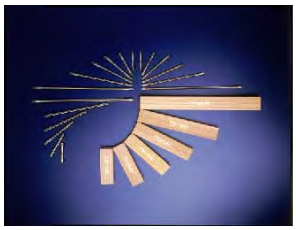
Technical Information

ON HPLC COLUMNS



Imtakt

HPLC TECHNICAL INFORMATION

Natural Compounds

MZ ANALYSENTECHNIK

AUTHORIZED DISTRIBUTOR

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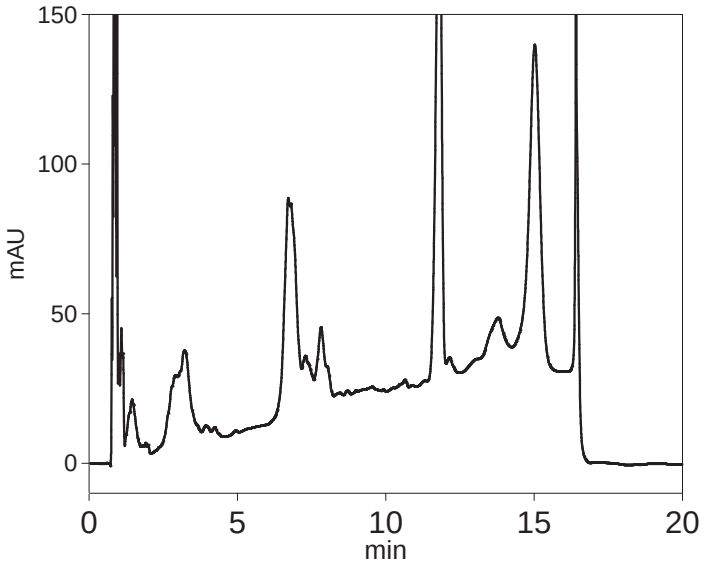
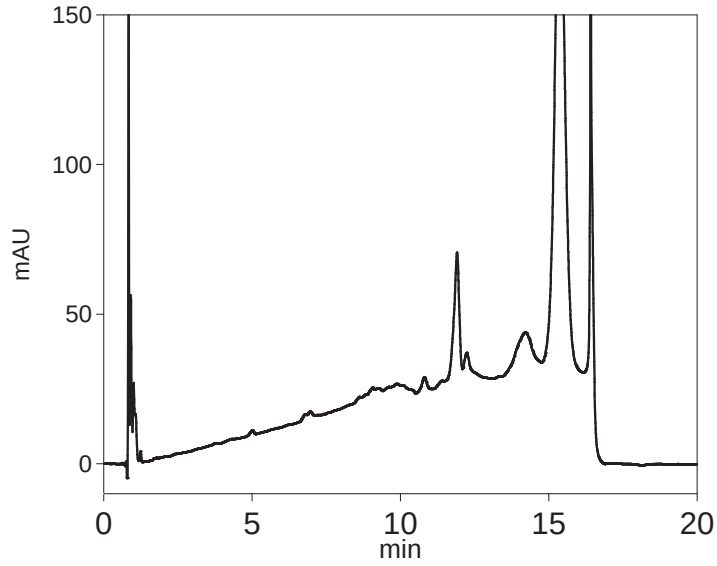
Cadenza CD-C18 75 x 4.6 mm Application

Olive Oil

extra virgin



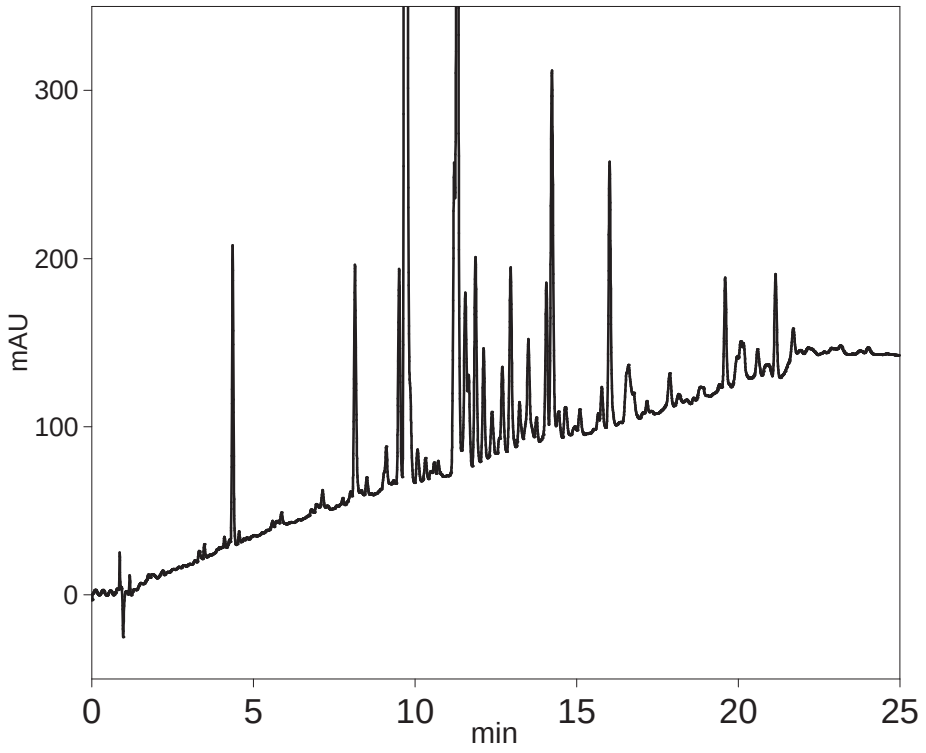
pure



Cadenza CD-C18
75 x 4.6 mm
A : water / formic acid
= 100 / 0.02
B : acetonitrile / formic acid
= 100/0.02
80-100%B (0-10min)
100%B (10-15min)
1.0 mL/min, 37 °C
UV at 210 nm, 2.1 MPa

Cadenza CD-C18 75 x 4.6 mm Application

Pepper

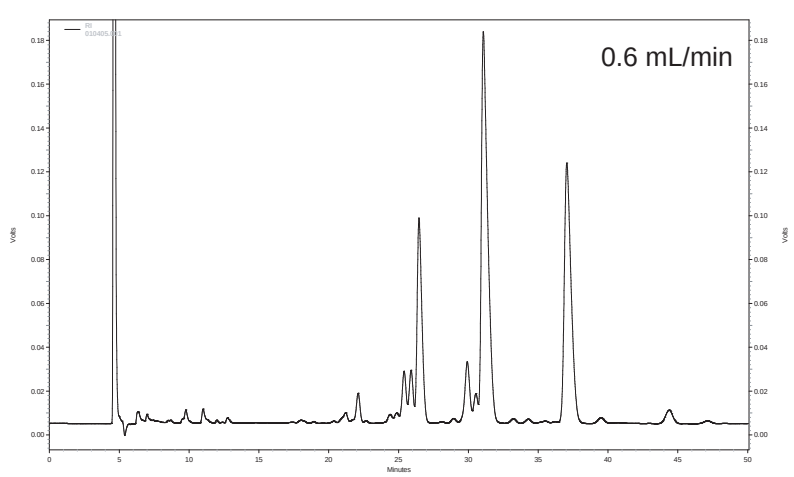


Cadenza CD-C18, 75 x 4.6 mm
A: water / formic acid = 100 / 0.1
B: ACN / formic acid =100 / 0.1
20 - 100 %B (0 - 20min)
100 %B (20- 25min)
1.0 mL/min, 37 °C
UV at 220 nm
6.3 MPa
THF extract of pepper powder
2.0 uL inj.

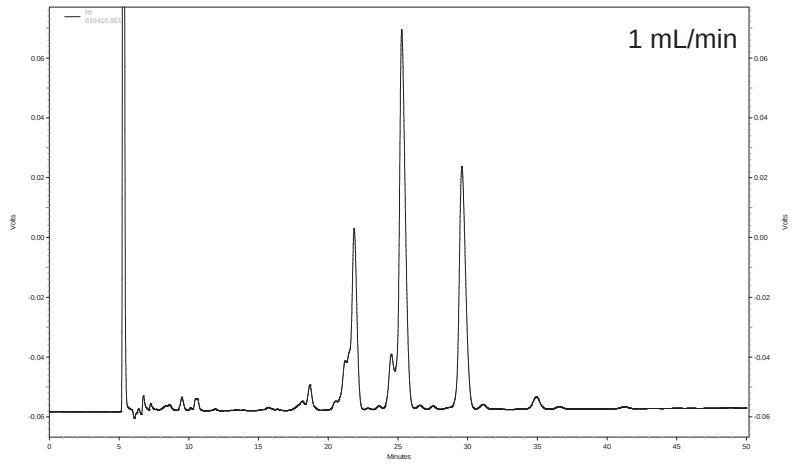
Cadenza CD-C18 250 x 4.6 mm Application

Triglycerides in Cacao Butter

Cadenza CD-C18 250 x 4.6 mm



Conventional ODS (5 um), (250 x 4.6 mm) x 2

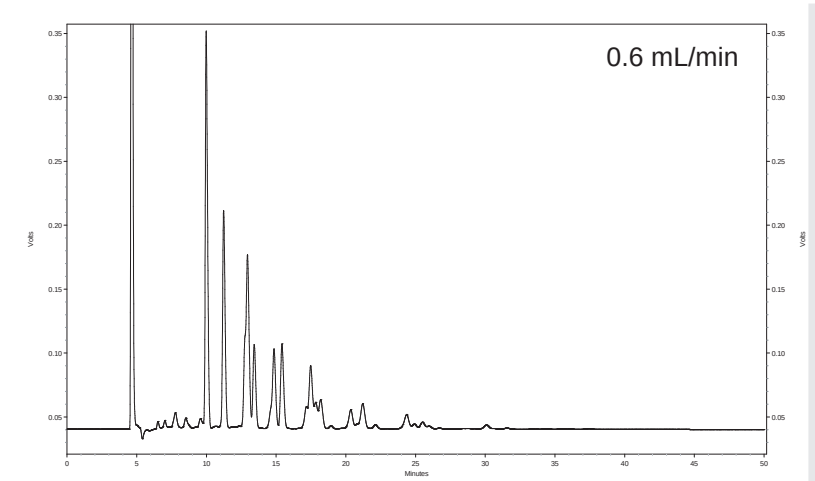


acetone / acetonitrile = 70 / 30
30 °C
RI

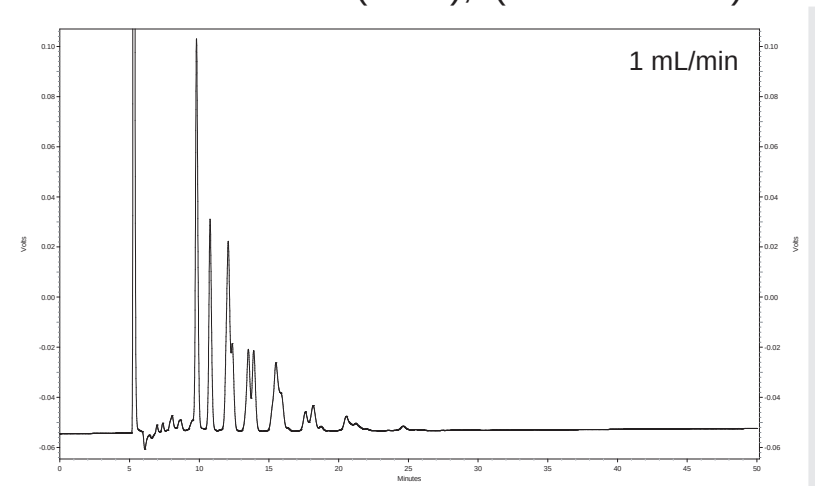
Cadenza CD-C18 250 x 4.6 mm Application

Triglycerides in Linseed Oil

Cadenza CD-C18 250 x 4.6 mm



Conventional ODS (5 um), (250 x 4.6 mm) x 2

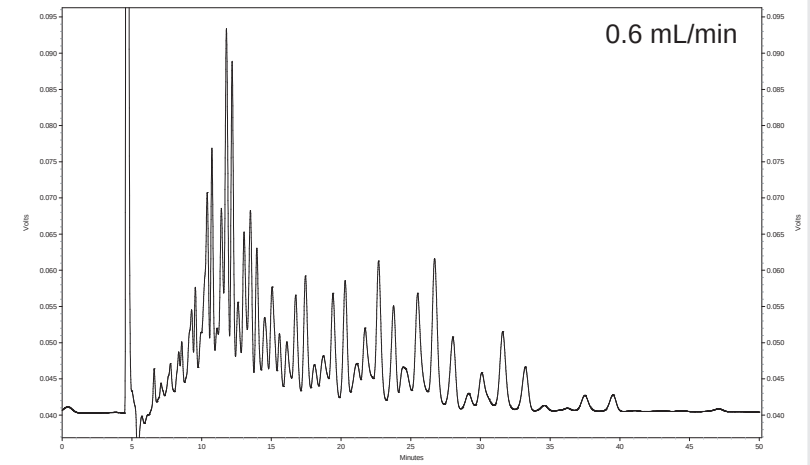


acetone / acetonitrile = 70 / 30
30 °C
RI

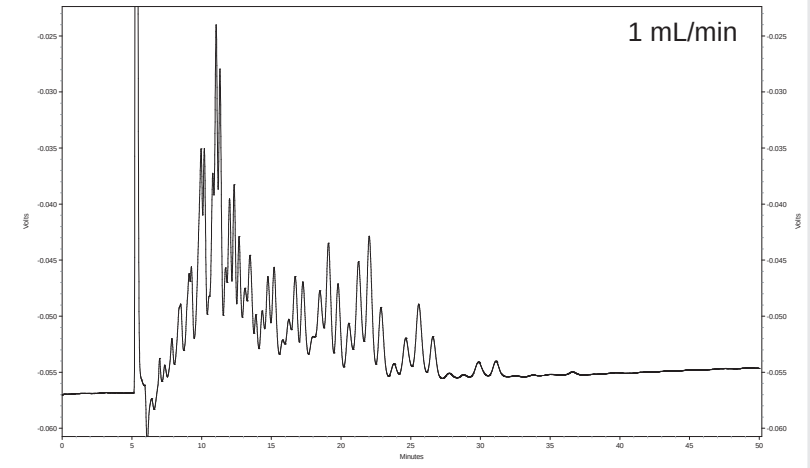
Cadenza CD-C18 250 x 4.6 mm Application

Triglycerides in Milk Fat

Cadenza CD-C18 250 x 4.6 mm



Conventional ODS (5 um), (250 x 4.6 mm) x 2

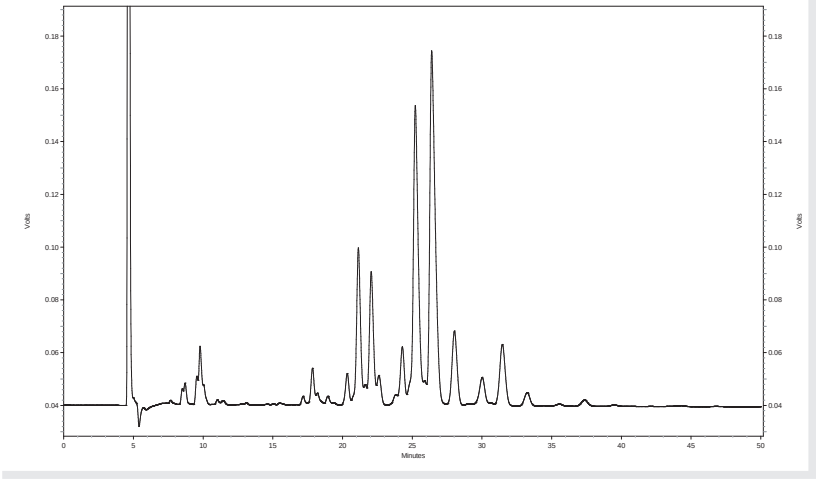


acetone / acetonitrile = 70 / 30
30 °C
RI

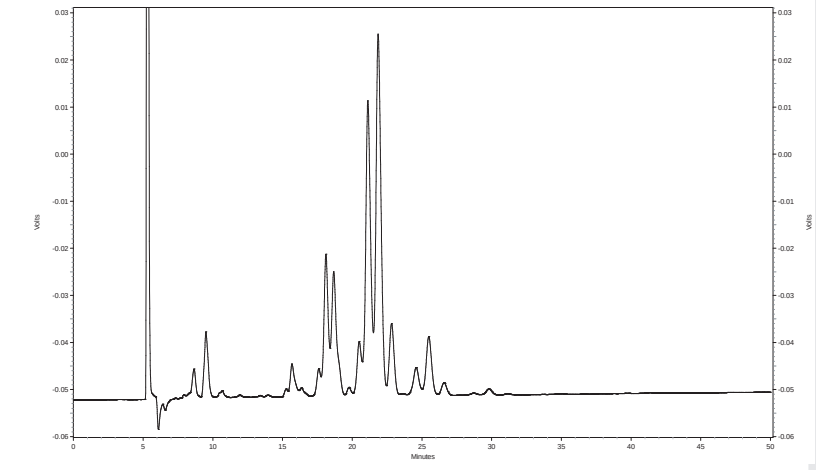
Cadenza CD-C18 250 x 4.6 mm Application

Triglycerides in Palm Oil

Cadenza CD-C18 250 x 4.6 mm



Conventional ODS (5 um), (250 x 4.6 mm) x 2

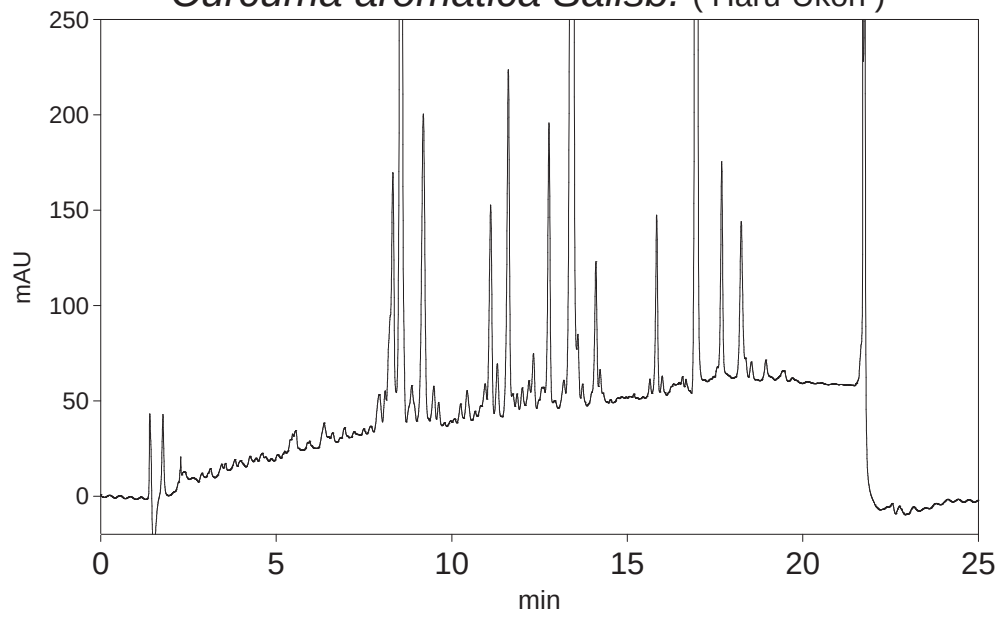


acetone / acetonitrile = 70 / 30
30 °C
RI

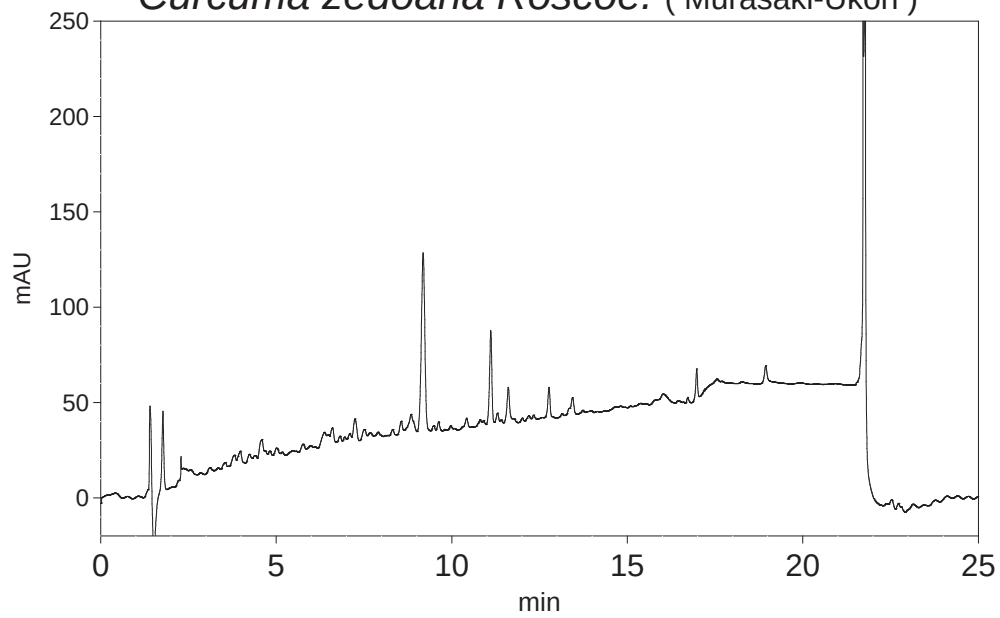
Cadenza CD-C18 150 x 3 mm Application

Turmelic (Ukon)

Curcuma aromatica Salisb. (Haru-Ukon)



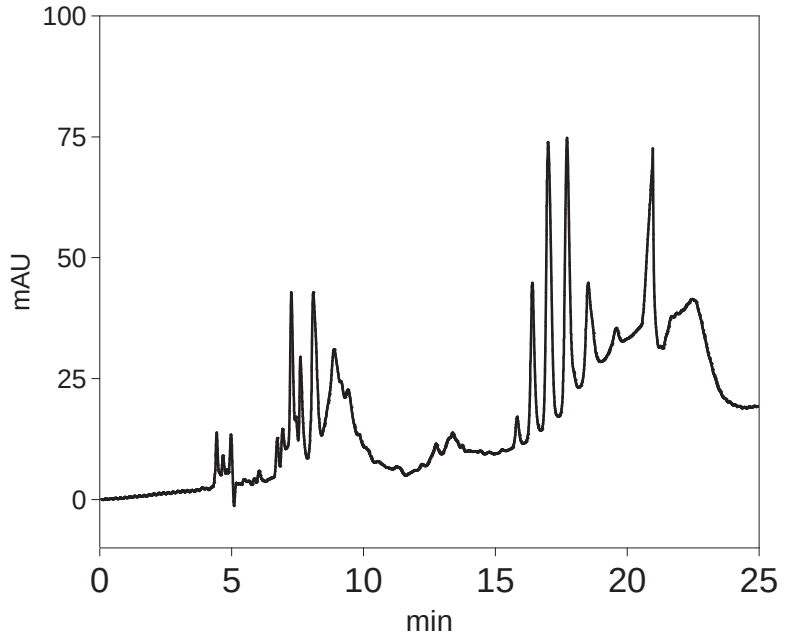
Curcuma zedoaria Roscoe. (Murasaki-Ukon)



Cadenza CD-C18, 150 x 3.0 mm
A : water / formic acid = 100 / 0.05
B : acetonitrile / formic acid = 100 / 0.05
30 - 100%B (0 -15 min), 100%B (15 - 20 min)
0.5 mL/min, 37 °C, 12.9 MPa, UV at 220 nm

Cadenza CD-C18 250 x 4.6 mm Application

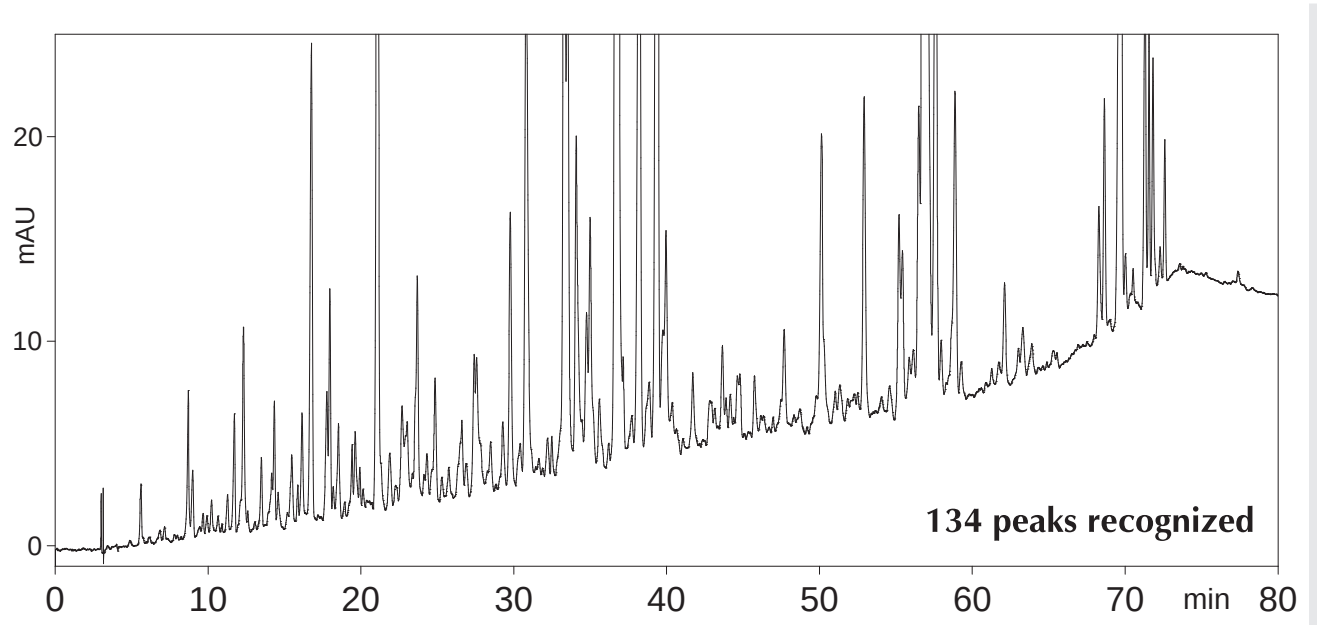
Lecithin, from Soybeans



Cadenza CD-C18, 250 x 4.6 mm
A : ethanol / water / TFA = 90 / 10 / 0.1
B : cyclohexane / ethanol / TFA = 10 / 90 / 0.1
50 - 100%B (0 -10 min), 100%B (10 - 15 min)
0.5 mL/min, 37 °C, 13.9 MPa, UV at 210 nm

Cadenza CD-C18 250 x 4.6 mm Application

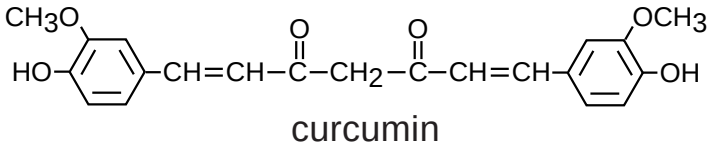
Lavender Oil



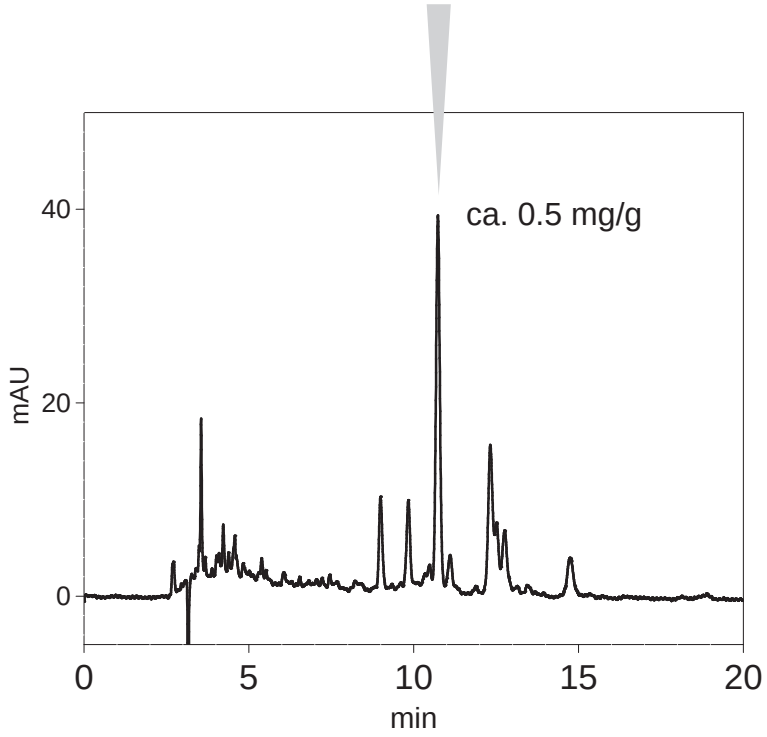
Cadenza CD-C18, 250 x 4.6 mm
A: 0.1% formic acid in water
B: 0.1% formic acid in ACN
10-100%B (0-70min),
100%B (70-80min)
1.0 mL/min
UV at 254 nm

Cadenza CD-C18 250 x 4.6 mm Application

Curcumin in Turmelic (Ukon)



curcumin

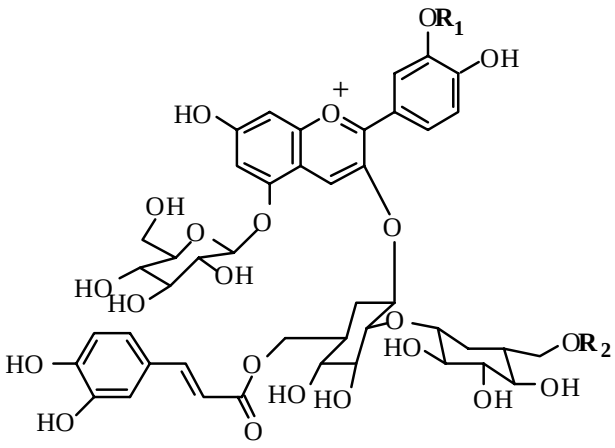


Cadenza CD-C18, 250 x 4.6 mm
acetonitrile / water / formic acid = 55 / 45 / 0.05
0.8 mL/min, 37 °C, 10.8 MPa
UV at 220 nm

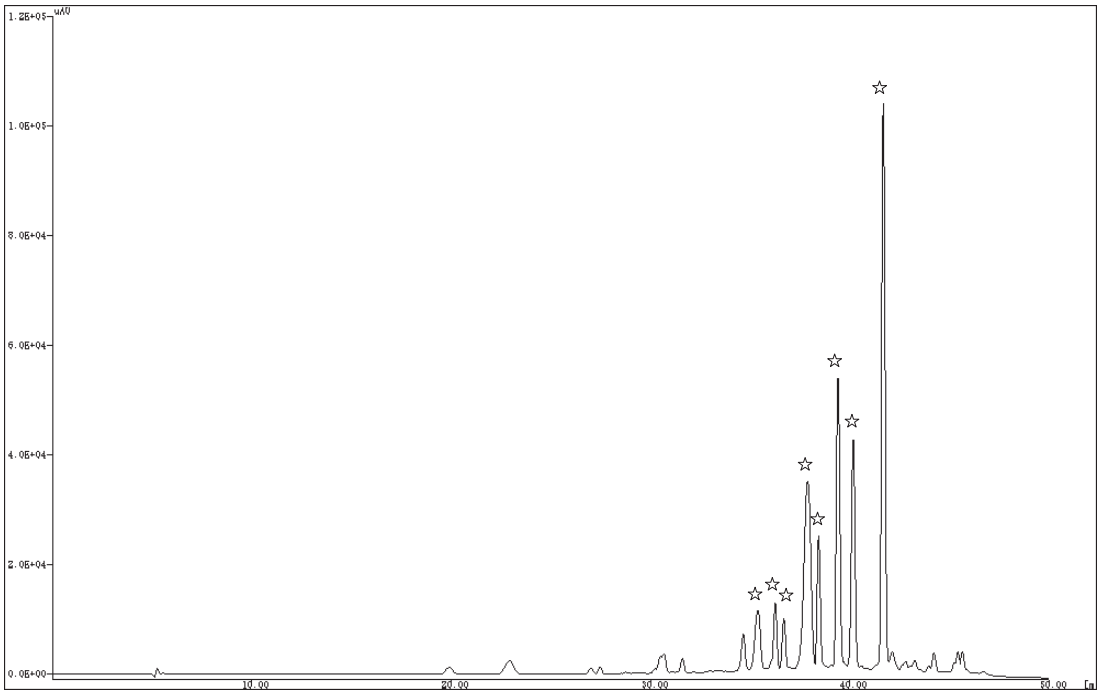
Courtesy of Prof. Dr. K. Hosokawa, Hyogo Univ.

Cadenza CD-C18 250 x 4.6 mm Application

Anthocyanins in Purple-Fleshed Sweet Potato



	R_1	R_2
YGM-1a	H	caffeic acid
YGM-1b	H	*p*-hydroxy benzoic acid
YGM-2	H	H
YGM-3	H	ferulic acid
YGM-4b	CH3	caffeic acid
YGM-5a	CH3	*p*-hydroxy benzoic acid
YGM-5b	CH3	H
YGM-6	CH3	ferulic acid



Cadenza CD-C18, 250 x 4.6 mm
5 - 25% acetonitrile / 0.1% TFA
0.75 mL/min, 35 °C
530 nm

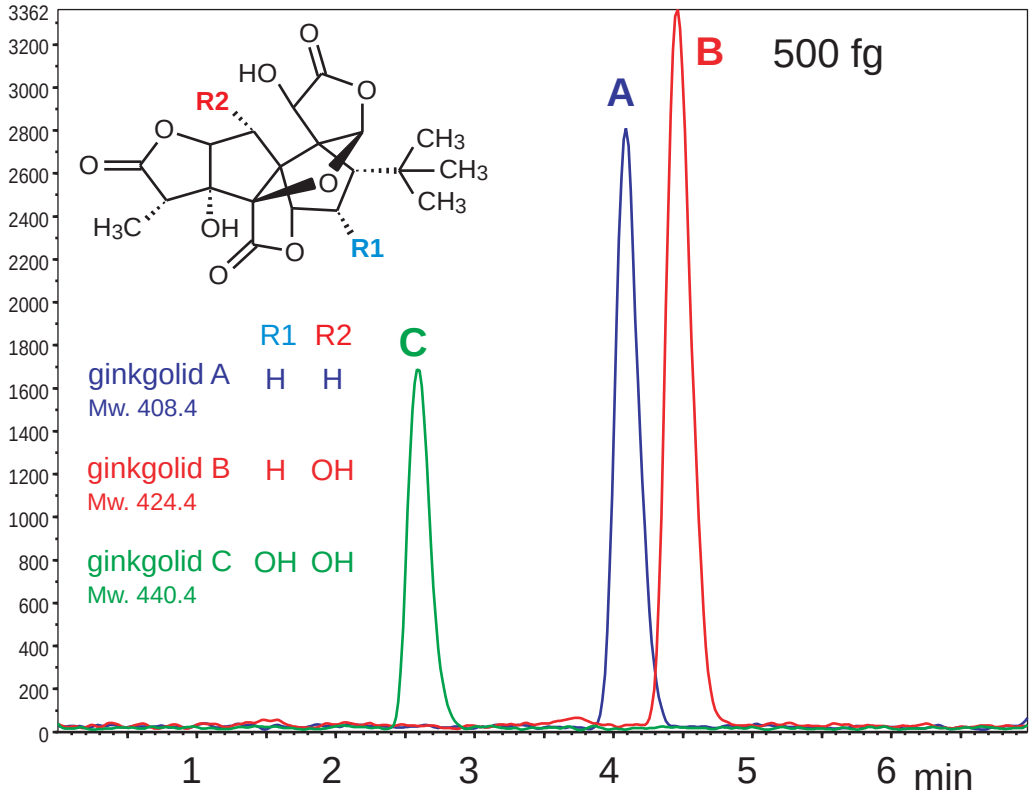
Courtesy of Dr. T. Oki and Dr. I. Suda, KONARC / NARO

Cadenza CD-C18 100 x 2 mm Application

LC-MS Application for Substances in Ginkgo Leaves

LC–MSアプリケーション（イチョウ葉の有効成分，ギンコライド）

API4000 (TAKARA BIO INC.)



Cadenza CD-C18, 100 x 2 mm
60% methanol, 0.2 mL/min, 40 °C, 5µL(100fg/µL)
API4000: ESI, MRM Negative
Q1/Q3:
ginkgolid A 407/351
ginkgolid B 423/367
ginkgolid C 439/383

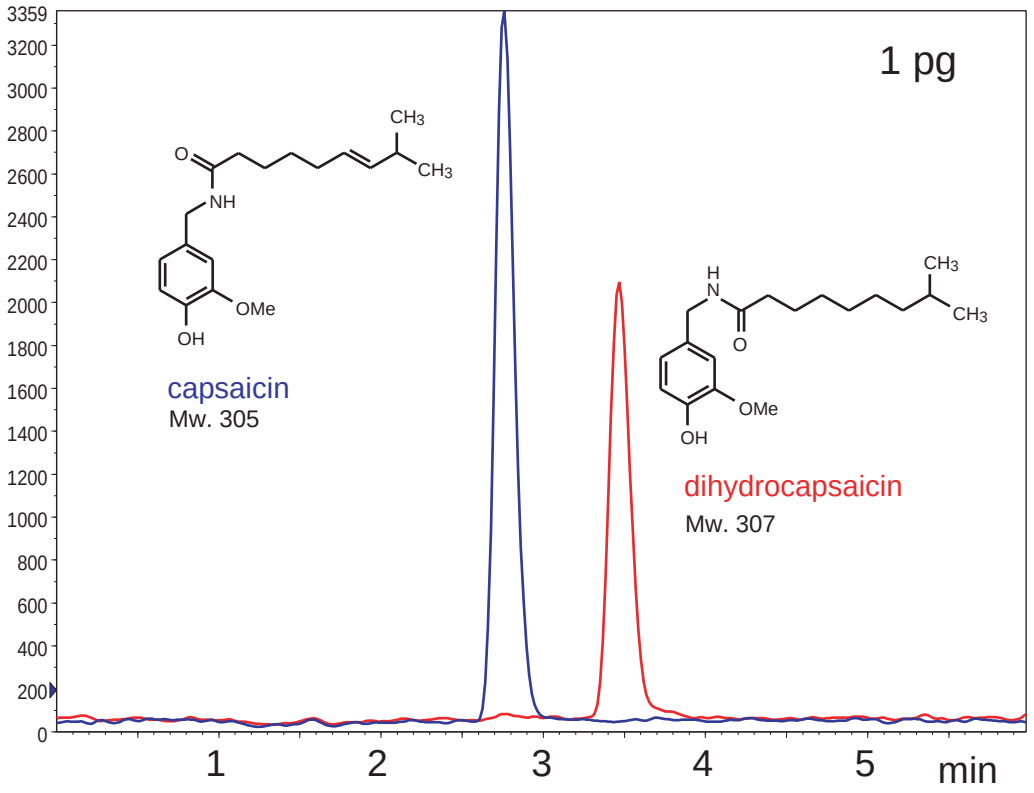
Courtesy of J.Watanabe, TAKARA BIO INC.

Cadenza CD-C18 100 x 2 mm Application

LC-MS Application for Capsaicins

LC–MSアプリケーション（唐辛子成分，カプサイシン）

API4000 (TAKARA BIO INC.)



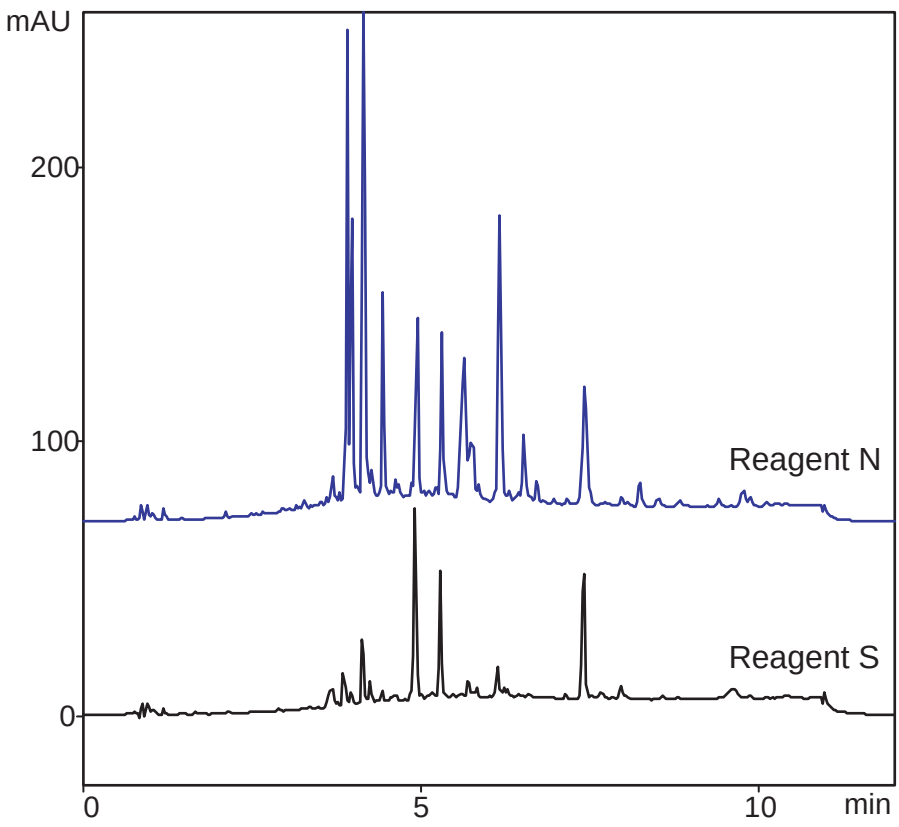
Cadenza CD-C18, 100 x 2 mm
0.1% acetic acid / 75% methanol, 0.2 mL/min, 40 °C, 5µL (200fg/µL)
API4000: ESI, MRM Positive
Q1/Q3:
capsaicin 306/137
dihydrocapsaicin 308/137

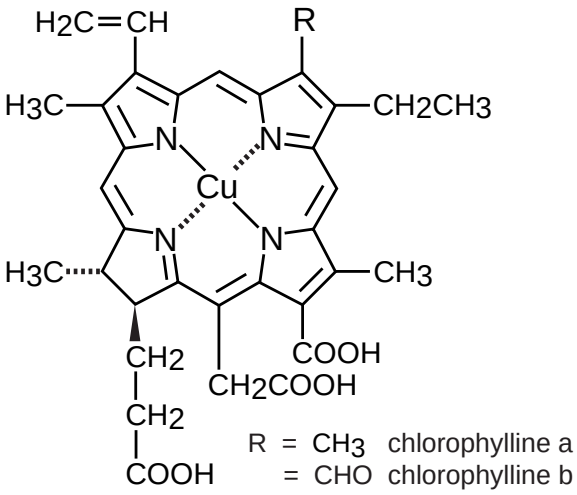
Courtesy of J.Watanabe, TAKARA BIO INC.

Unison UK-C18 75 x 4.6 mm Application

Cupper Chlorophylline

銅クロロフィリン



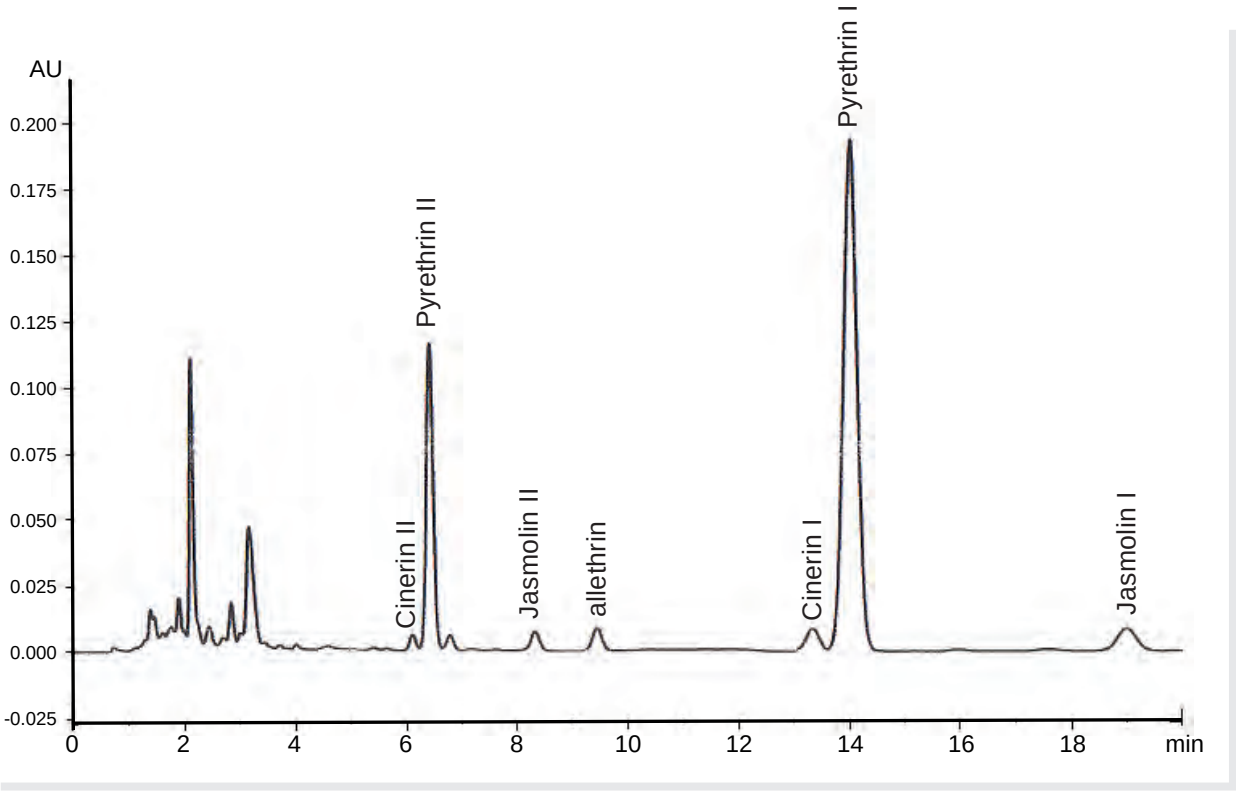


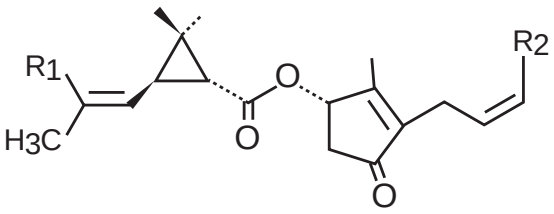
Unison UK-C18, 75 x 4.6 mm
A : 20mM Ammonium Acetate
B : ACN
20-80%B (0-10min)
1.0 mL/min, 37 °C
UV at 420 nm, 8.1 MPa

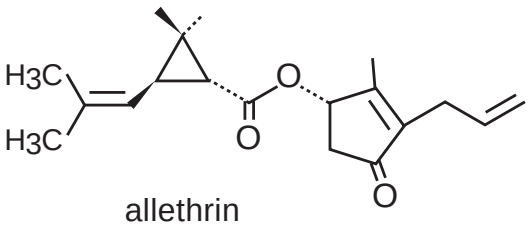
Unison UK-C18 100 x 4.6 mm Application

Pyrethrins

天然ピレトリン類







allethrin
(as internal standard)

	R_1	R_2
Pyrethrin I	CH_3	$CH=CH_2$
Pyrethrin II	$COOCH_3$	$CH=CH_2$
Cinerin I	CH_3	CH_3
Cinerin II	$COOCH_3$	CH_3
Jasmolin I	CH_3	CH_2CH_3
Jasmolin II	$COOCH_3$	CH_2CH_3

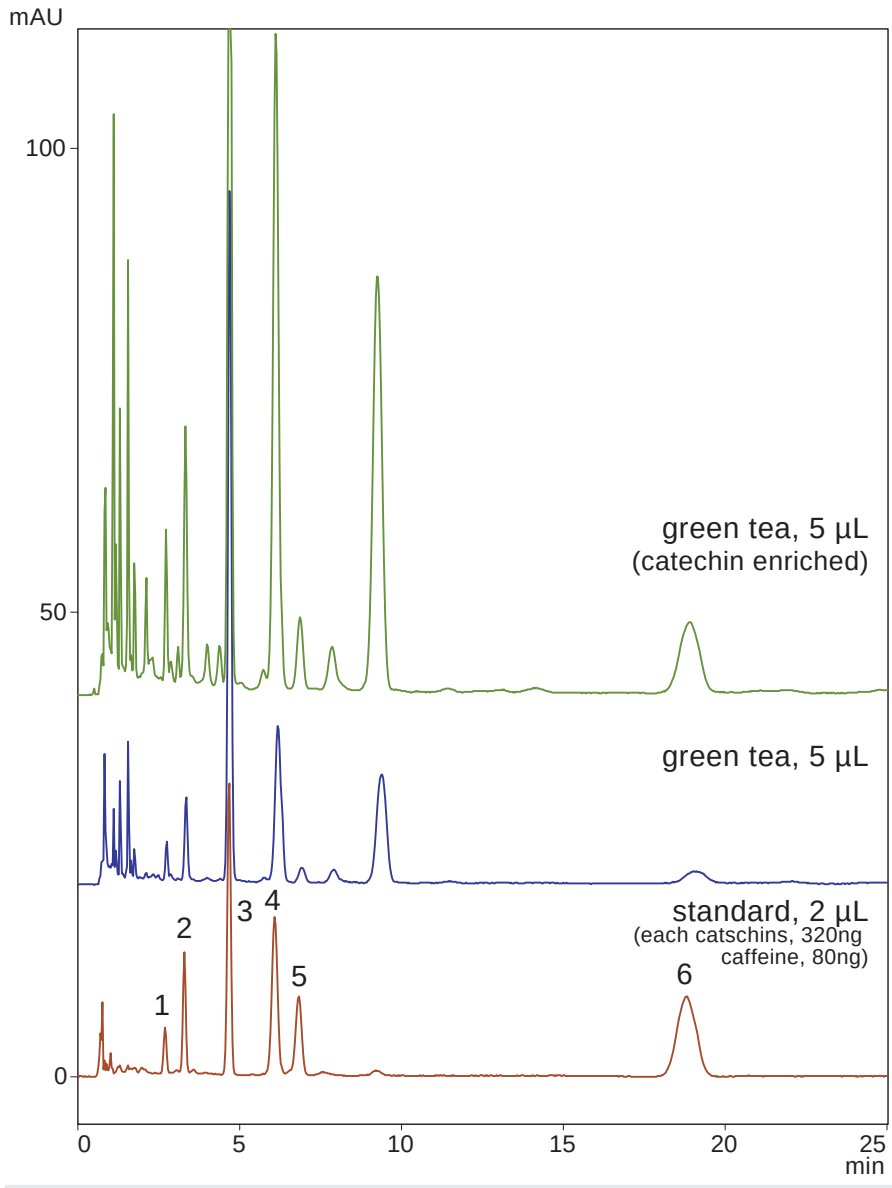
Unison UK-C18, 100 x 4.6 mm
water / acetonitrile = 35 / 65
1.0 mL/min, 40 °C
UV at 220 nm, 1µL

Courtesy of Makoto IHARA and Prof. Koichiro KOMAI
Graduate School of Agriculture, Kinki University

Cadenza CD-C18 75 x 4.6 mm Application

Catechins in Green Tea

緑茶中のカテキン



1 epigallocatechin
EGC(-)

2 catechin
C(+)

3 caffeine

4 epigallocatechin gallate
EGCg(-)

5 epicatechin
EC(-)

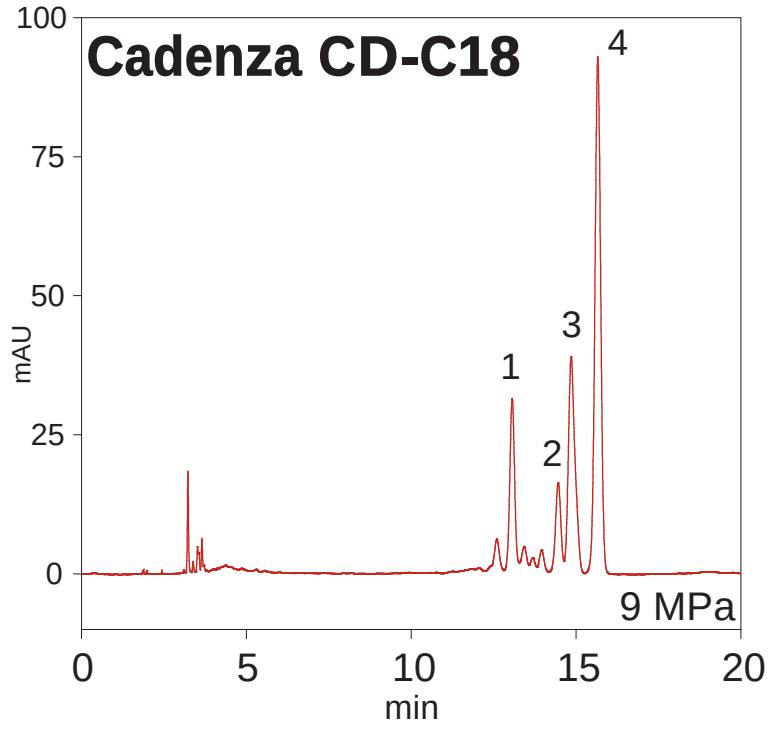
6 epicatechin gallate
ECg(-)

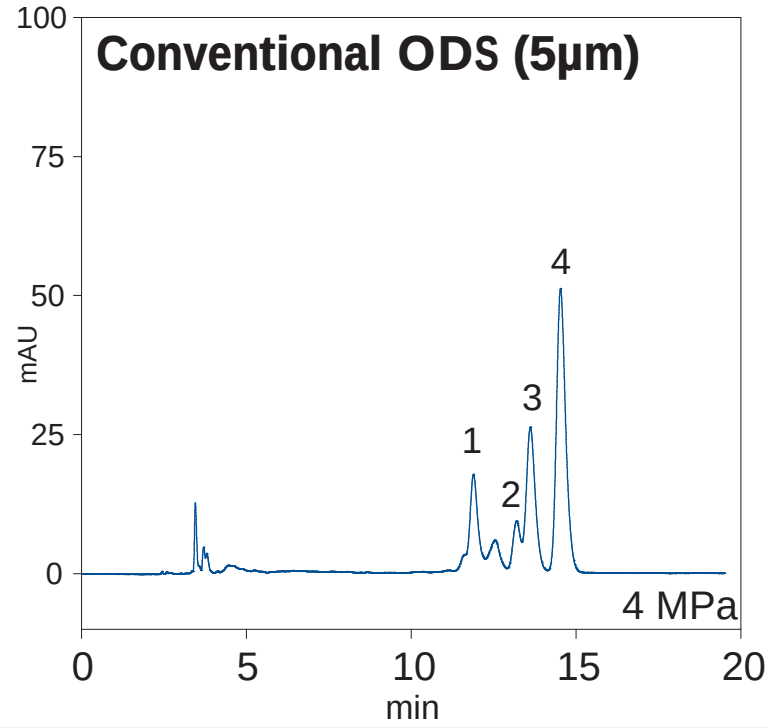
Cadenza CD-C18, 75 x 4.6 mm
1% acetic acid / methanol / acetonitrile = 85 / 10 / 5
1 mL/min, 37 °C, 280 nm, 10 MPa

Cadenza CD-C18 250 x 4.6 mm Application

Plant Sterols

植物ステロール





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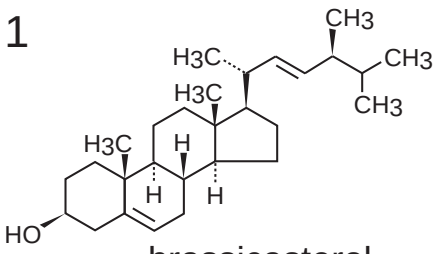
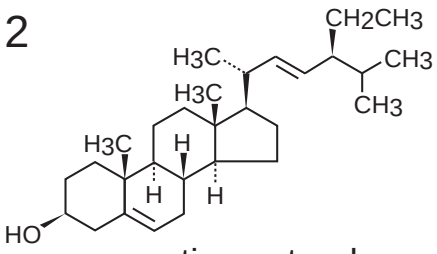


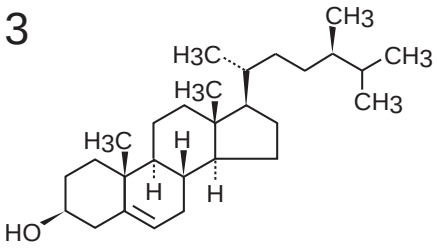
brassicasterol

2



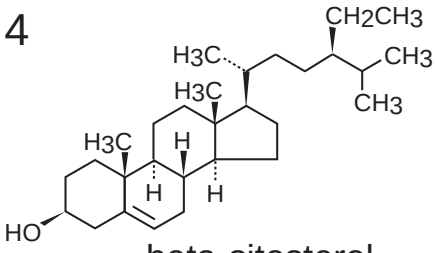
stigmasterol

3



campesterol

4



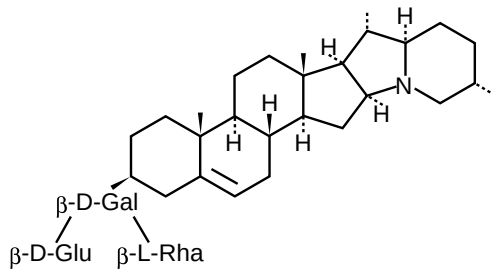
beta-sitosterol

250 x 4.6 mm
methanol / THF = 90 / 10
0.8 mL/min, room temp.
210 nm

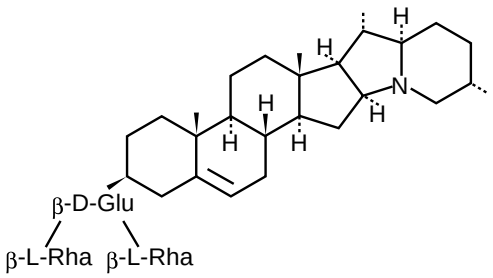
Cadenza CD-C18 75 x 2 mm Application

α- Solanine and α- Chaconine from Potato

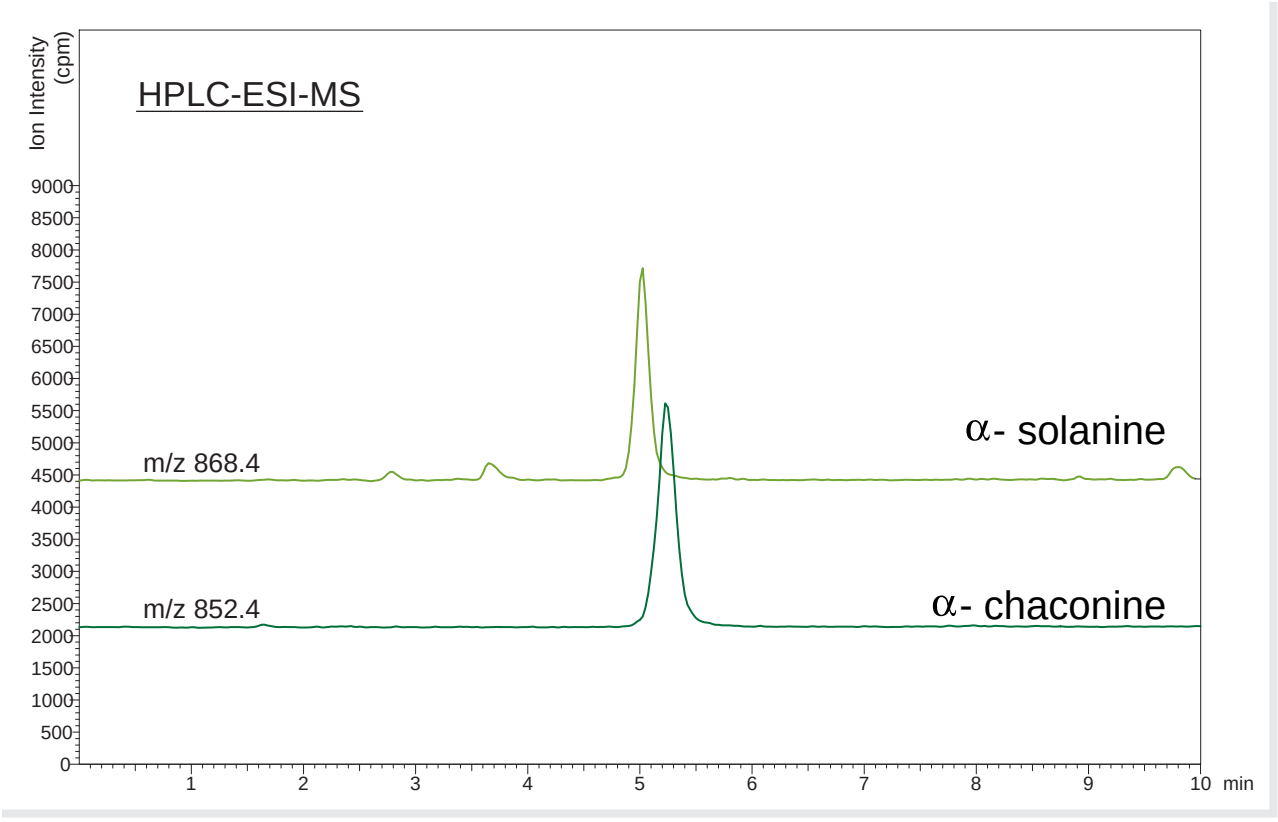
ジャガイモ中のα−ソラニンとα−チャコニン



α- solanine



α- chaconine



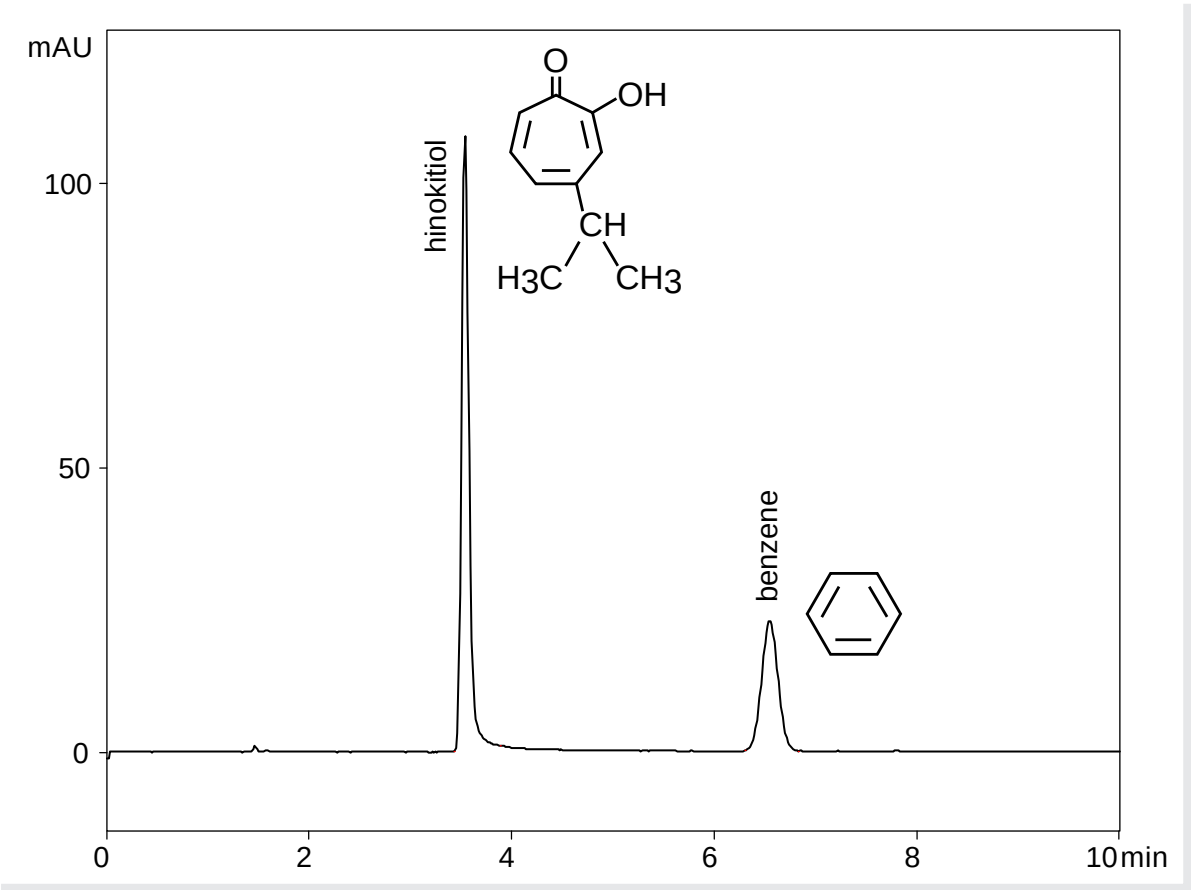
Cadenza CD-C18, 75 x 2 mm
0.1% trifluoroacetic acid / acetonitrile = 75 / 35
0.2 mL/min, 35 deg.C,
LCMS-2010A, ESI positive

Courtesy of Dr. Fumio MATSUDA and Prof. Hisashi MIYAGAWA,
Department of Agriculture, Kyoto University.

Cadenza CD-C18 | 75 x 4.6 mm | Application

Hinokitiol

ヒノキチオール

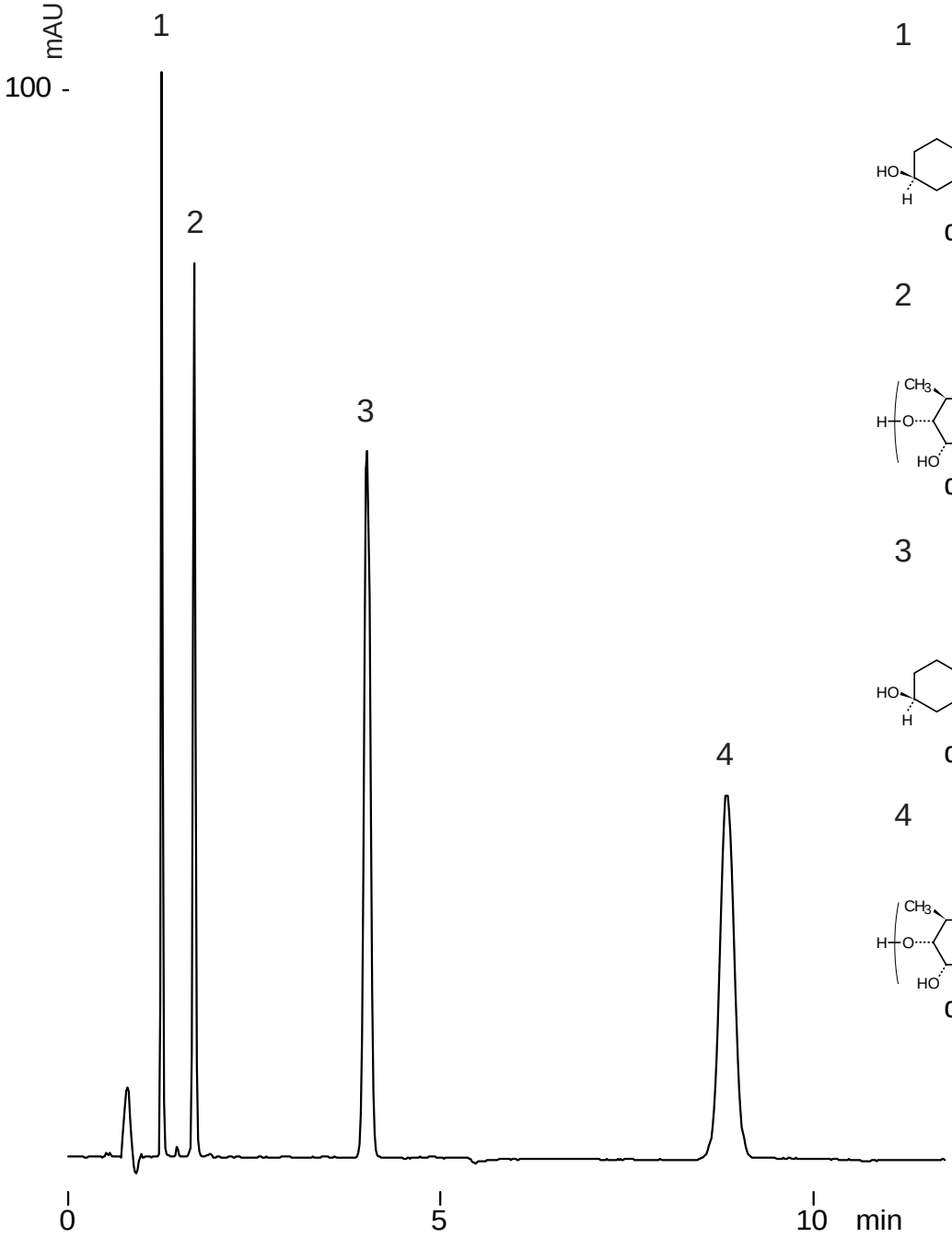


Cadenza CD-C18, 75 x 4.6 mm
50mM ammonium acetate / acetonitrile = 60 / 40
1 mL/min (6MPa), 37 deg.C, 260 nm

Unison UK-C18 75 x 4.6 mm Application

Digitalis Glycosides

ジギタリス配糖体



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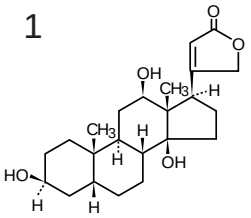
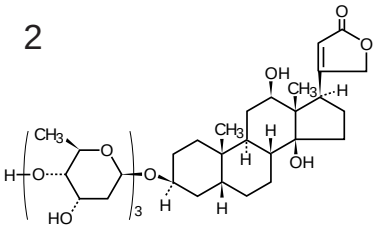


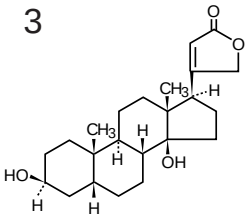
digoxigenin

2



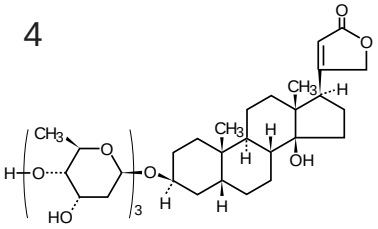
digoxin

3



digitoxigenin

4



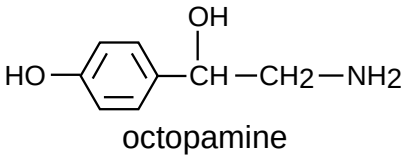
digitoxin

Unison UK-C18, 75 x 4.6 mm
water / acetonitrile = 60 / 40
1.0 mL/min (7MPa), 37 deg.C, 220 nm, 2 uL (0.2-0.8 ug)

Unison UK-C18 75 x 2 mm Application

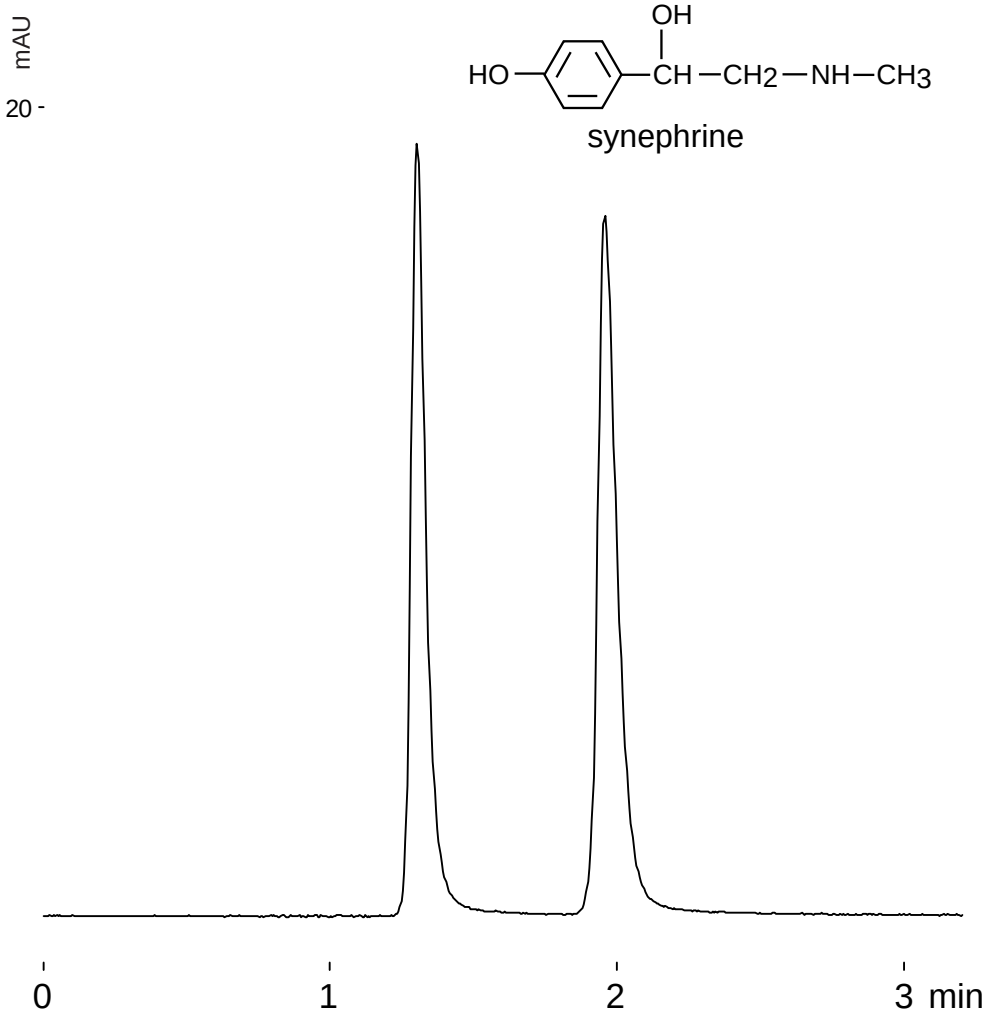
Adrenergic Amines

アドレナリン作動性アミン



octopamine

synephrine

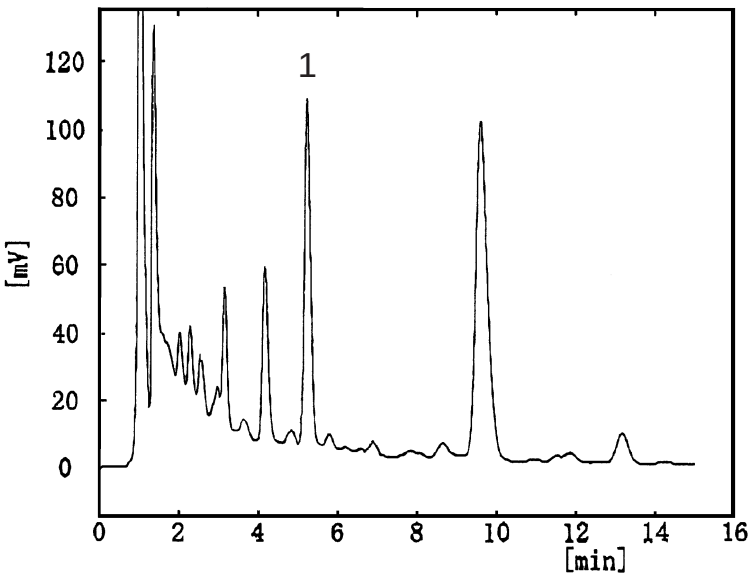


Unison UK-C18, 75 x 2 mm
20mM formic acid / 20mM ammonium formate = 1 / 1
0.2 mL/min (4MPa), 37 deg.C, 260 nm, 0.4 uL (0.2 ug)

Cadenza CD-C18 75 x 4.6 mm Application

Natural Medicine Properties (Shoseiryuto)

生薬成分（小青竜湯）



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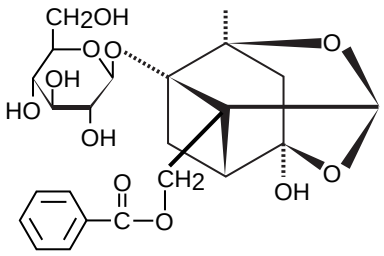
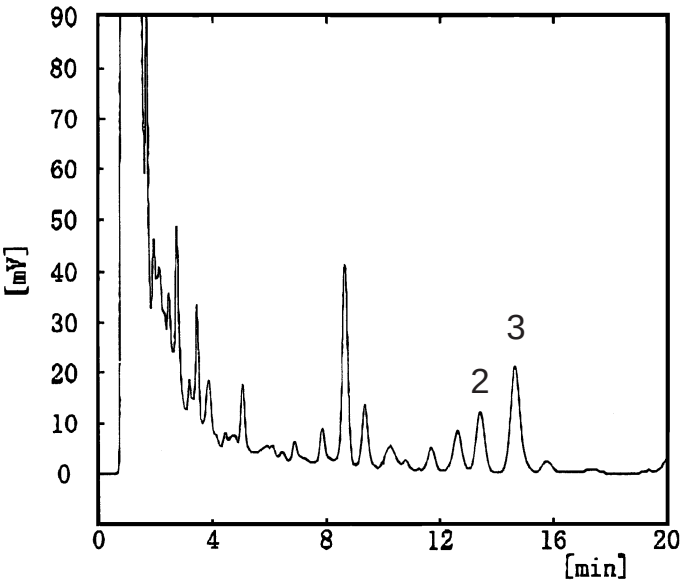


paeoniflorin

Cadenza CD-C18,
75 x 4.6 mm
water / acetonitrile / H_3PO_4
= 700 / 100 / 1
1 mL/min, 25 deg.C, 230 nm



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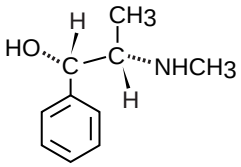
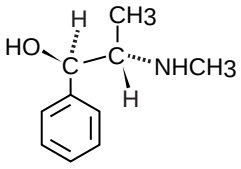


d- pseudoephedrine

3



l - ephedrine

Cadenza CD-C18, 75 x 4.6 mm
water / acetonitrile / H_3PO_4 / SDS
= 650 / 350 / 2 / 5
1 mL/min, 40 deg.C, 210 nm

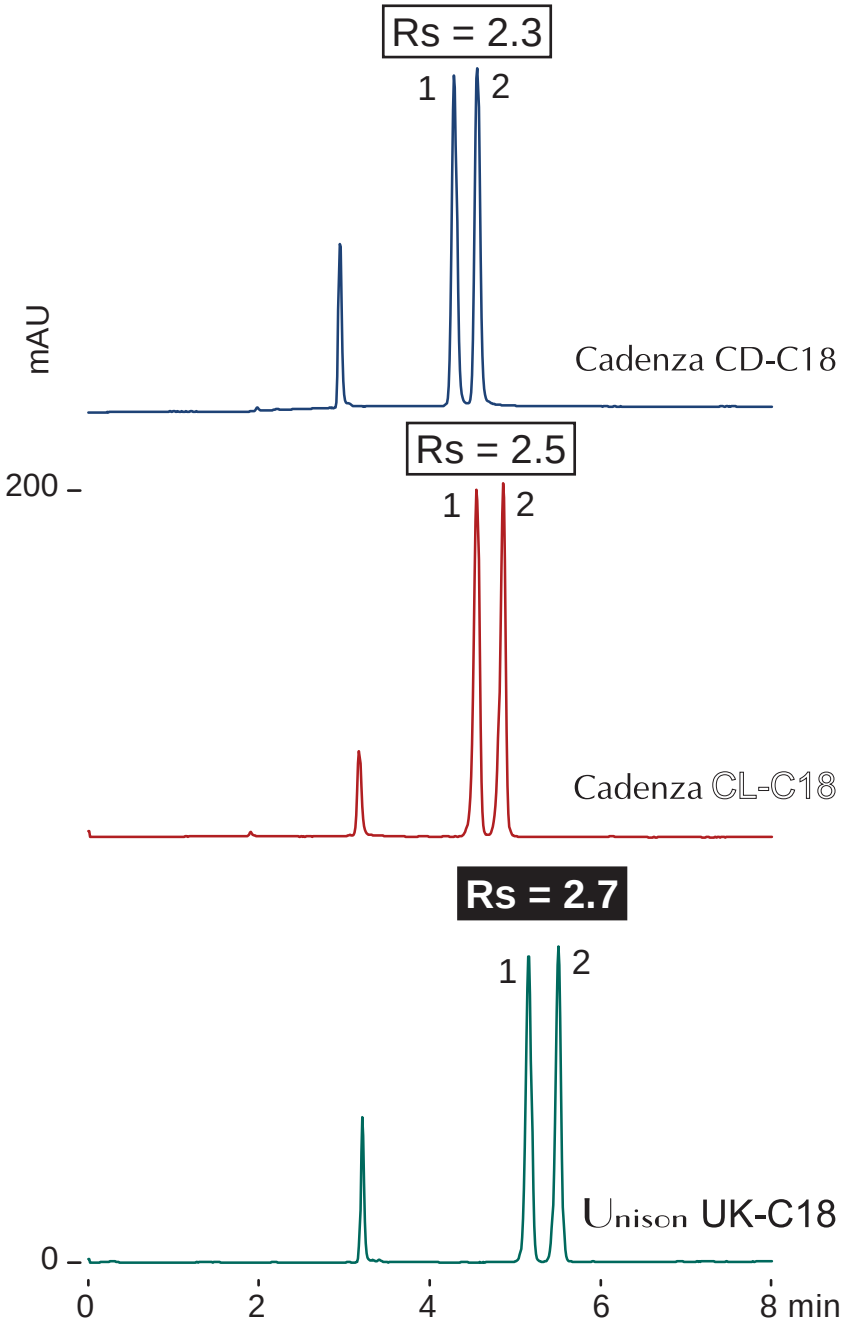
Cadenza CD-C18
Cadenza CL-C18
Unison UK-C18

250 x 4.6 mm

Application

Stevia Sweeteners

ステビア甘味料



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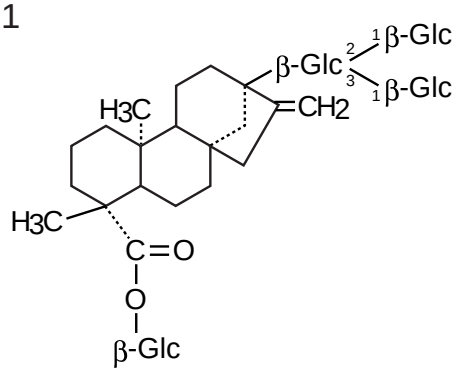
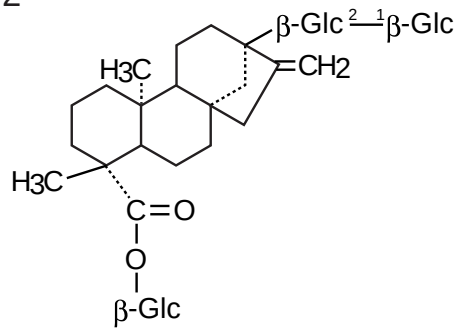


rebaudioside A

2



stevioside

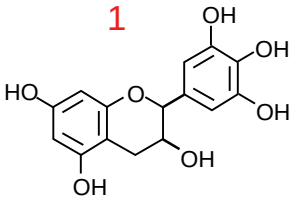
250 x 4.6 mm
water / acetonitrile = 62 / 38
0.8 mL/min (12-13MPa)
37 deg.C, 210 nm, 2 uL (4ug)

Unison UK-C18 250 x 4.6 mm Application

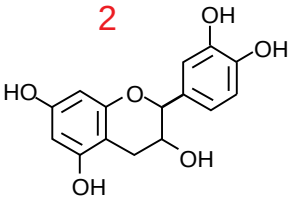
Catechins and Flavonoids in Black Catechu and Chinese Scullcap

アセンヤクおよびコガネバナ中のカテキンとフラボノイド

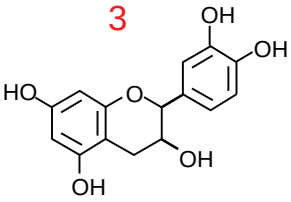
1 epigallocatechin
EGC



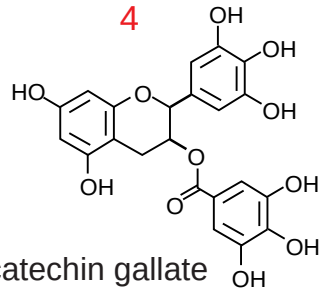
2 catechin
C

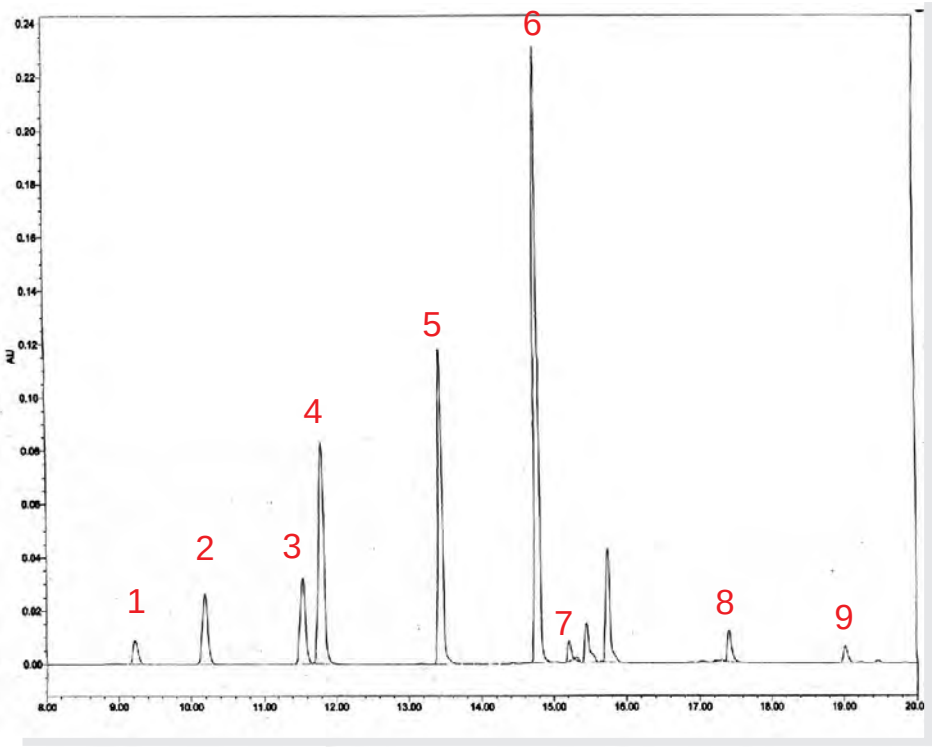


3 epicatechin
EC

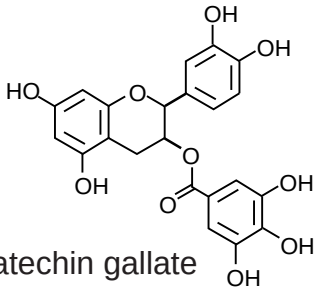


4 epigallocatechin gallate
EGCG

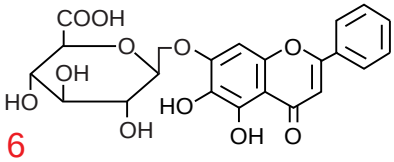




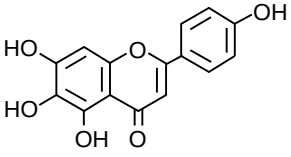
5 epicatechin gallate
ECG



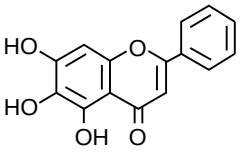
6 baicalin



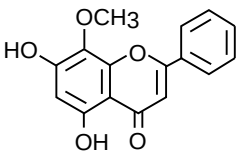
7 scutellarein



8 baicalein



9 wogonin



Unison UK-C18, 250 x 4.6mm

A: 0.125% TFA in water
B: acetonitrile
5-20%B (0-8min), 20-95%B (8-20min)
1.0 mL/min, 45 deg.C
5 uL inj., 2mg/40mL, UV at 280 nm

Courtesy of Perrigo Co., USA

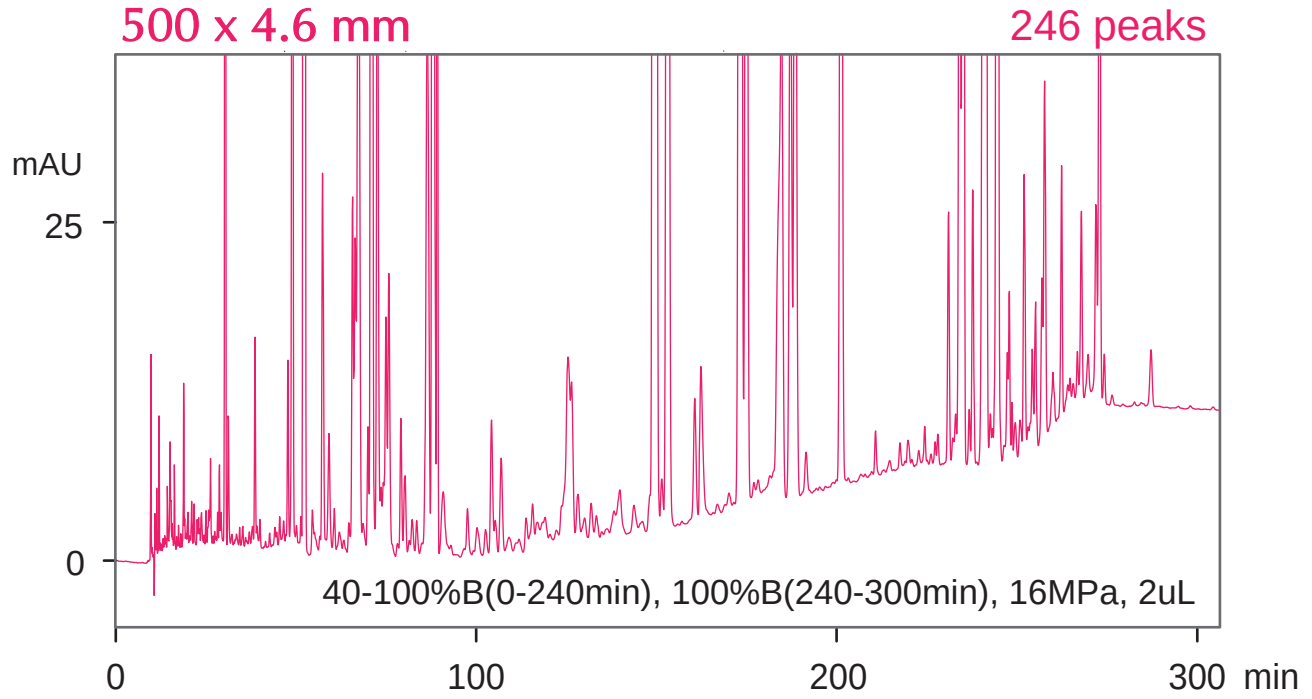
Cadenza CD-C18

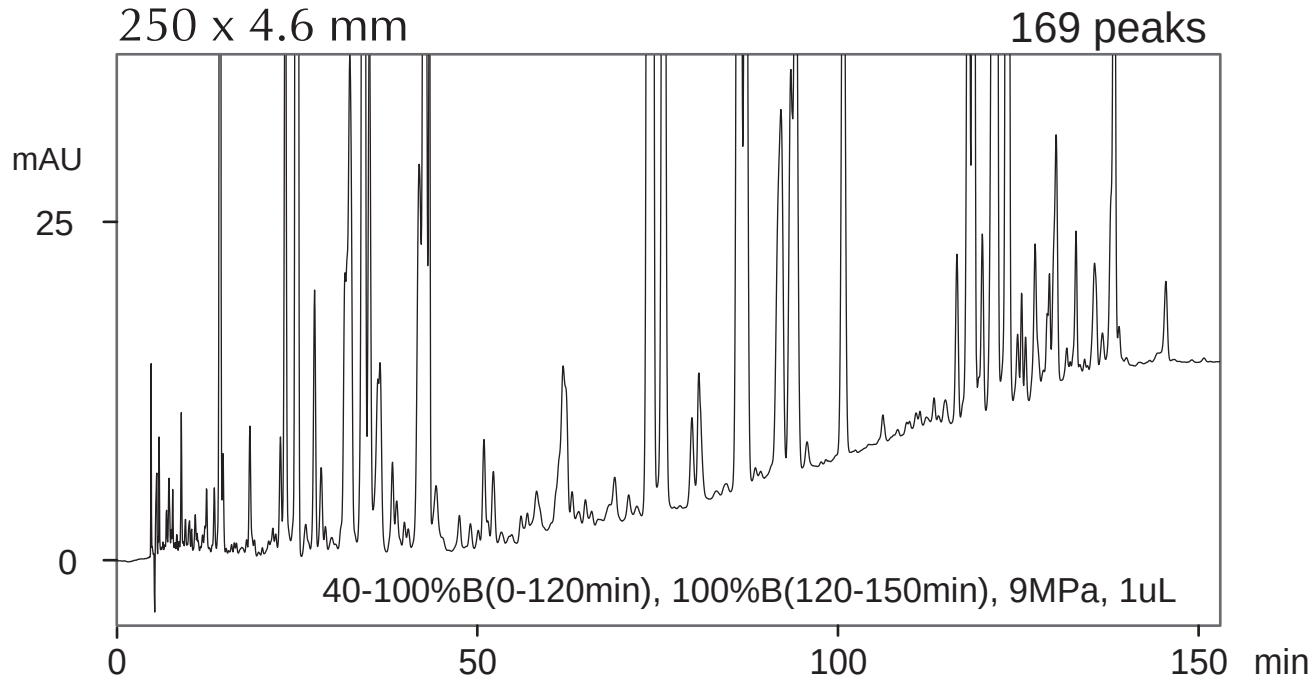
500 x 4.6 mm
250 x 4.6 mm

Application

Essential Oil (Peppermint)

エッセンシャルオイル（ペパーミント）



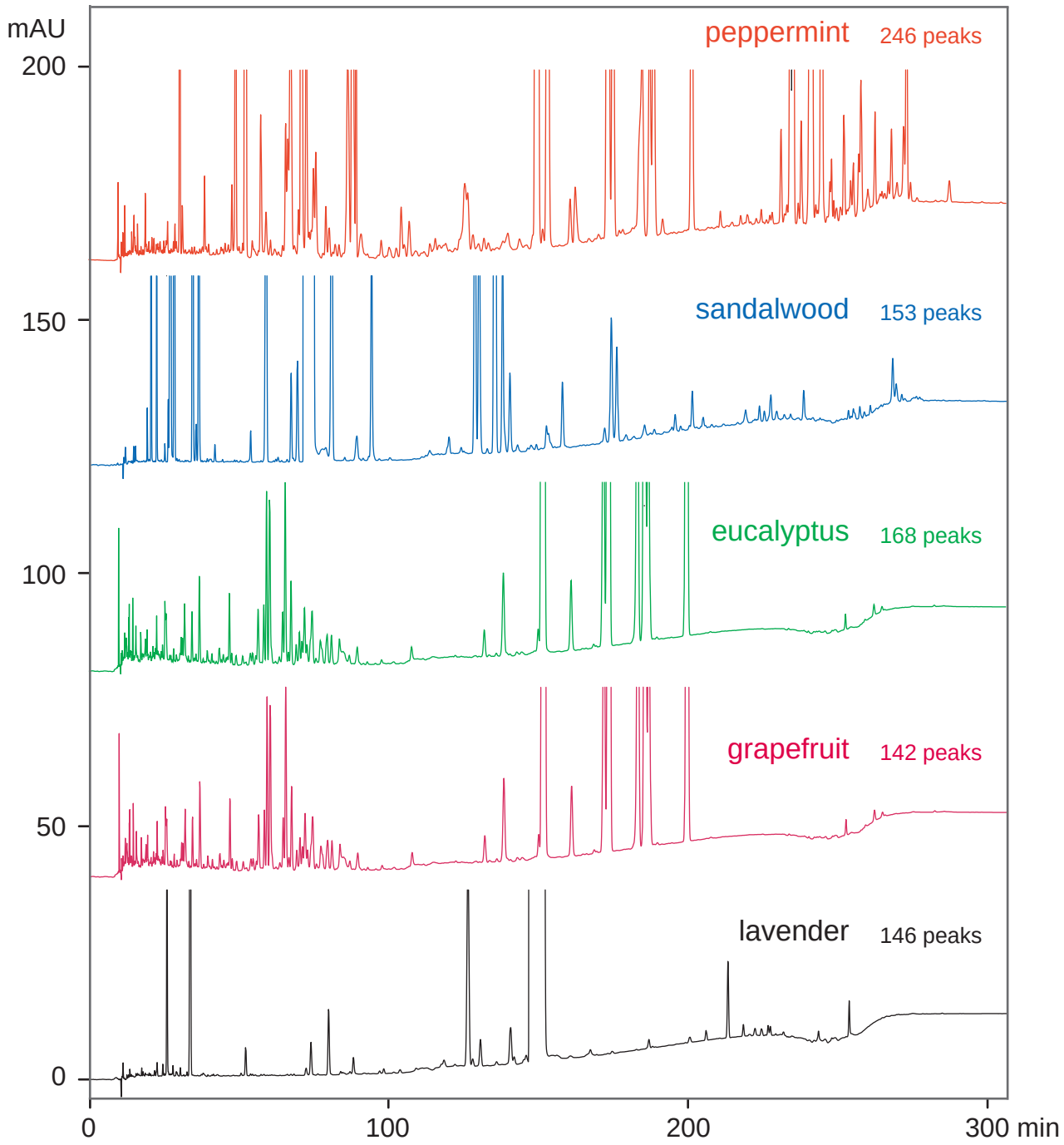


Cadenza CD-C18
A: water / trifluoroacetic acid = 100 / 0.1
B: acetonitrile / trifluoroacetic acid = 100 / 0.1
0.5mL/min, room temp., 220 nm

Cadenza CD-C18 500 x 4.6 mm Application

Essential Oils

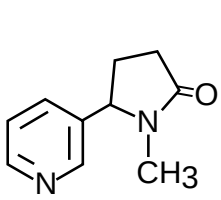
エッセンシャルオイル



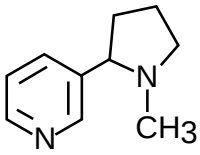
Cadenza CD-C18, 500 x 4.6 mm
A: water / trifluoroacetic acid = 100 / 0.1
B: acetonitrile / trifluoroacetic acid = 100 / 0.1
40-100%B(0-240min), 100%B(240-300min)
0.5mL/min (16MPa), room temp., 220 nm, 2uL

Unison UK-Amino
Cadenza CD-C18 100 x 3 mm Application

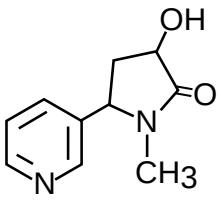
Nicotine derivatives and Metabolites
ニコチン類縁体と代謝物



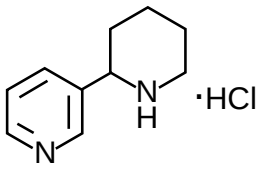
1 cotinine



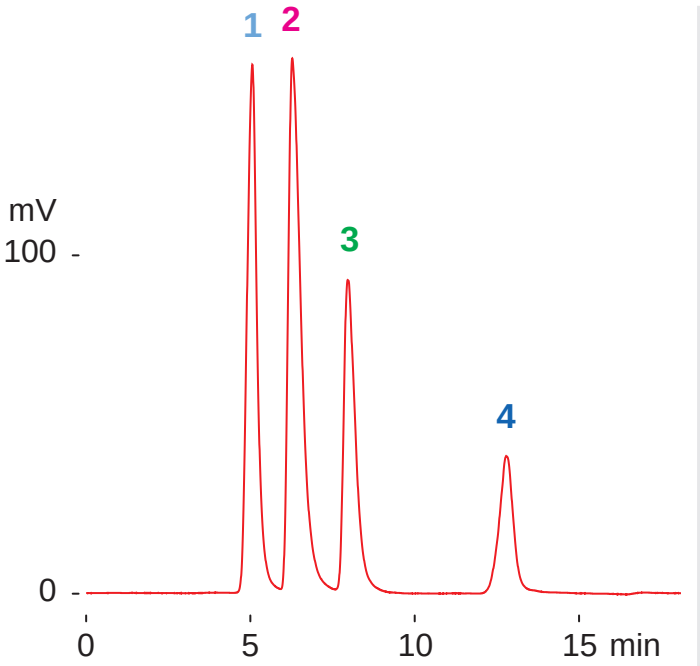
2 nicotine



3 3-hydroxycotinine

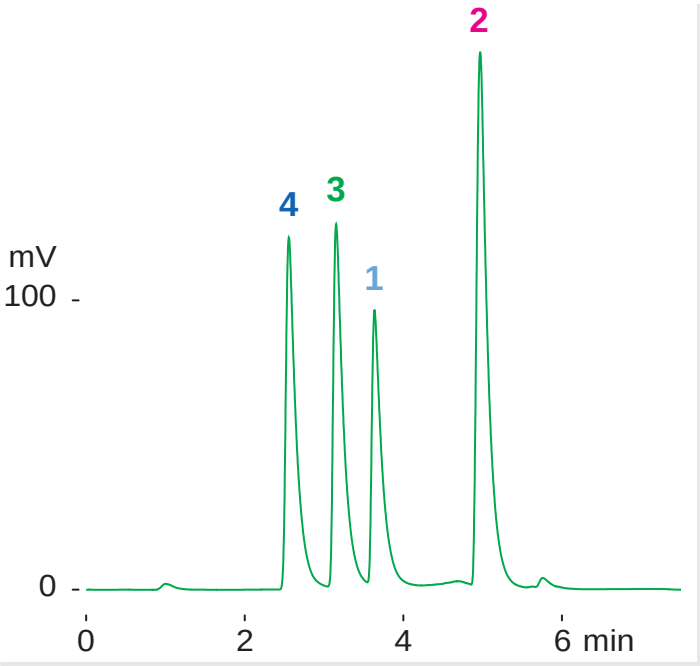


4 anabasine hydrochloride



normal phase

Unison UK-Amino, 100 x 3 mm
A: hexane /TFA = 100 /0.5
B: ethanol /water /TFA = 100 /0.1 /0.5
15-65%B(0-15min)
0.4mL/min (2MPa), 37deg.C, ELSD
0.8uL (4ug)



reversed phase

Cadenza CD-C18, 100 x 3 mm
A: water / HFBA = 100 / 0.1
B: acetonitrile / HFBA = 100 / 0.1
0-40%B(0-6min)
0.4mL/min (6MPa), 37deg.C, ELSD
1uL (5ug)

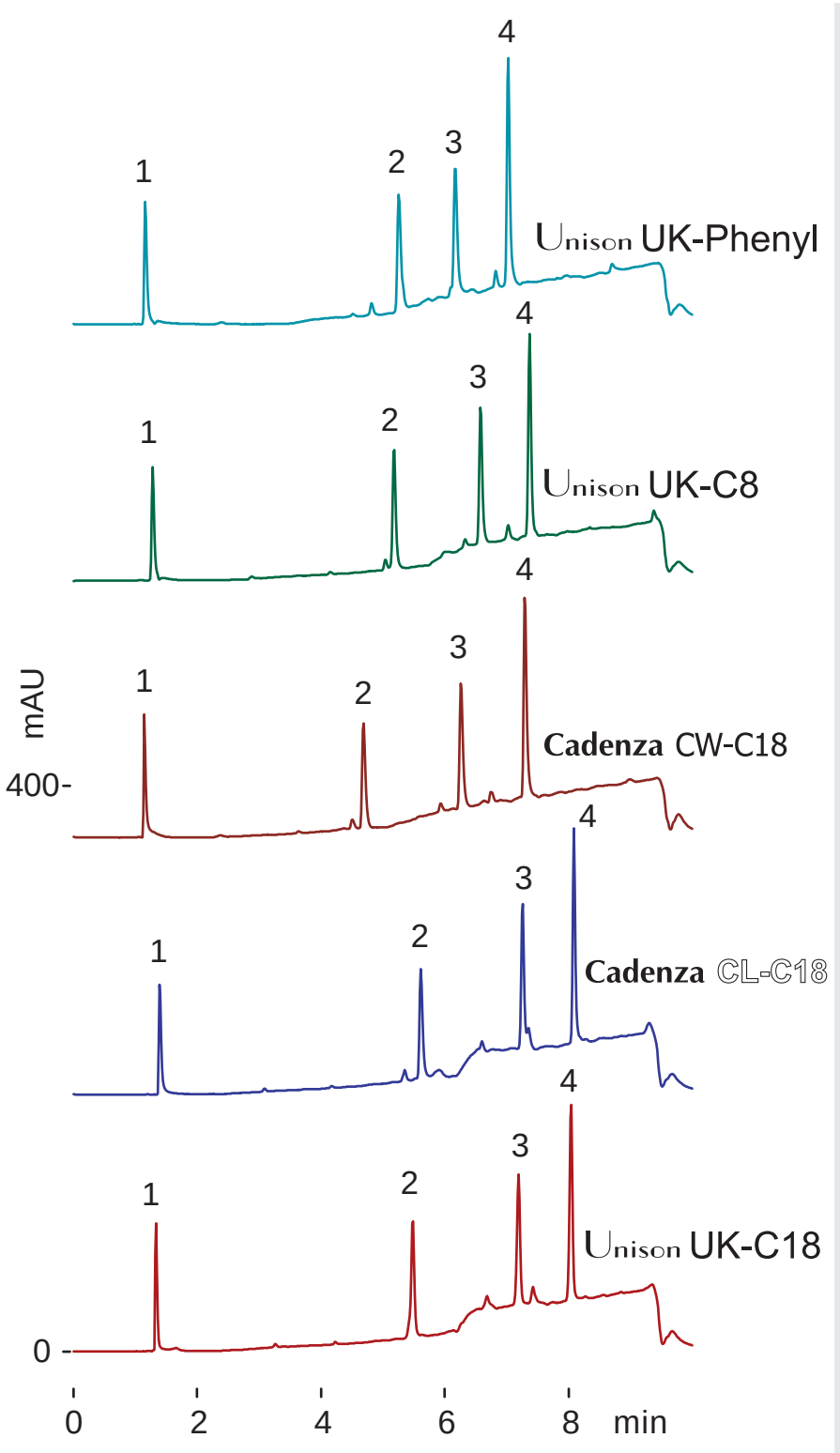
Unison UK-Phenyl
Unison UK-C8
Cadenza CW-C18
Cadenza CL-C18
Unison UK-C18

75 x 2 mm

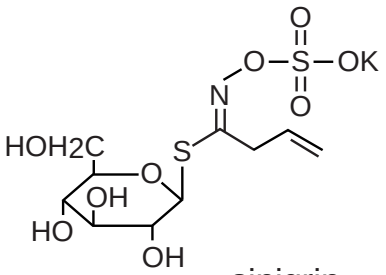
Application

Isothiocyanates of Brassicaceae (Cruciferae)

アブラナ科の辛味成分（イソチオシアネート類）

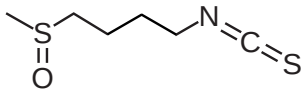


1



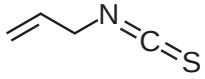
sinigrin

2



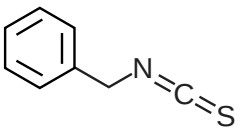
sulforaphane

3



allyl isothiocyanate

4



benzyl isothiocyanate

75 x 2 mm
A: water / TFA = 100 / 0.1
B: methanol / TFA = 100 / 0.1
0-100 %B (0-8min)
0.2 mL/min (4-5MPa)
37 deg.C, 250 nm
1 uL (0.5-1ug)

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

75 x 2 mm

Application

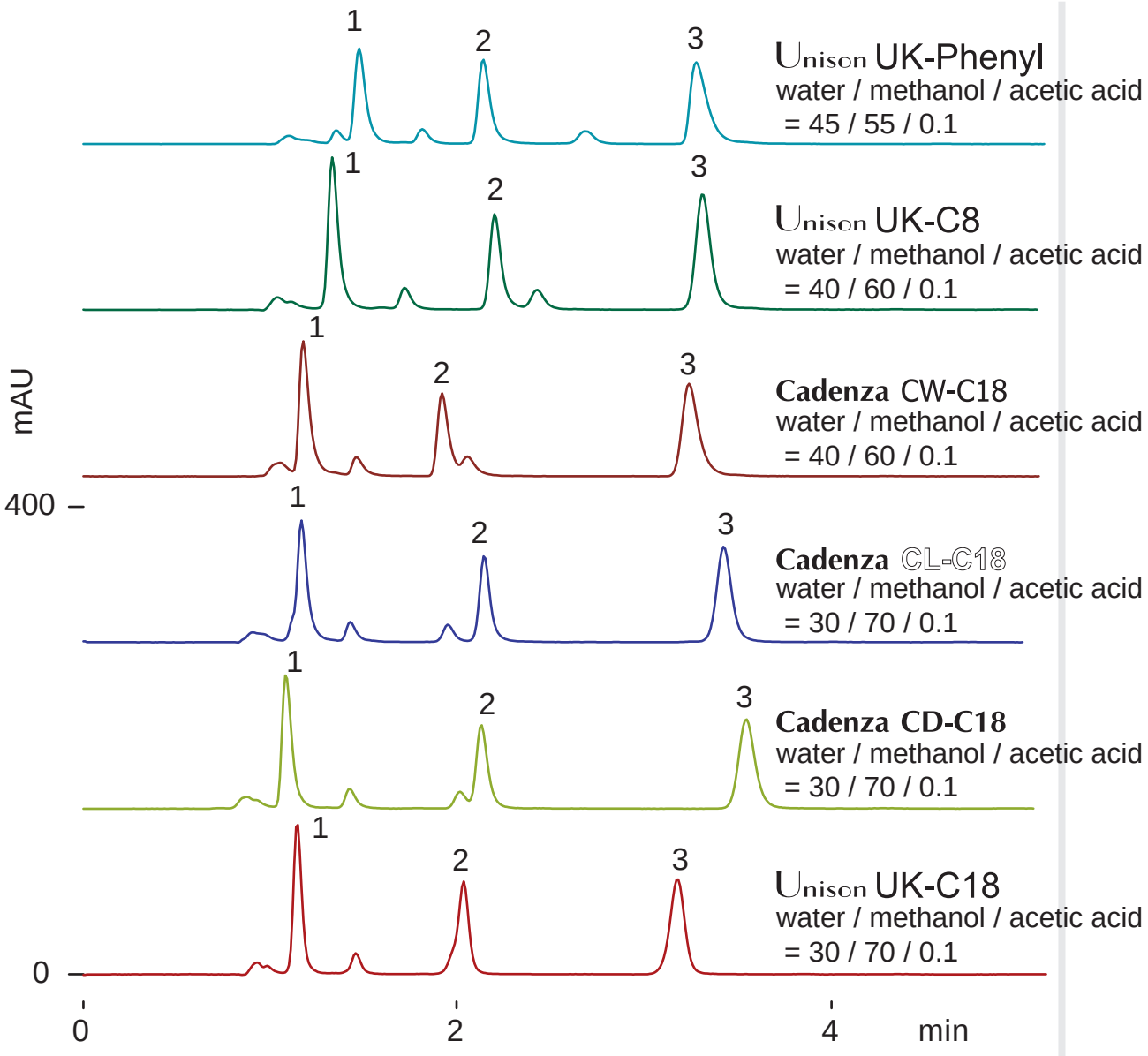
Isothiocyanates of Brassicaceae (Cruciferae)

アブラナ科の辛味成分（イソチオシアネート類）

1 sulforaphane

2 allyl isothiocyanate

3 benzyl isothiocyanate

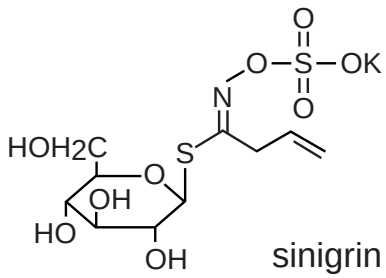


75 x 2 mm, 0.2 mL/min (6-8MPa)
37 deg.C, 250 nm, 1 uL (0.5-1ug)

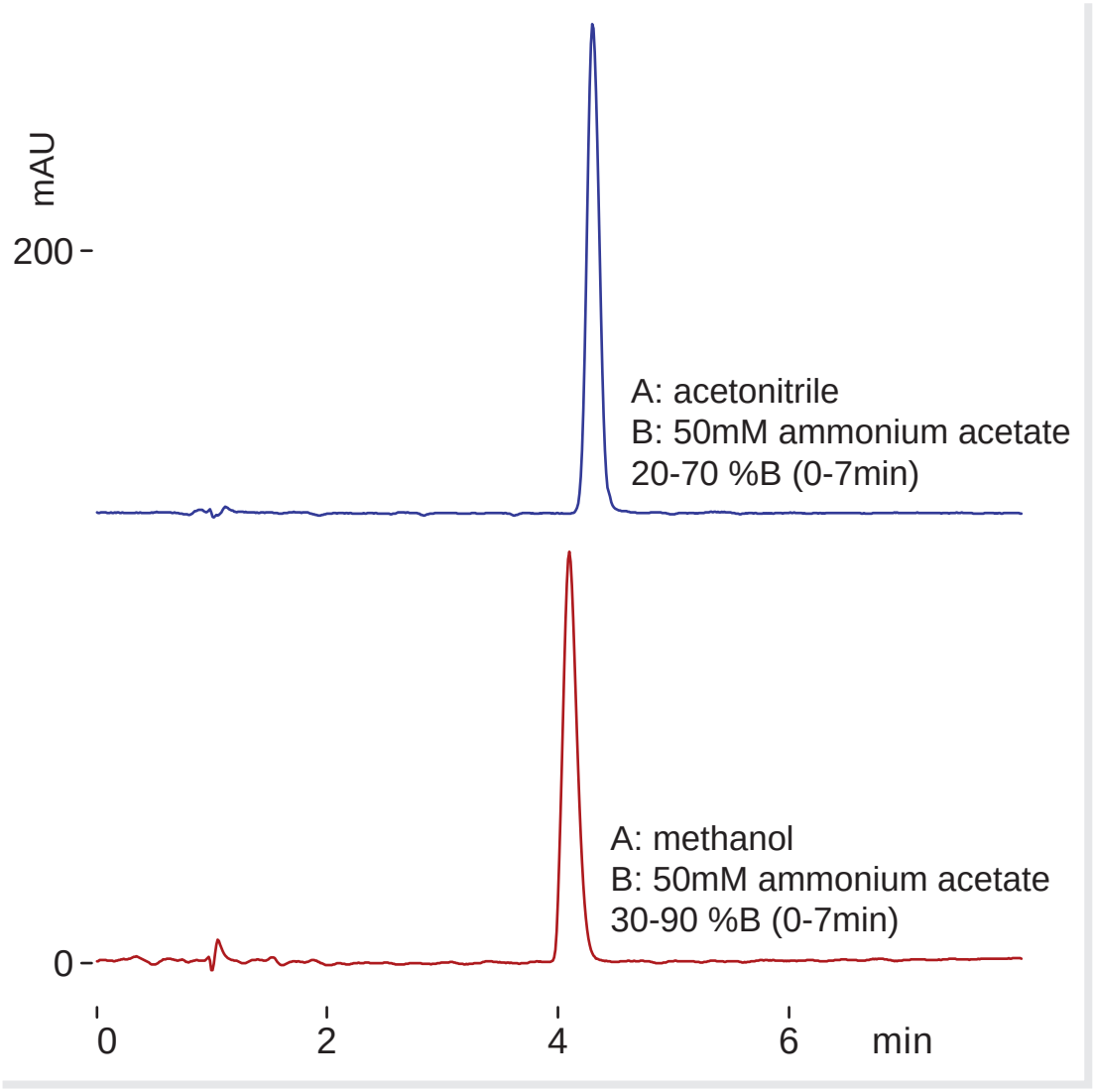
Unison UK-Amino 75 x 2 mm Application

Sinigrin (normal phase)

シニグリンの順相分離



sinigrin



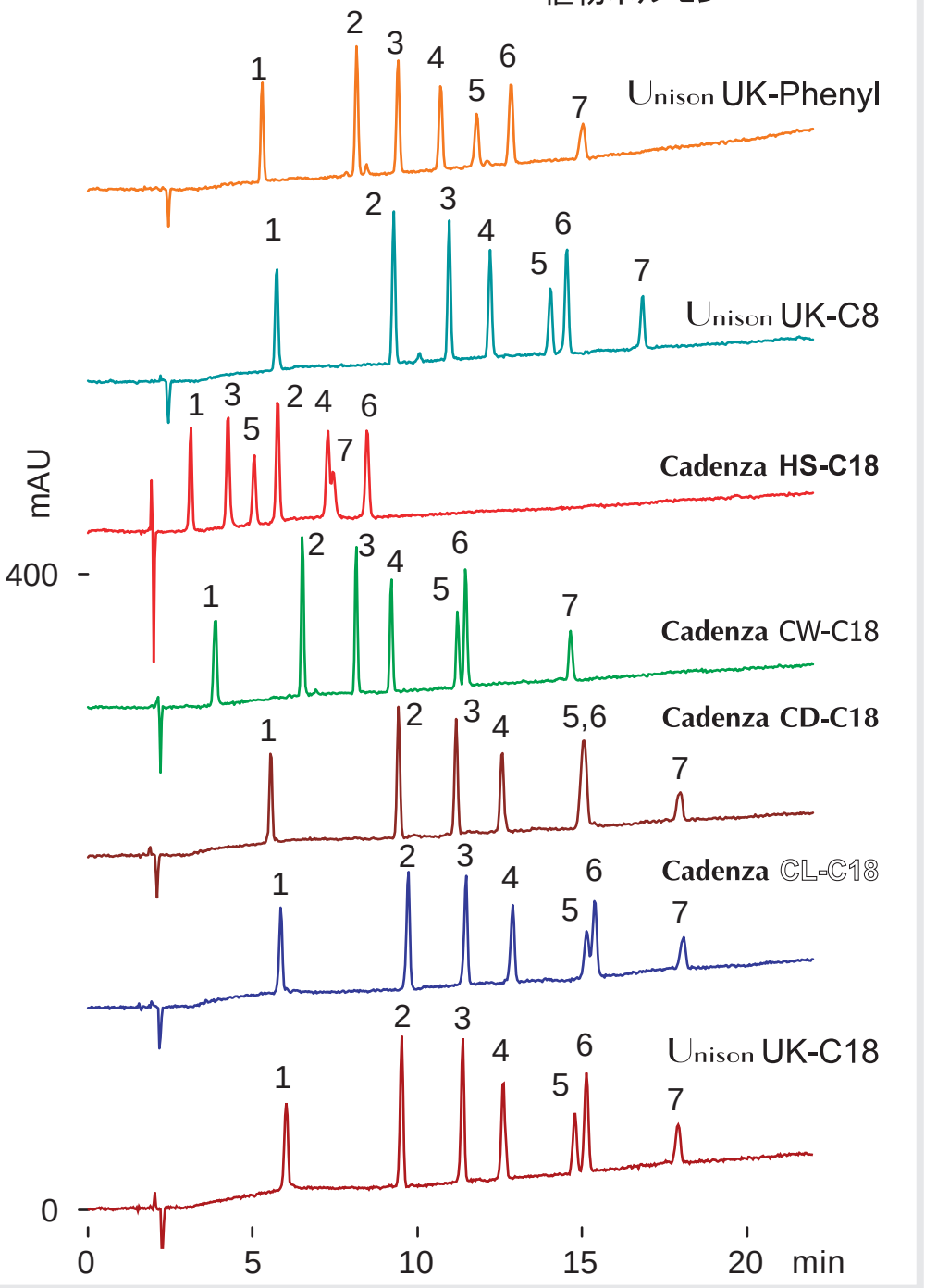
Unison UK-Amino, 75 x 2 mm
0.2 mL/min (3-7MPa), 37 deg.C, 250 nm, 1 uL (5ug)

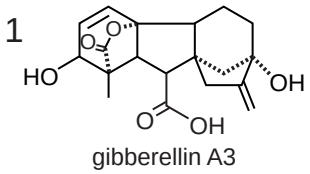
Unison UK-Phenyl
Unison UK-C8 Cadenza CD-C18
Cadenza HS-C18 Cadenza CL-C18
Cadenza CW-C18 Unison UK-C18 150 x 3 mm

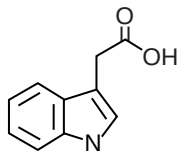
Application

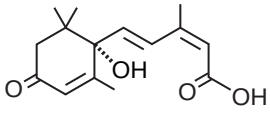
Phytohormones

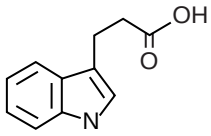
植物ホルモン

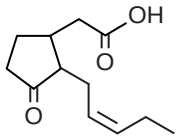


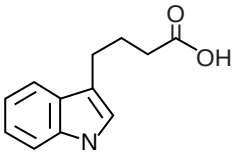

1 gibberellin A3

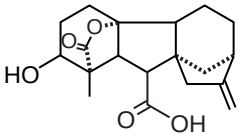

2 3-indoleacetic acid


3 abscisic acid


4 3-indolepropionic acid


5 jasmonic acid


6 3-indolebutyric acid


7 gibberellin A4

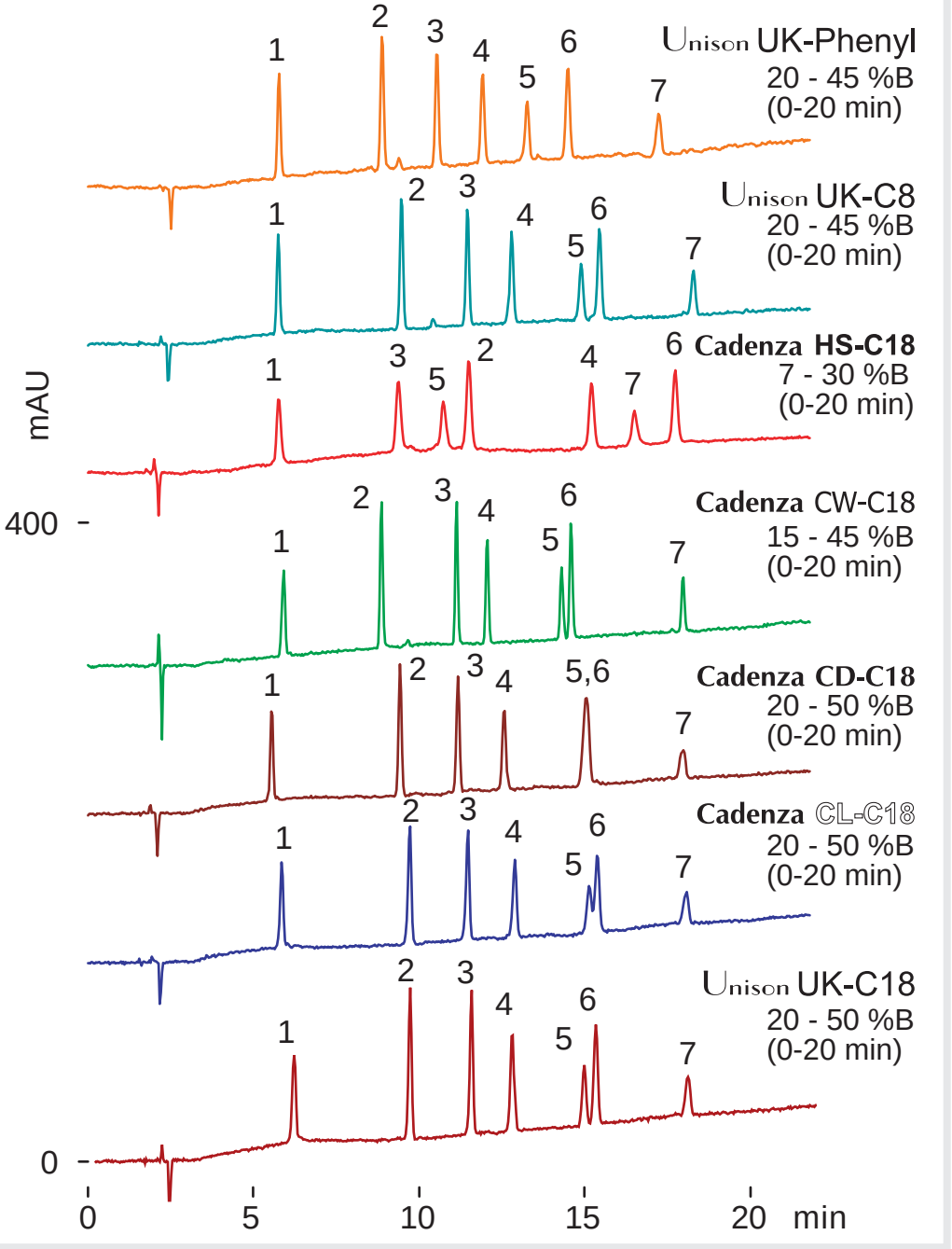
150 x 3 mm
A: water / formic acid = 100 / 0.1
B: acetonitrile / formic acid = 100 / 0.1
20 - 50 %B (0-20 min) ,0.4 mL/min (8-10 MPa)
37 deg.C, 210 nm, 3 uL (0.3-3 ug)

Unison UK-Phenyl
Unison UK-C8 Cadenza CD-C18
Cadenza HS-C18 Cadenza CL-C18
Cadenza CW-C18 Unison UK-C18 150 x 3 mm

Application

Phytohormones

植物ホルモン



1 gibberellin A3

2 3-indoleacetic acid

3 abscisic acid

4 3-indolepropionic acid

5 jasmonic acid

6 3-indolebutyric acid

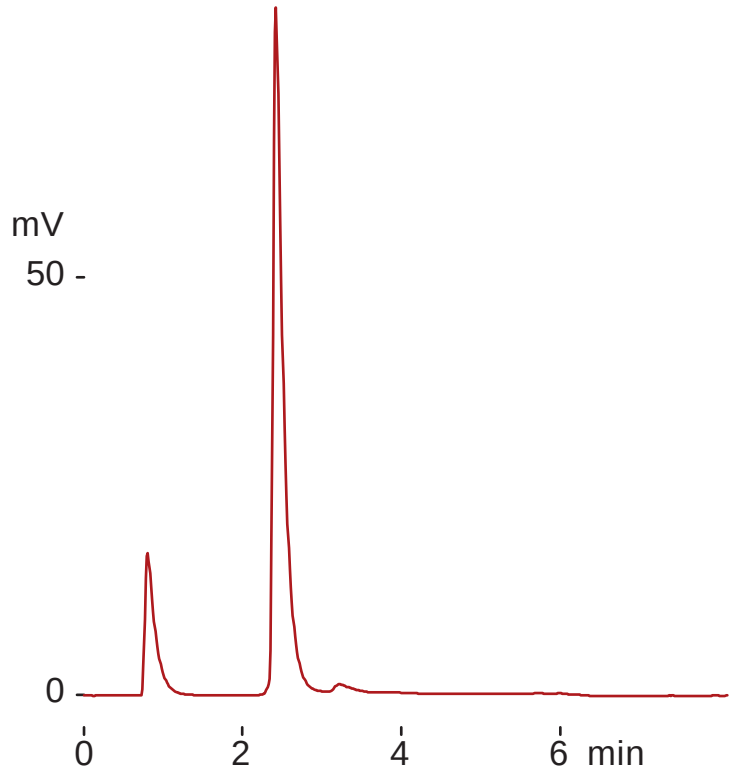
7 gibberellin A4

150 x 3 mm
A: water / formic acid = 100 / 0.1
B: acetonitrile / formic acid = 100 / 0.1
0.4 mL/min (8-10 MPa)
37 deg.C, 210 nm, 3 uL (0.3-3 ug)

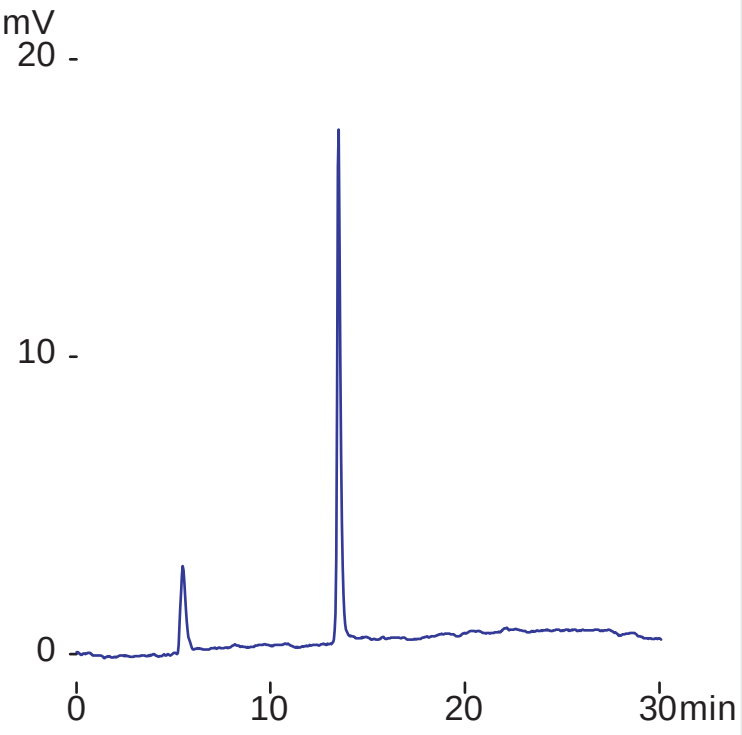
Presto FF-C18 50 x 4.6 mm 150 x 4.6 mm Application

Lipopolysaccharide (from *E.coli* O127)

リポ多糖（大腸菌O127由来）



Presto FF-C18, 50 x 4.6 mm
A: water / formic acid = 100 / 0.1
B: acetonitrile / formic acid = 100 / 0.1
0-70 %B (0-5 min)
0.5 mL/min (7 MPa), 37 deg.C
ELSD (spray chamber 30 deg.C,
drift tube 80 deg.C)
5 uL (10 ug)

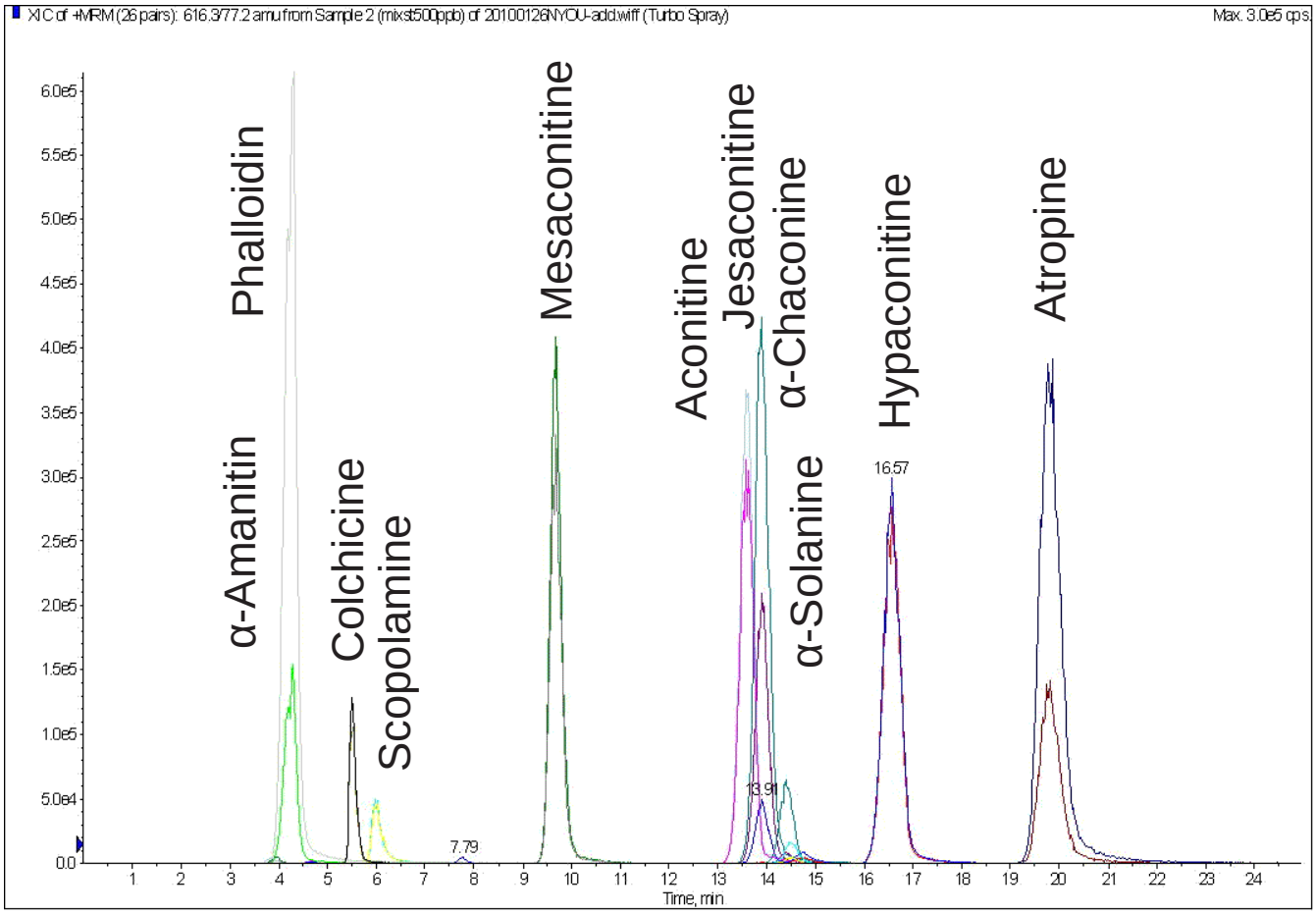


Presto FF-C18, 150 x 4.6 mm
A: water / formic acid = 100 / 0.1
B: acetonitrile / formic acid = 100 / 0.1
0-70 %B (0-25 min)
0.2 mL/min (7 MPa), 37 deg.C
ELSD (spray chamber 30 deg.C,
drift tube 80 deg.C)
5 uL (10 ug)

Scherzo SM-C18 150 x 2 mm Application

LC-MS/MS Application: Simultaneous determination of phytotoxins in urine

LC–MS/MSによる尿中植物性自然毒一斉分析



Scherzo SM-C18, 150 x 2 mm
10mM ammonium formate / methanol = 10 / 90
0.2 mL/min, 40 deg.C, 10uL
ESI-MS (MRM, positive)

MZ ANALYSENTECHNIK

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Ref.)
Simultaneous Determination of phytotoxins in urine with LC/MS/MS
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