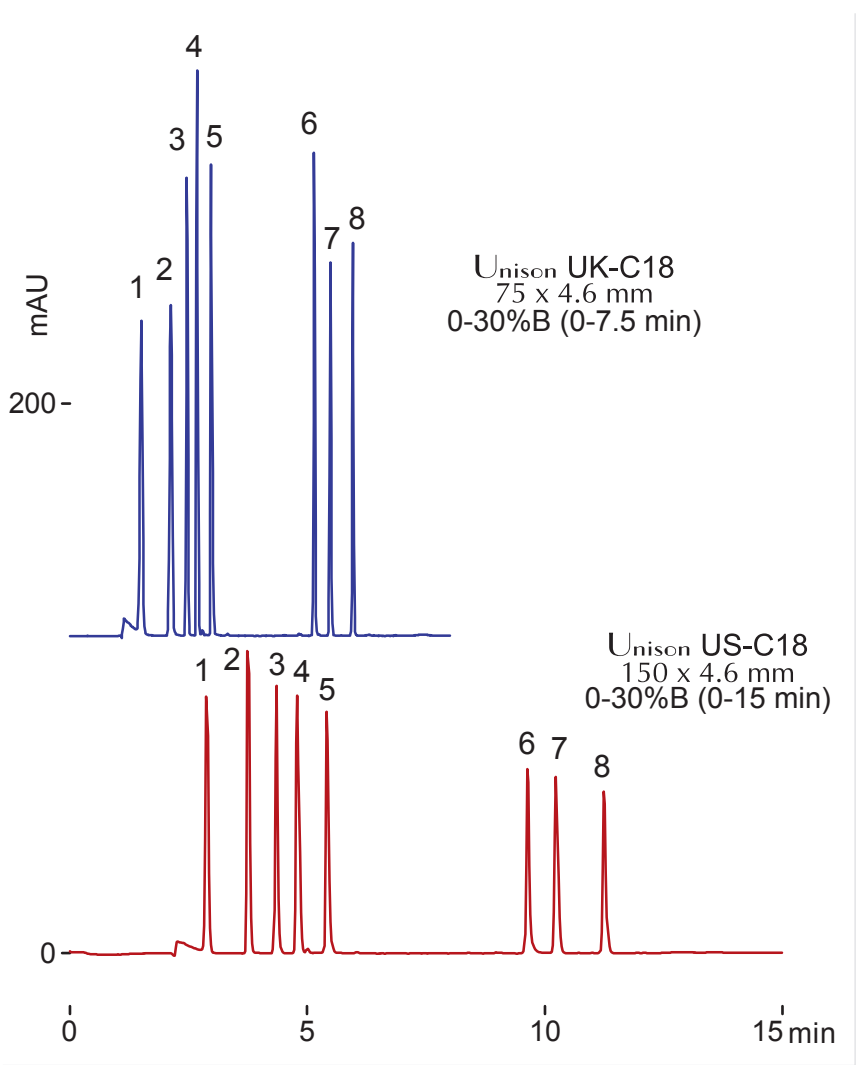


Unison UK-C18
Unison US-C18

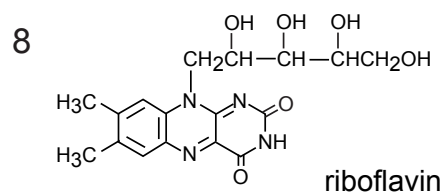
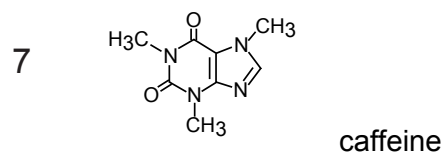
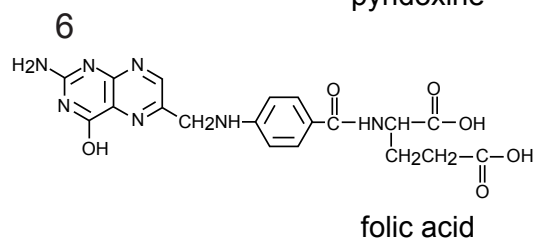
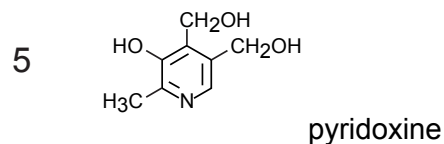
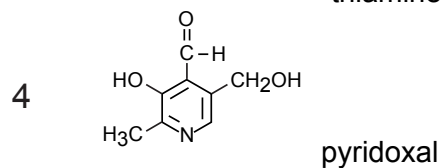
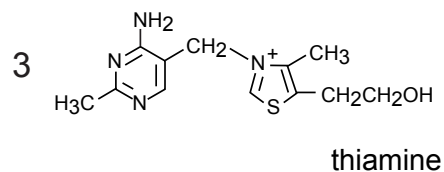
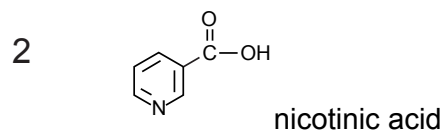
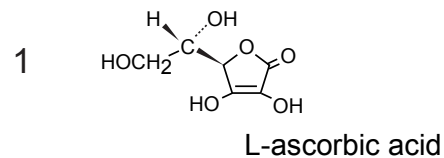
75 x 4.6 mm
150 x 4.6 mm

Application

Water-Soluble Vitamins
水溶性ビタミン



A: water / trifluoroacetic acid = 100 / 0.1
B: acetonitrile
1 mL/min (5MPa), 37 deg.C, 254 nm
2uL (0.2-5 ug)



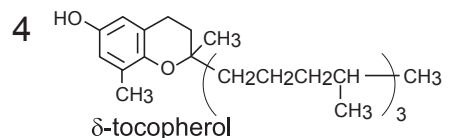
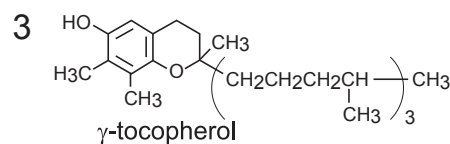
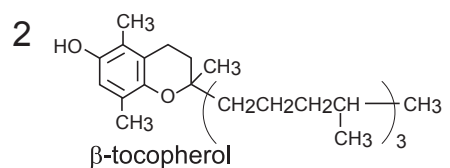
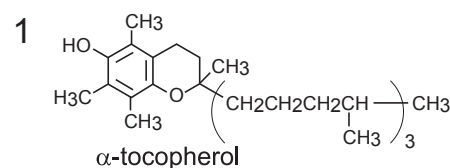
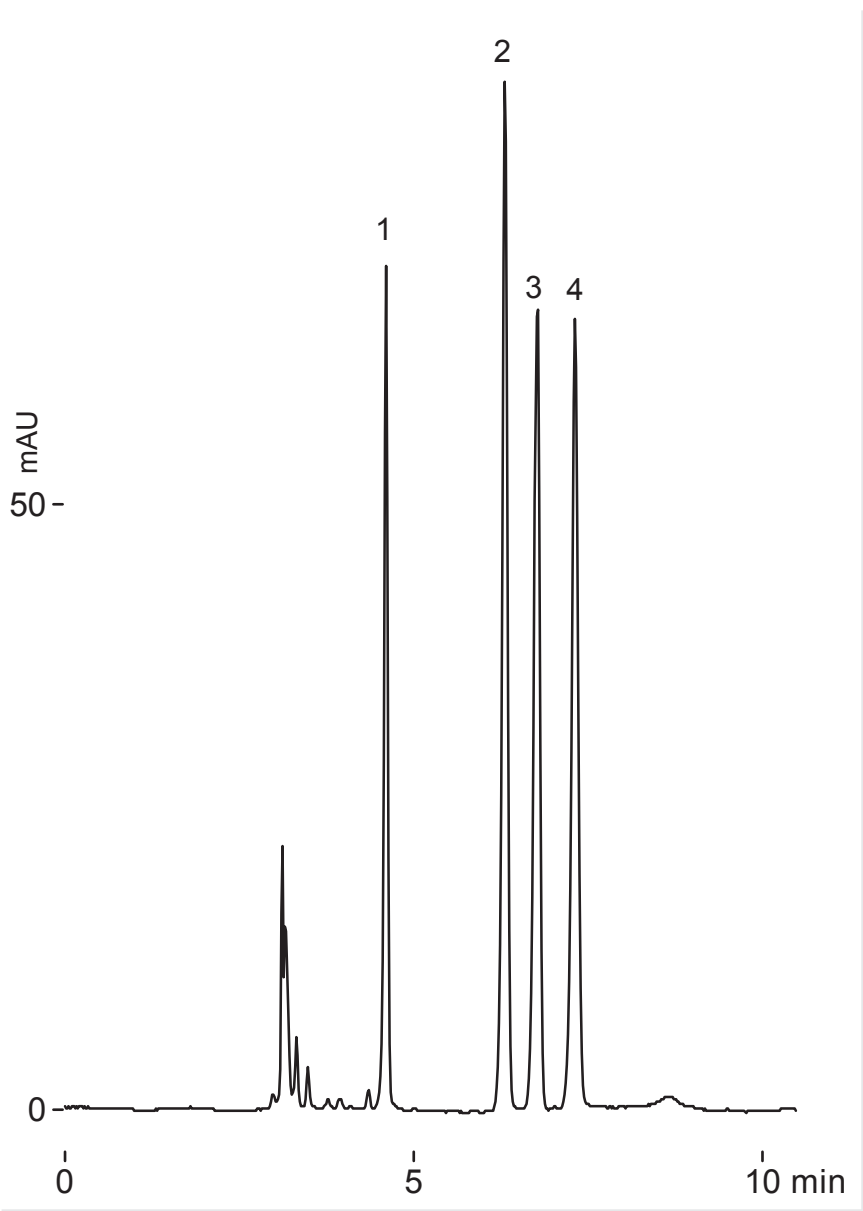
Unison UK-Amino

250 x 4.6 mm

Application

Tocopherols

トコフェロール



Unison UK-Amino, 250 x 4.6 mm
 hexane / ethyl acetate / acetic acid = 80 / 20 / 0.1
 1 mL/min (6 MPa), 37 deg.C, 295 nm, 2 μ L (2 ug)

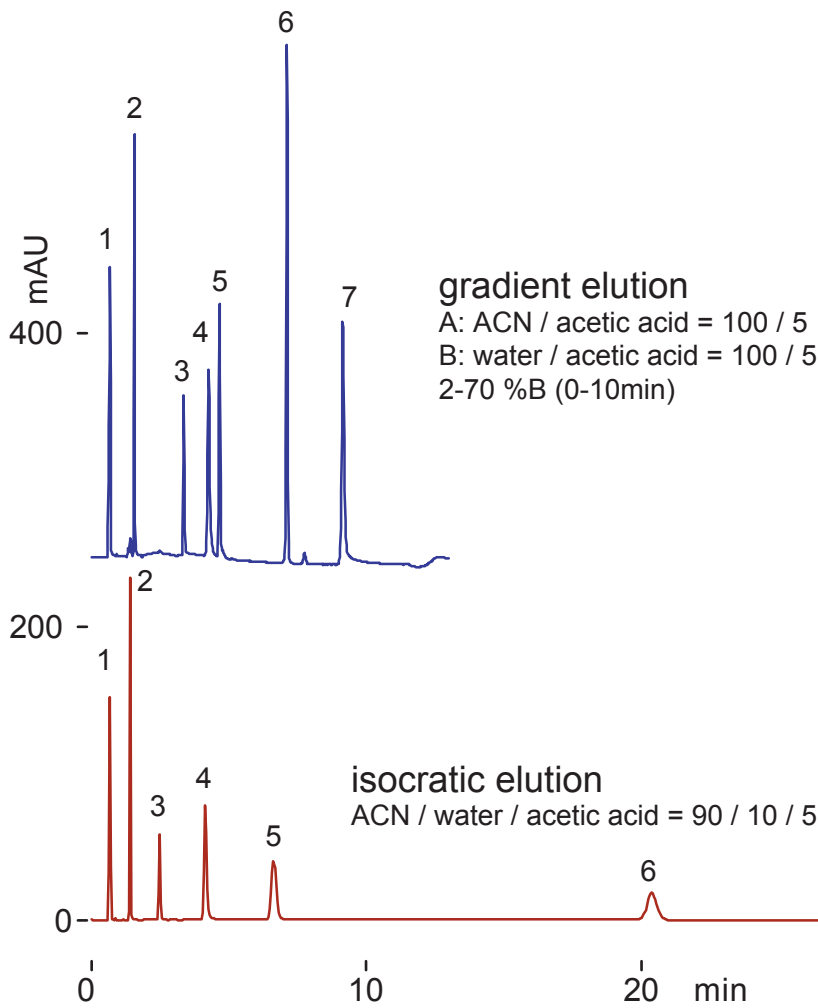
Unison UK-Amino

100 x 4.6 mm

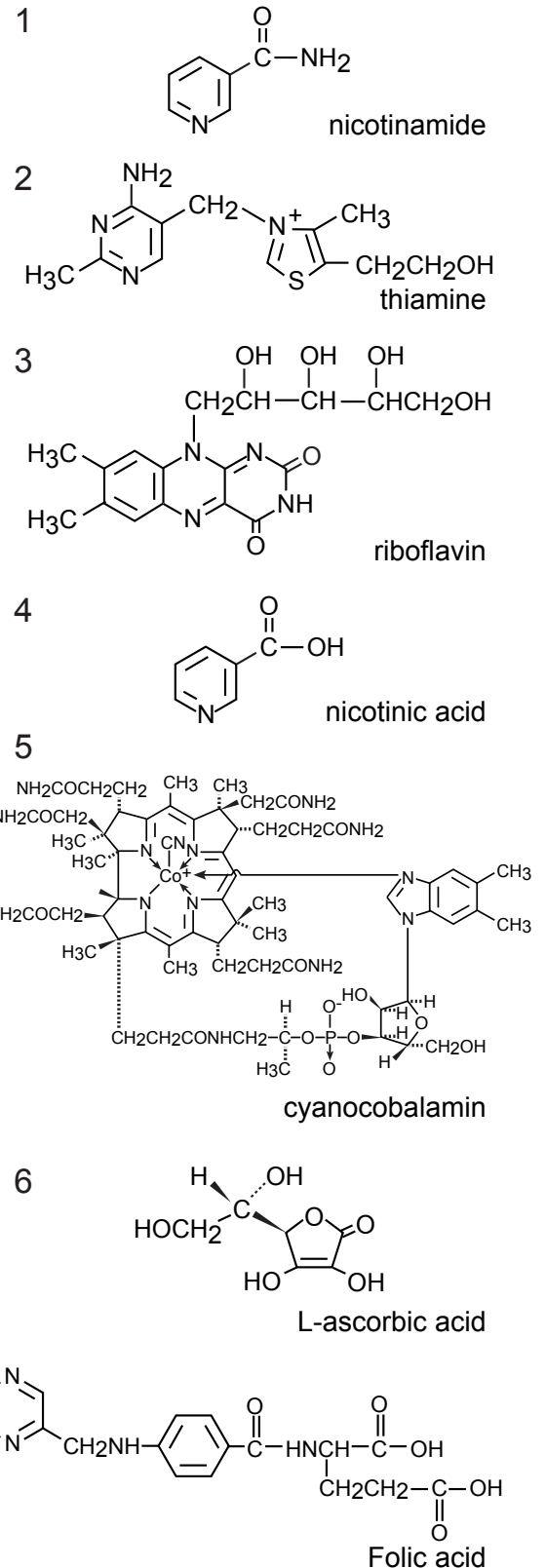
Application

Water-Soluble Vitamins

水溶性ビタミン



Unison UK-Amino, 100 x 4.6 mm
 1 mL/min, 37 deg.C, 260 nm



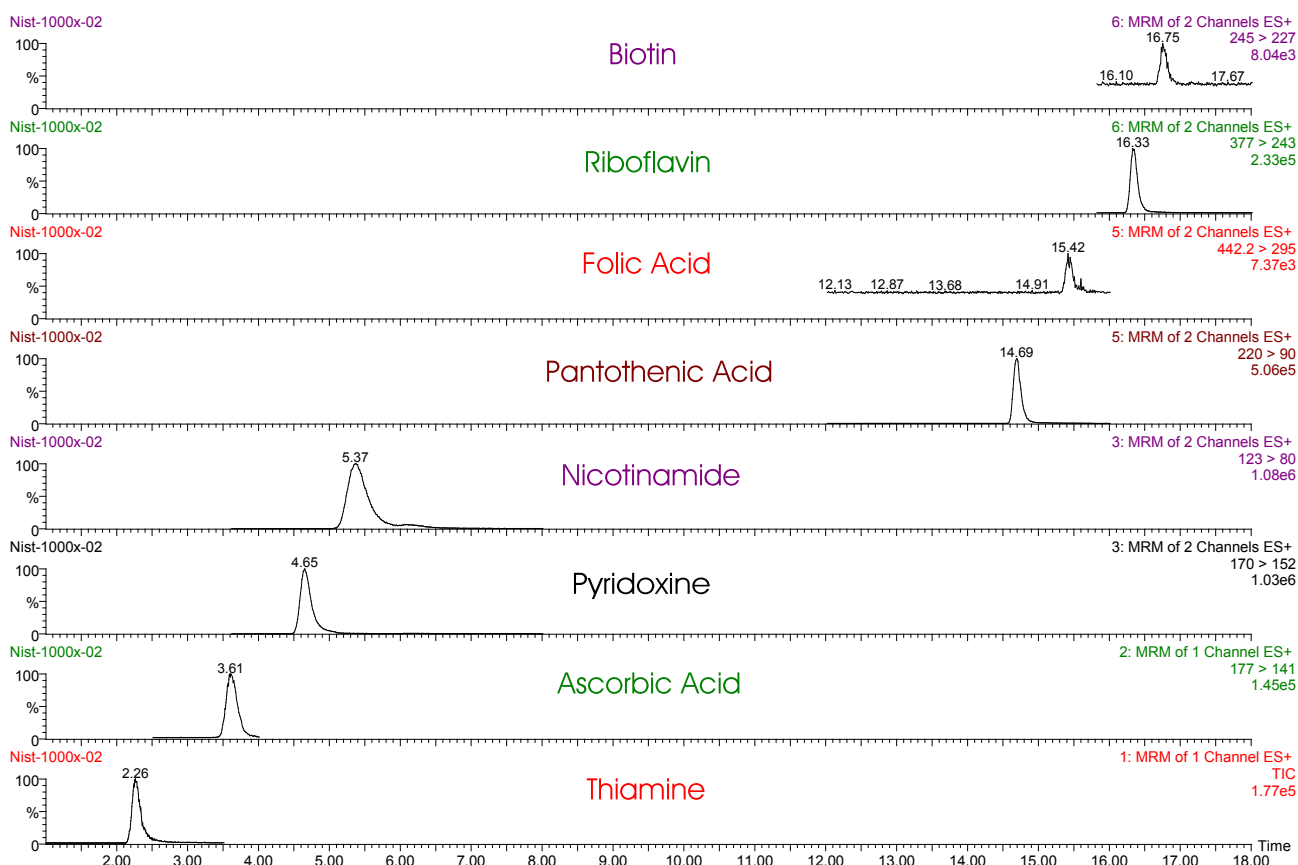
Unison UK-C18

250 x 2 mm

Application

LC-MS/MS Application of Water Soluble Vitamins

LC-MS/MSアプリケーション(水溶性ビタミン)



Unison UK-C18, 250 x 2 mm

A: 0.1% HCOOH in water

B: 0.1% HCOOH in acetonitrile

0%B (0-5min), 0-50%B (5-15min), 50-95%B (15-17min), 0%B (17-25min)

0.25mL/min, ambient, 5uL

ESI-MS, MRM Positive

Courtesy of Dr. Pei Chen, USDA, ARS, BHNRC, Food Composition Lab - Beltsville, MD, USA

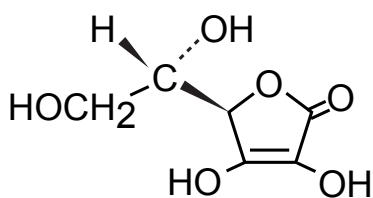
Unison UK-Amino

250 x 2 mm
150 x 2 mm

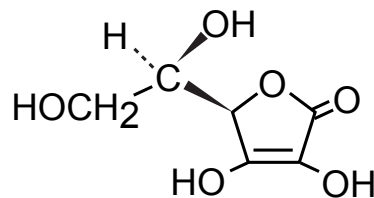
Application

Ascorbic Acid and Erythorbic Acid

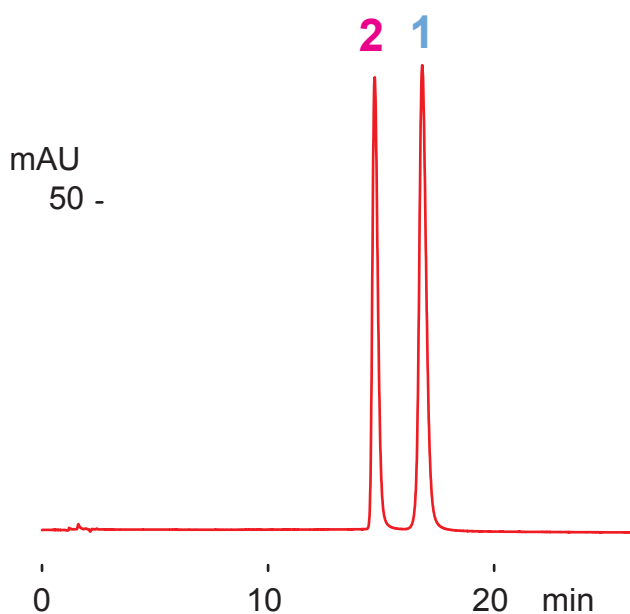
アスコルビン酸とエリソルビン酸



1 L-ascorbic acid
(Vitamin C)

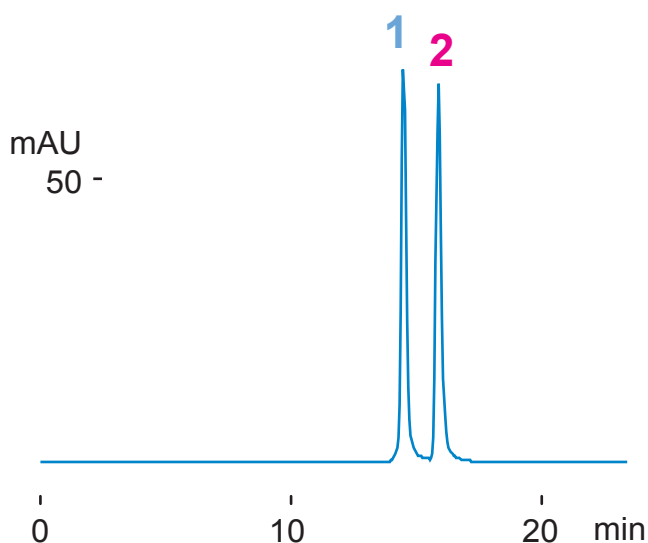


2 isoascorbic acid
(erythorbic acid)



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)

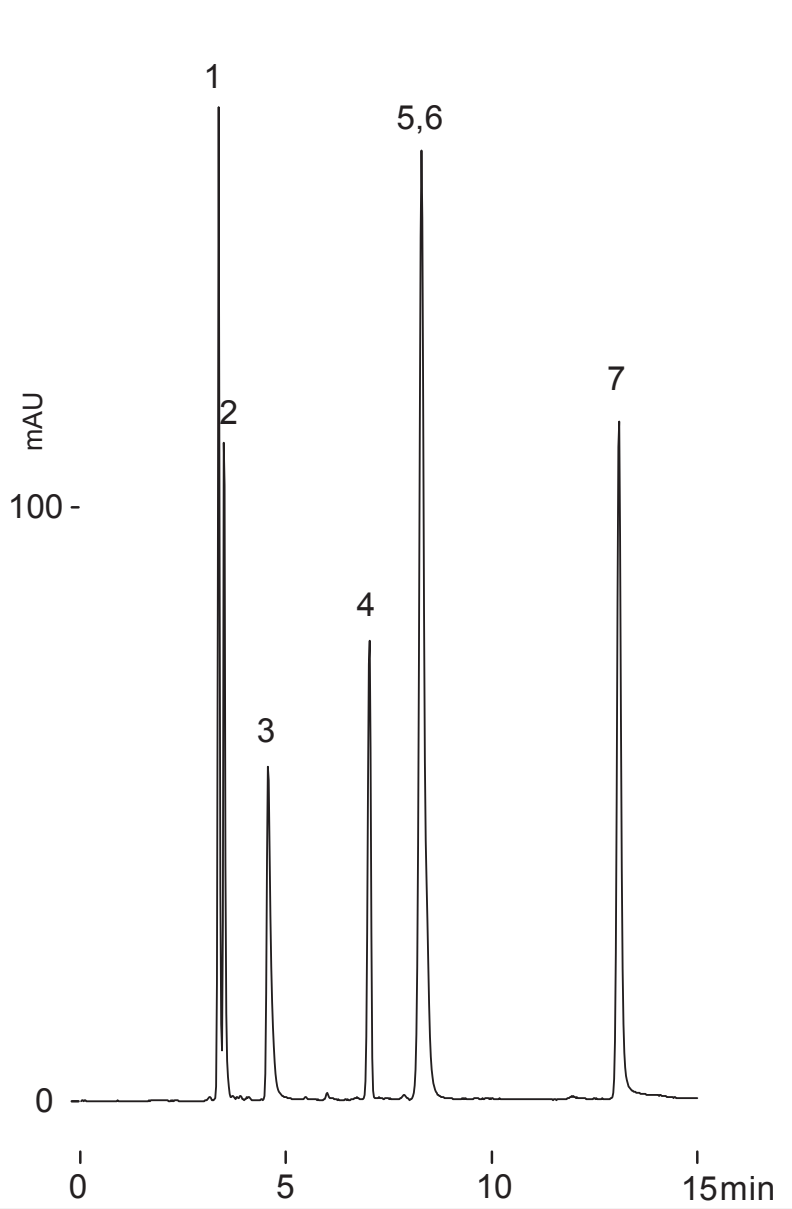
Unison UK-Amino

250 x 4.6 mm

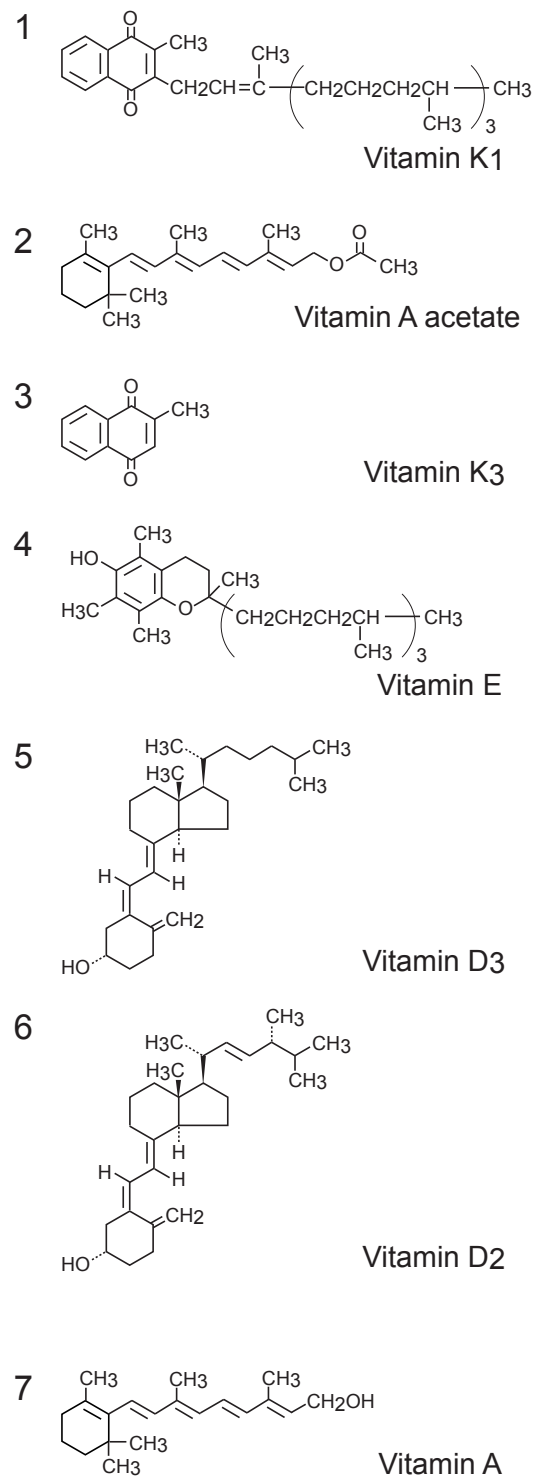
Application

Fat-Soluble Vitamins

脂溶性ビタミン



Unison UK-Amino, 250 x 4.6 mm
 hexane / ethanol / acetic acid = 100 / 0.2 / 0.5
 1 mL/min (4MPa), 37 deg.C, 280 nm
 1 uL (0.5-5ug)



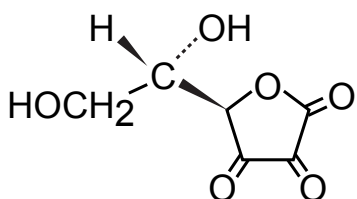
Unison UK-Amino

150 x 2 mm

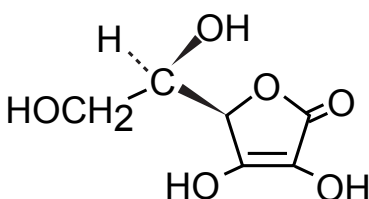
Application

Dehydroascorbic Acid and Related Compunds

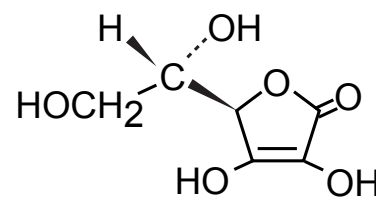
デヒドロアスコルビン酸と関連化合物



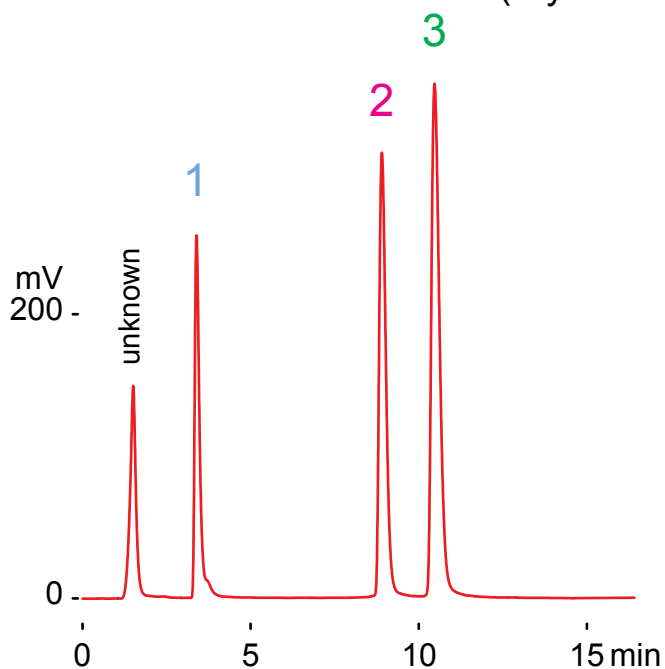
1 dehydroascorbic acid



2 isoascorbic acid
(erythorbic acid)

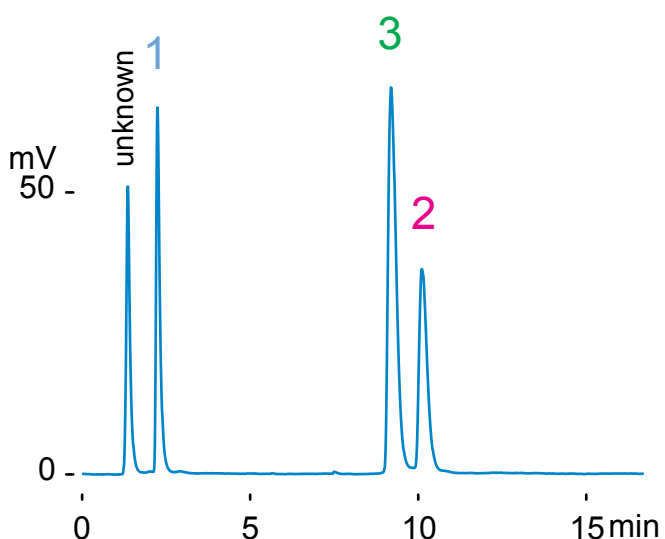


3 L-ascorbic acid
(Vitamin C)



normal phase

Unison UK-Amino
150 x 2 mm
acetonitrile /water /acetic acid =
80 / 20 / 5
0.2mL/min (5MPa),
37deg.C, ELSD,
1uL(2-4ug)



anion exchange

Unison UK-Amino
150 x 2 mm
water /acetic acid = 100 /0.5
0.2mL/min (9MPa),
37deg.C, ELSD,
1uL(2-4ug)

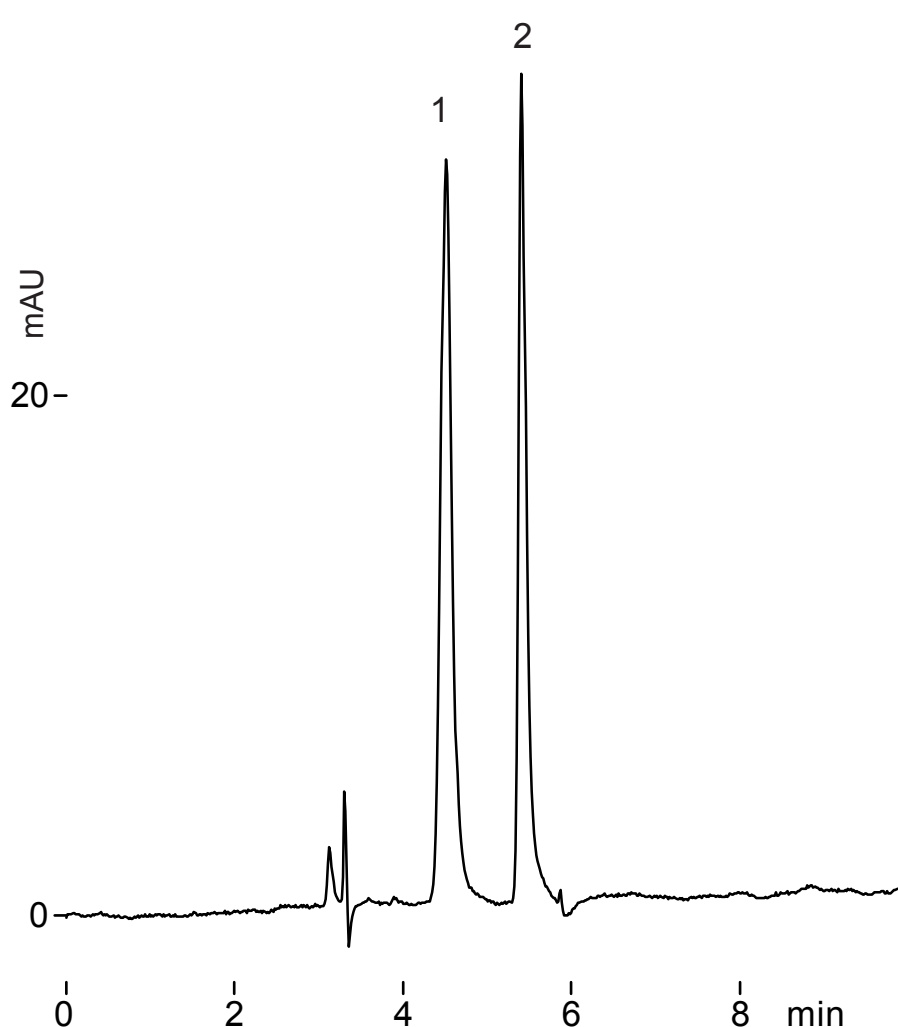
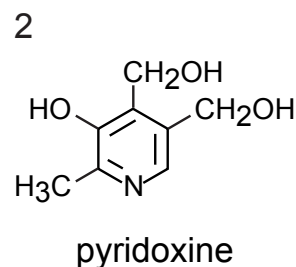
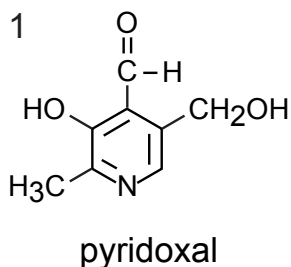
Unison UK-Amino

250 x 4.6 mm

Application

Vitamin B6

ビタミンB6



Unison UK-Amino, 250 x 4.6 mm
 tetrahydrofuran / water / acetic acid = 100 / 2 / 1
 1 mL/min (9MPa), 37 deg.C, 260 nm, 1 uL (1ug)

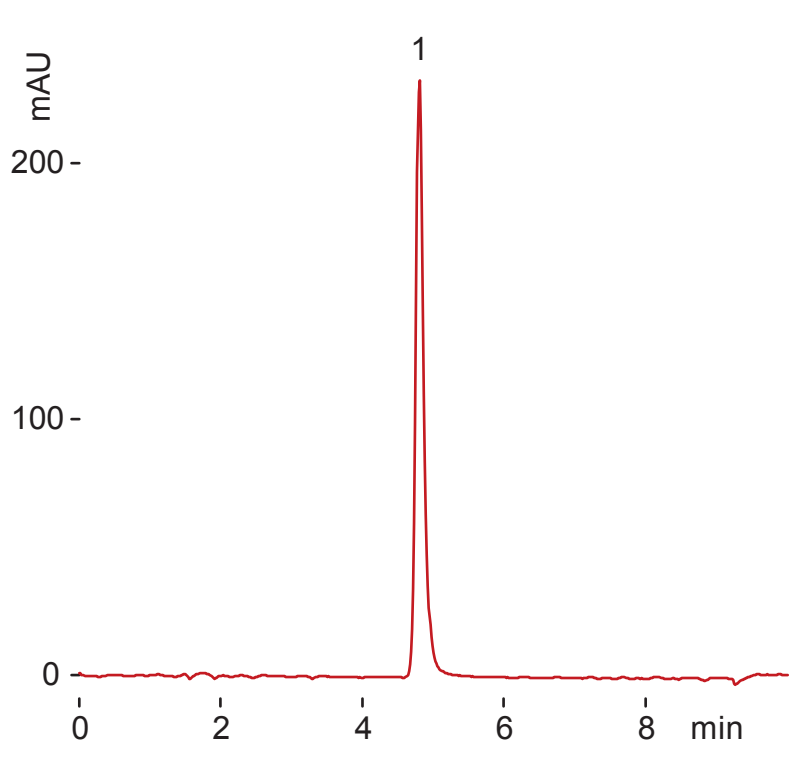
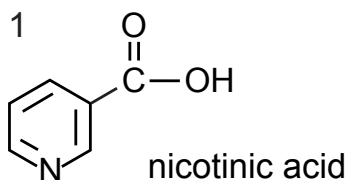
Unison UK-Amino

100 x 2 mm

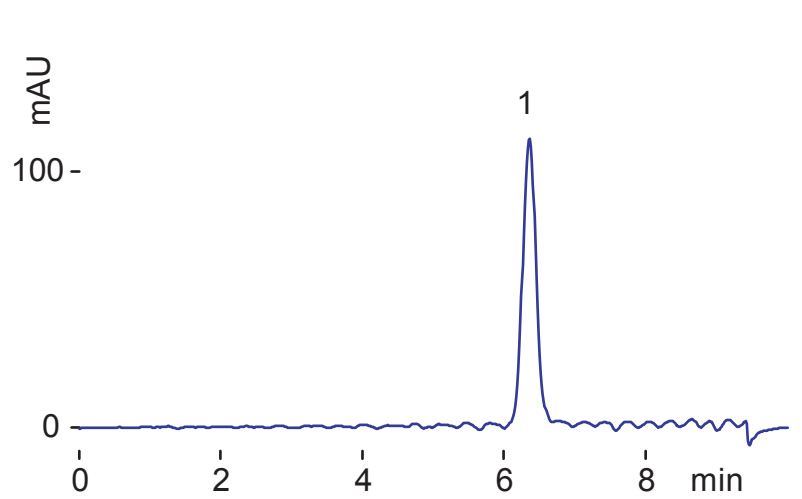
Application

Nicotinic Acid

ニコチン酸



Unison UK-Amino, 100 x 2 mm
 A: acetonitrile / HCOOH = 100/0.1
 B: water / HCOOH = 100 / 0.1
 20-60 %B(0-8min), 0.2 mL/min
 37 deg.C, 260 nm, 0.4 uL(0.8 ug)



Unison UK-Amino, 100 x 2 mm
 A: acetonitrile
 B: 20mM HCOONH4
 50-90 %B(0-8min), 0.2 mL/min
 37 deg.C, 260 nm, 0.4 uL(0.8 ug)

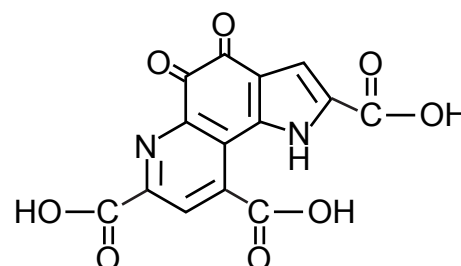
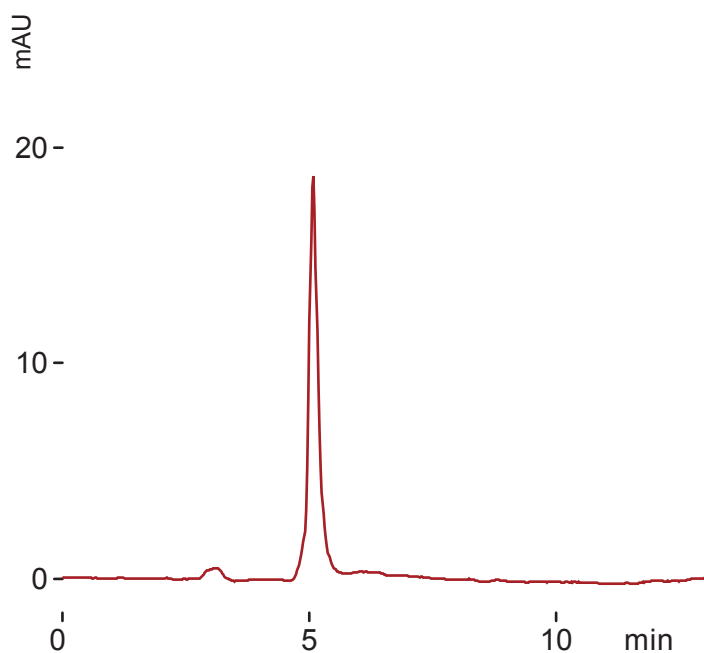
Unison UK-Amino
Unison UK-Silica

150 x 2 mm

Application

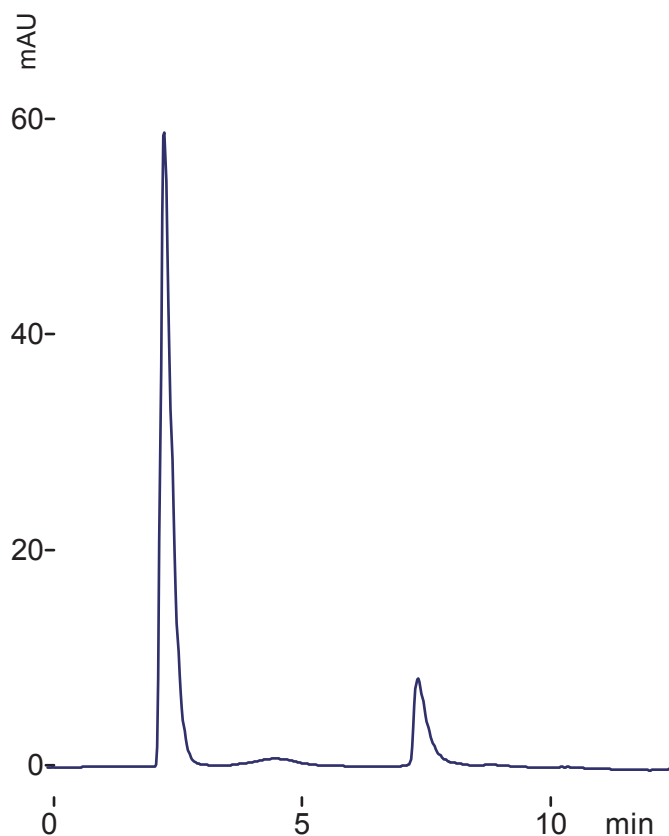
PQQ: pyrroloquinoline quinone (Normal Phase)

新ビタミン PQQ:ピロロキノリンキノンの順相分析



PQQ (pyrroloquinoline quinone)

Unison UK-Amino, 150 x 2 mm □
 A: acetone / formic acid = 100 / 0.1 □
 B: water / formic acid = 100 / 0.1 □
 0 - 100%B (0-10min)
 0.2 mL/min (3MPa)
 37 deg.C, ELSD, 2 uL (2ug)



Unison UK-Silica, 150 x 2 mm □
 A: acetone / formic acid = 100 / 0.1 □
 B: water / formic acid = 100 / 0.1 □
 0 - 100%B (0-10min)
 0.2 mL/min (3MPa)
 37 deg.C, ELSD, 2 uL (2ug)

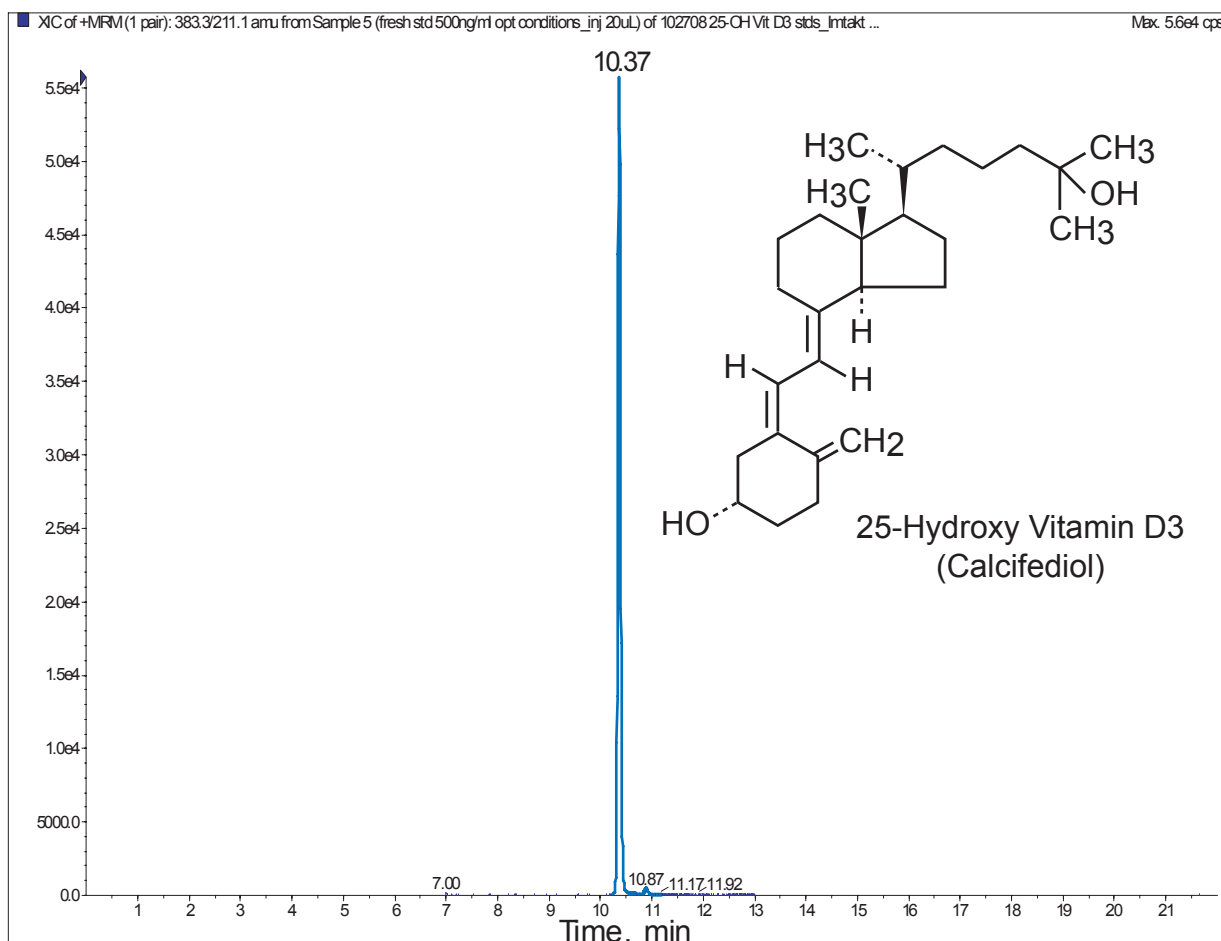
Cadenza CD-C18

150 x 4.6 mm

Application

LC-MS/MS Application for 25-Hydroxy Vitamin D3

25-ヒドロキシビタミンD3 のLC-MS/MS分析



Cadenza CD-C18, 150 x 4.6 mm

A: water / methanol = 75 / 25

B: acetonitrile / ethyl acetate = 70 / 30

40%B (0-1min), 40-95%B (1-8min), 95%B (8-15min), 40%B (15-22min)

0.7mL/min, ambient

Applied Biosystems 4000 Q trap

Ionization: APCI Positive mode

LOQ: 1ng/mL

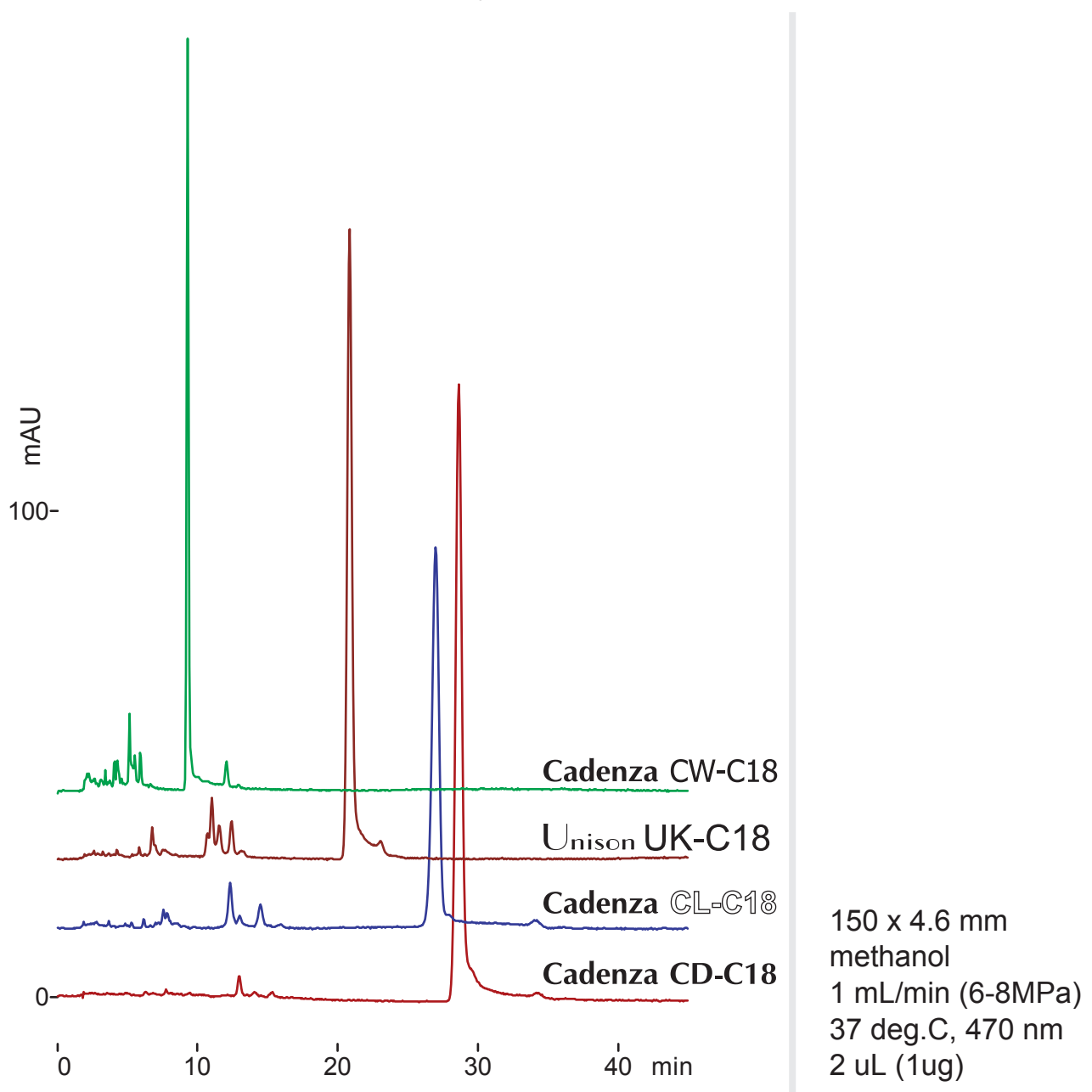
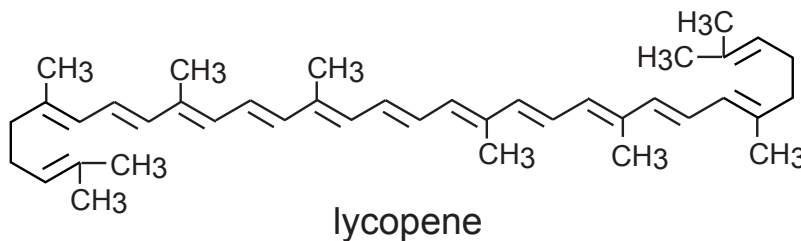
Courtesy of Penn State Hershey Medical Center, USA

Cadenza CW-C18
 Unison UK-C18
 Cadenza CL-C18
 Cadenza CD-C18

150 x 4.6 mm

Application

Lycopene
 リコピン



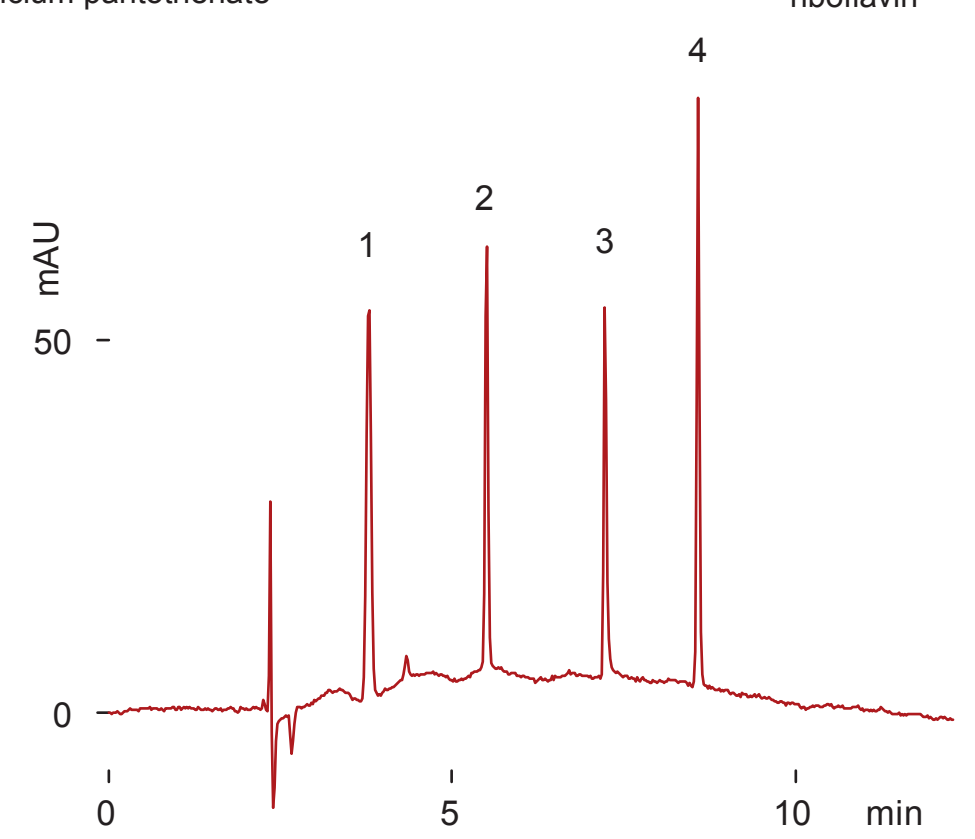
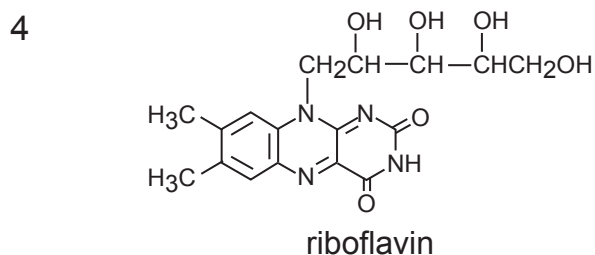
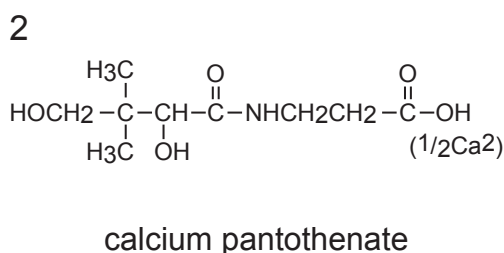
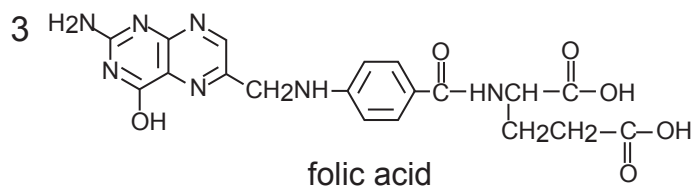
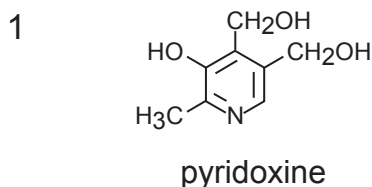
Cadenza CW-C18

150 x 3 mm

Application

Water-soluble vitamins

水溶性ビタミン



Cadenza CW-C18, 150 x 3 mm

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.07

3-30 %B (0-10min), 0.4 mL/min (9MPa), 37 deg.C

210 nm, 1 uL (0.1-1.2ug, ethanol, water)

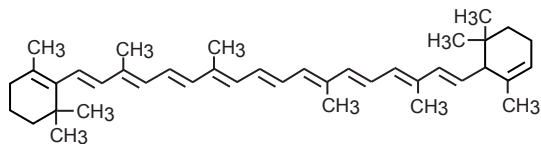
Cadenza CL-C18
 Cadenza CD-C18
 Unison UK-C18

150 x 4.6 mm

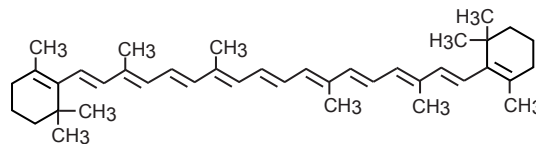
Application

Alpha-carotene and beta-carotene

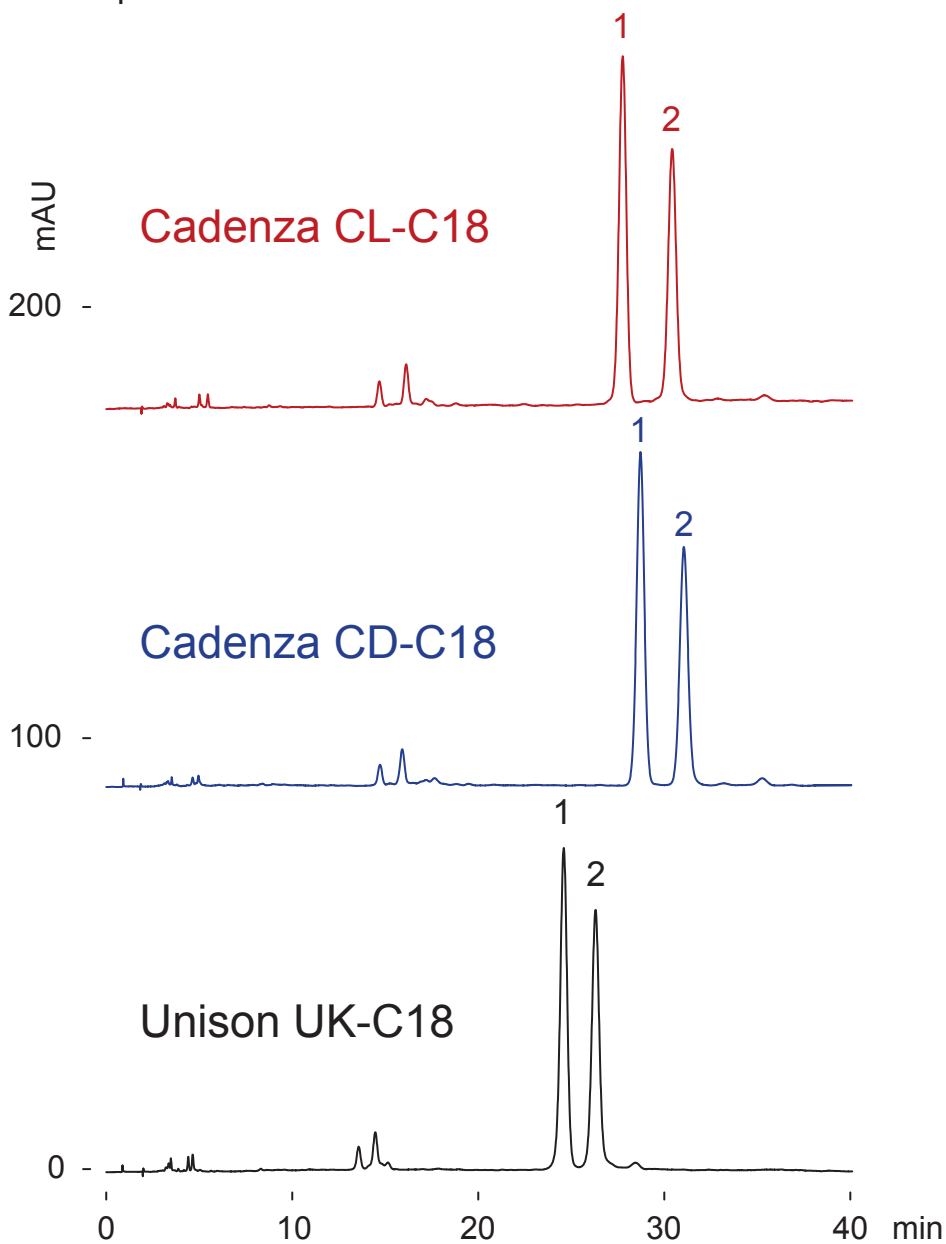
α -カロテンと β -カロテン



1 alpha-carotene



2 beta-carotene



150 x 4.6 mm
 methanol, 1 mL/min (7-8 MPa), 37 deg.C, 470nm, 1 uL (0.5 ug)

Courtesy of Mr Baburao. TR; Davos lifescience Pte Ltd, Singapore

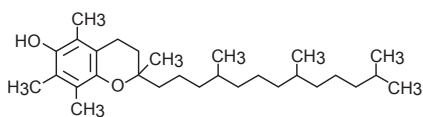
Unison UK-Silica
Unison UK-Amino

150 x 4.6 mm

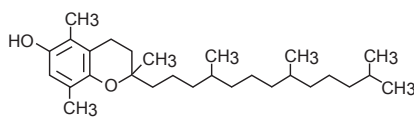
Application

Tocopherols and tocotrienols

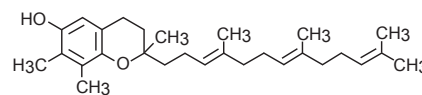
トコフェロール類とトコトリエノール類



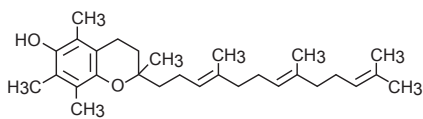
1 α -tocopherol



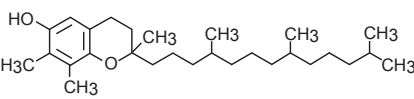
3 β -tocopherol



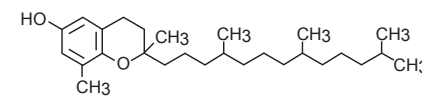
6 γ -tocotrienol



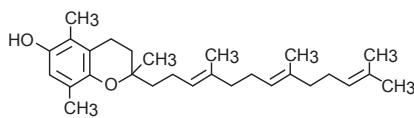
2 α -tocotrienol



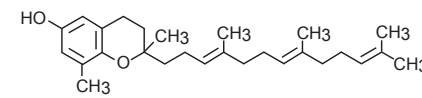
4 γ -tocopherol



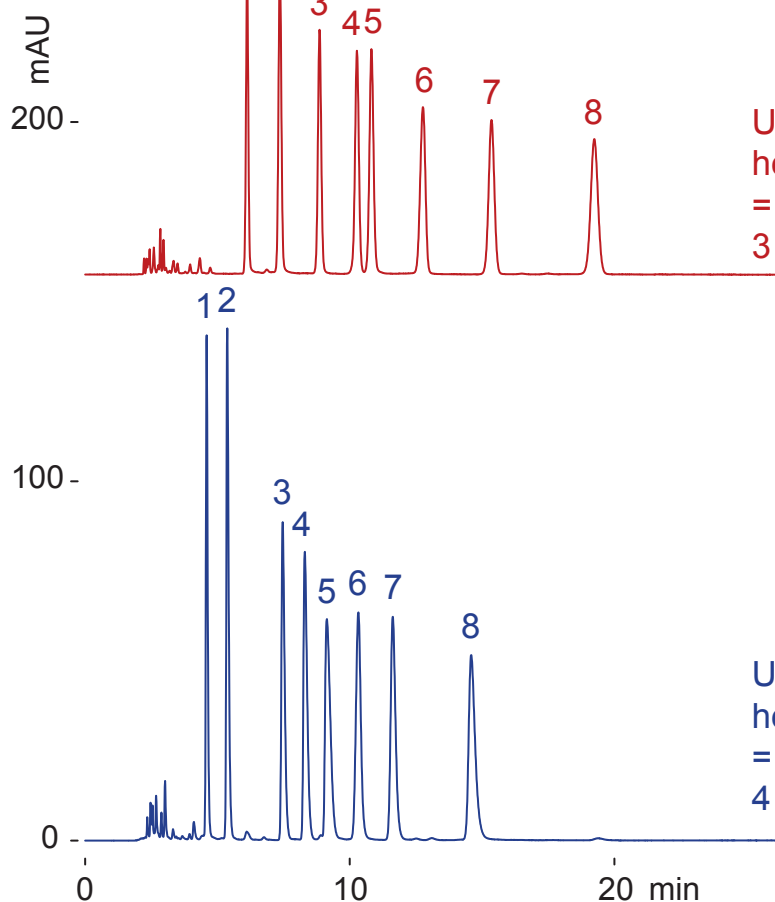
7 δ -tocopherol



5 β -tocotrienol



8 δ -tocotrienol



Unison UK-Silica
hexane / ethyl acetate / acetic acid
= 97 / 3 / 0.1
3 MPa

Unison UK-Amino
hexane / tetrahydrofuran / acetic acid
= 91 / 9 / 0.1
4 MPa

150 x 4.6 mm, 1 mL/min, 37 deg.C, 295 nm, 2 μ L (2 μ g)

Courtesy of Mr Baburao. TR; Davos lifescience Pte Ltd, Singapore

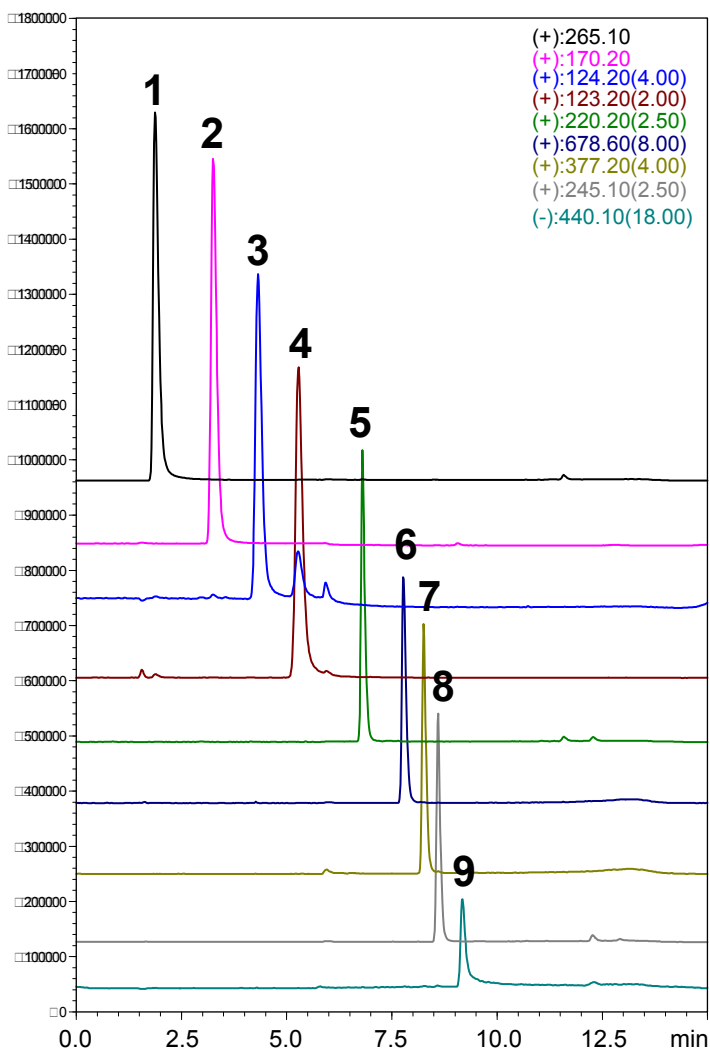
Scherzo SM-C18

150 x 2 mm

Application

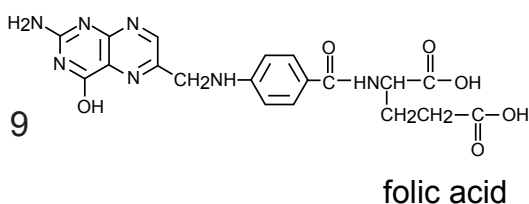
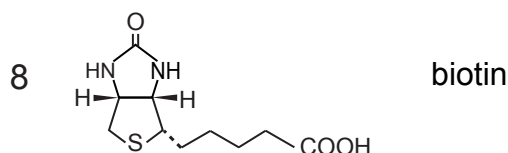
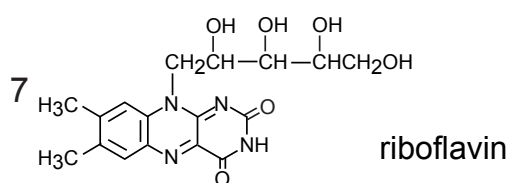
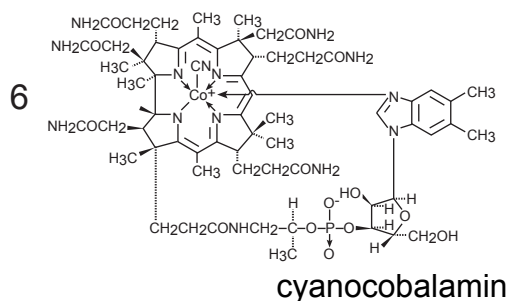
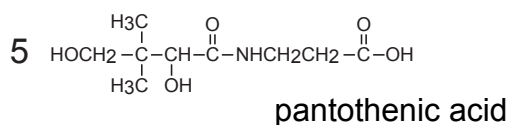
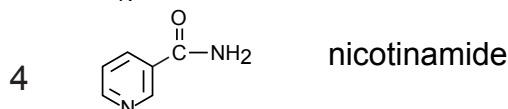
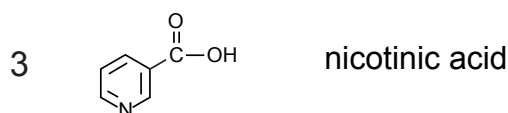
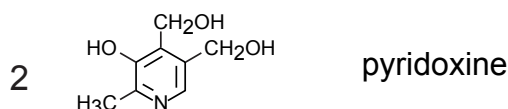
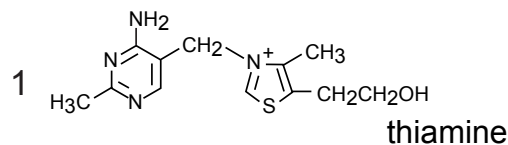
Analysis of Water-soluble Vitamins using LCMS-2020

LCMS-2020を用いた水溶性ビタミンの分析



Shimadzu LCMS-2020
(ESI, positive/negative, SIM)

Scherzo SM-C18, 150 x 2 mm
 A: 5 mmol/L ammonium formate
 + 0.1% formic acid - water
 B: acetonitrile
 0 - 55 %B (0-10 min), 0 %B(10.01-20 min)
 1,000 pg/uL, 1uL



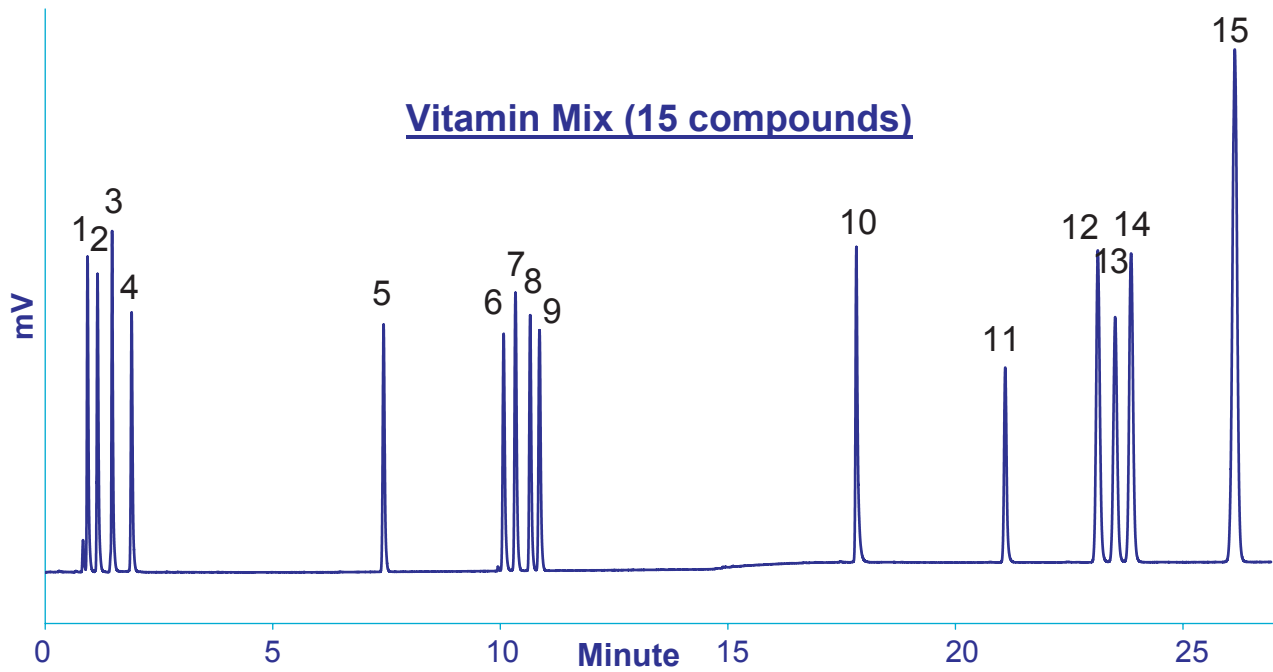
Scherzo SM-C18

150 x 2 mm

Application

Simultaneous HPLC/LT-ELSD Analysis of Water- and Fat-Soluble Vitamins

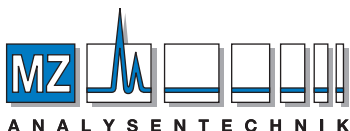
LT-ELSDによる水溶性および脂溶性ビタミンの一斉分析



	RT	%RSD (n=6)		LOD (S/N=3)
	Minutes	RT	Response	ng (o.c.)
1-B1: Thiamine	0.92	0.11	2.6	5.7
2-B8: myo-Inositol	1.14	0.09	6.2	6.3
3-B6: Pyridoxine	1.44	0.16	2.7	1.8
4-C: Ascorbic acid	1.94	0.25	2.4	9.6
5-B5: Pantothenic acid	7.32	0.15	6.8	6.9
6-B9: Folic acid	9.92	0.09	3.1	8.0
7-B12: Cyanocobalamin	10.17	0.11	4.1	4.6
8-B2: Riboflavin	10.49	0.11	3.4	5.0
9-B7: Biotin	10.70	0.09	4.2	4.8
10-A: Retinol	17.64	0.06	6.7	1.7
11-K2: Menaquinone	20.87	0.07	2.1	14.2
12-D2: Ergocalciferol	22.89	0.06	1.5	47.6
13-D3: Cholecalciferol	23.26	0.06	2.6	52.6
14-E: a-Tocopherol	23.61	0.07	1.6	45.0
15-K1: Phylloquinone	25.86	0.07	1.7	41.7

Scherzo SM-C18, 150 x 2 mm
 A: H₂O + 0.3% HCOOH
 B: acetonitrile
 0%B (0-0.1 min)
 0 - 30%B (0.1-10 min)
 30%B (10-11 min)
 30 - 100%B (11- 12 min)
 100%B (12-26 min)
 0.3 mL/min, 30°C
 2uL(DMSO soln.)

ELSD (SEDERE, France)
 SEDEX 90LT, 40°C, 3.5Bar



AUTHORIZED DISTRIBUTOR

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 e-mail: info@mz-at.de, www.mz-at.de

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