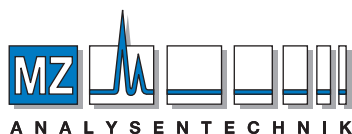


 **Imtakt**

HPLC TECHNICAL INFORMATION

**Peptides
Proteins
Amino Acids**



ANALYSENTECHNIK

AUTHORIZED DISTRIBUTOR

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

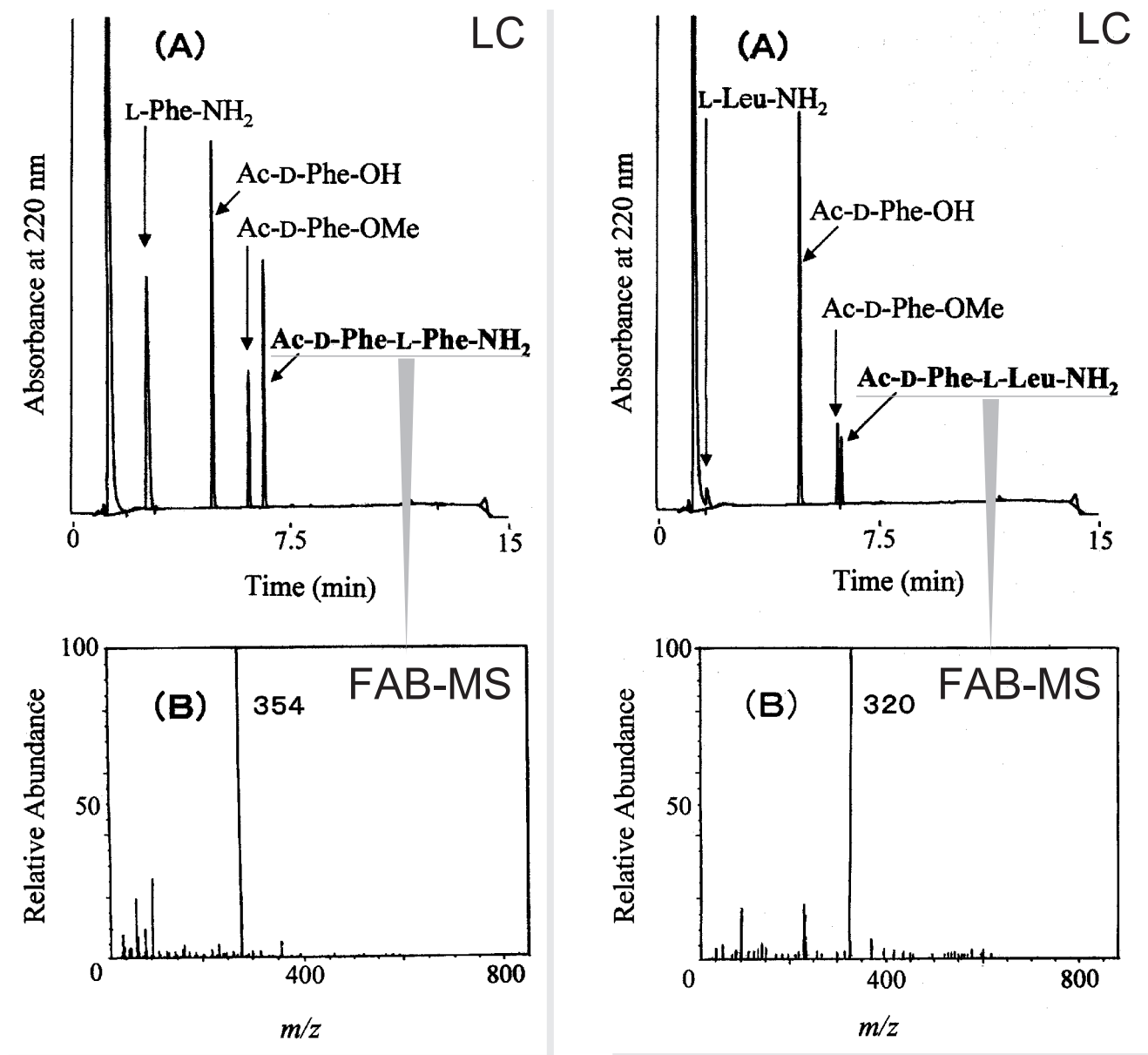
USA, Canada, and Mexico : [Silvertone Sciences \(USA\) - info@silvertonesciences.com](http://Silvertone Sciences (USA) - info@silvertonesciences.com)
Other Countries : [Imtakt Corp.\(JAPAN\) - info@imtakt.com](http://Imtakt Corp.(JAPAN) - info@imtakt.com)

Cadenza CD-C18

75 x 4.6 mm

Application

LC and FAB Mass Analyses of D-Amino Acid-containing Peptides



[LC]
 Cadenza CD-C18, 75 x 4.6 mm
 5-45% of methanol/acetonitrile (6:4) in 50 mM phosphate, pH 5.7
 1 mL/min

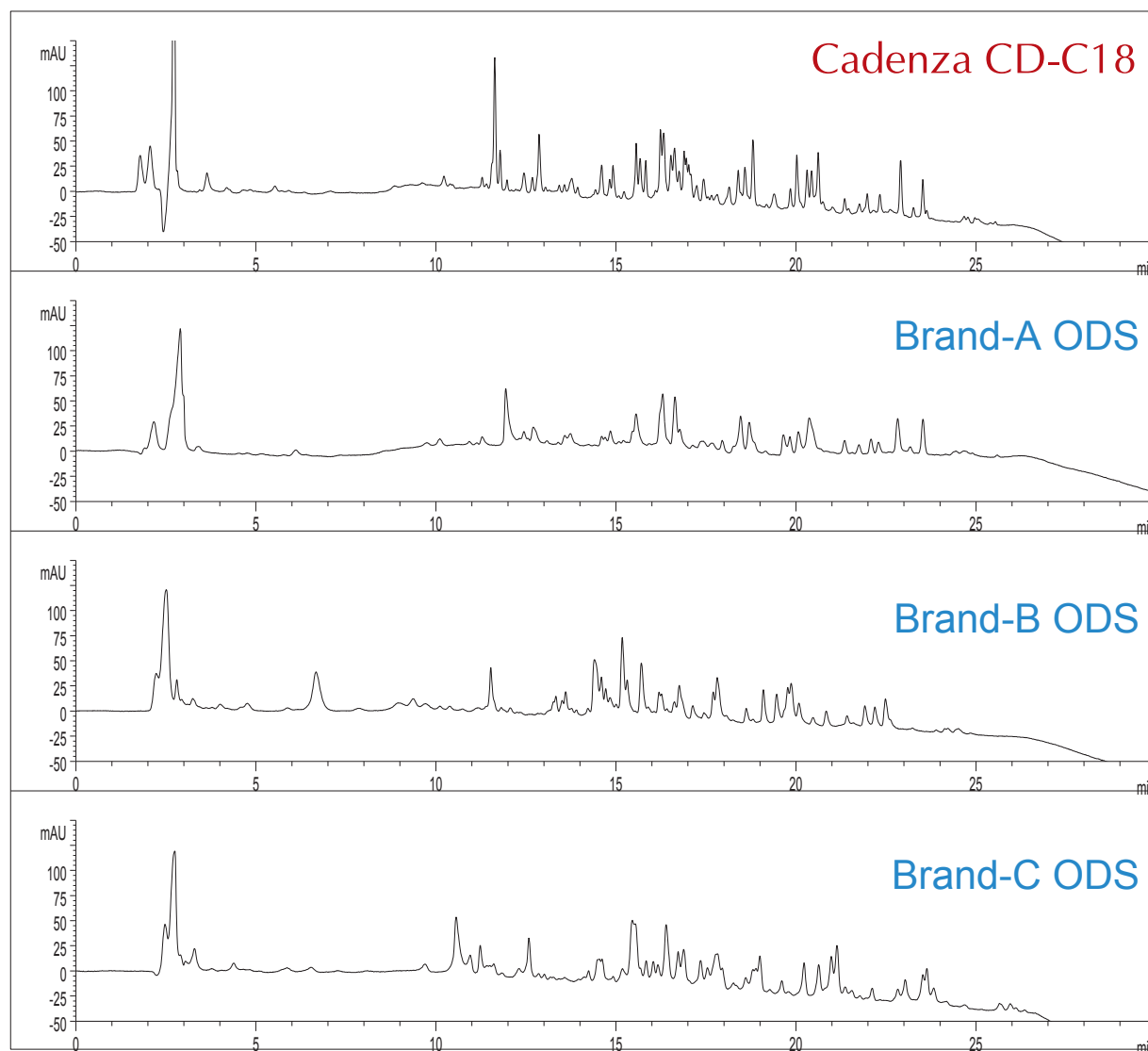
Courtesy of A. Sugihara, Osaka Municipal Technical Research Institute

Cadenza CD-C18

150 x 2 mm

Application

Peptides - BSA Tryptic Digest



150 x 2 mm

A: water / TFA = 100 / 0.08

B: acetonitrile / TFA = 100 / 0.05

5%B(0-2min), 5-40%B(2-20min), 40-90%B(20-25min), 90%B(25-30min), 90-5%B(30-33min)

0.2 mL/min

UV at 214 nm

40 °C

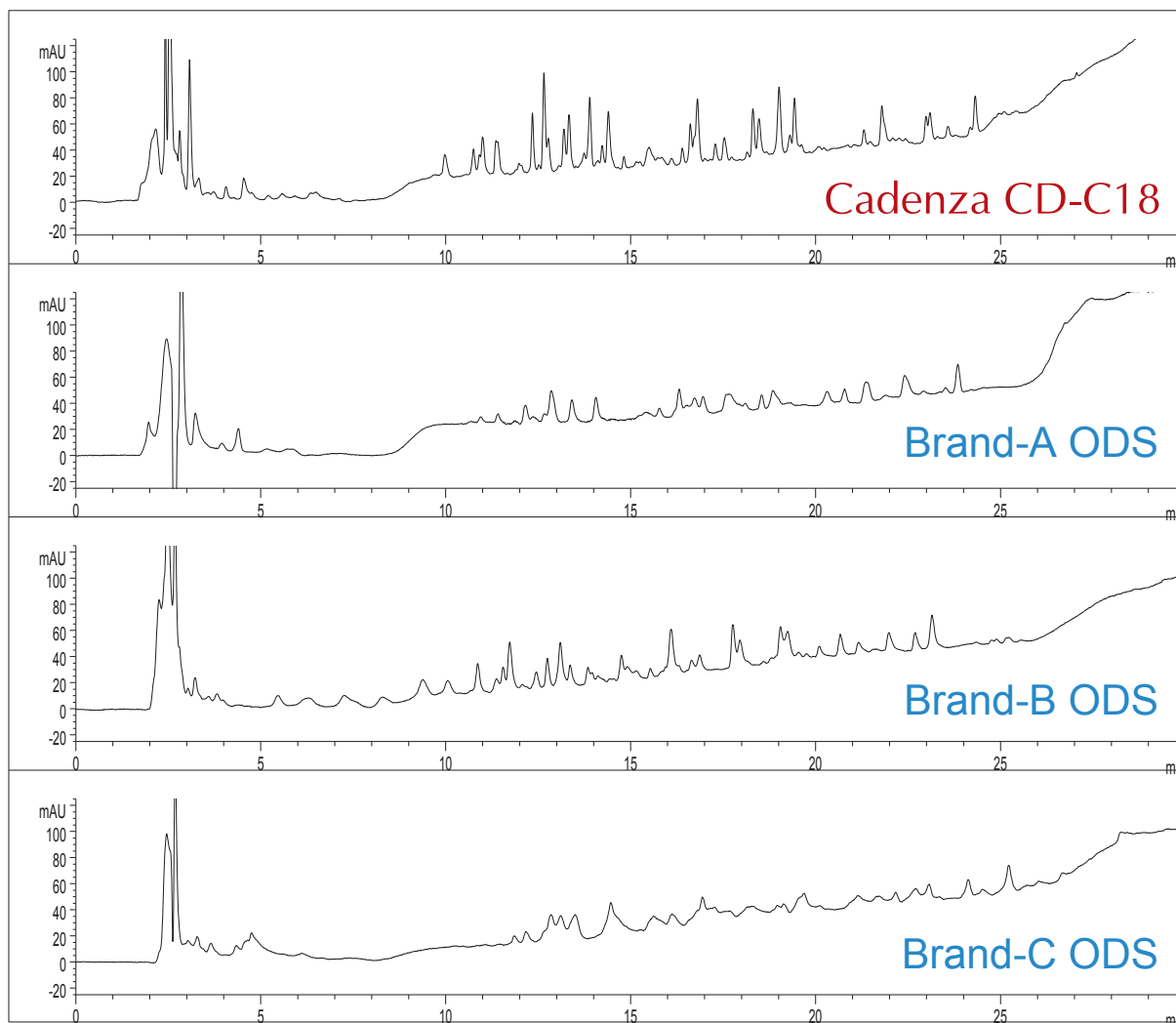
BSA Tryptic Digest, 18.5uL (ca.6.5ug)

Cadenza CD-C18

150 x 2 mm

Application

Peptides - BSA Tryptic Digest



150 x 2 mm

A: acetonitrile / 1-propanol / water / acetic acid / TFA = 1 / 1 / 98 / 0.1 / 0.02

B: acetonitrile / 1-propanol / water / acetic acid / TFA = 70 / 20 / 10 / 0.09 / 0.02

5%B(0-2min), 5-40%B(2-20min), 40-90%B(20-25min), 90%B(25-30min), 90-5%B(30-33min)

0.2 mL/min

UV at 214 nm

40 °C

BSA Tryptic Digest, 18.5uL (ca.6.5ug)

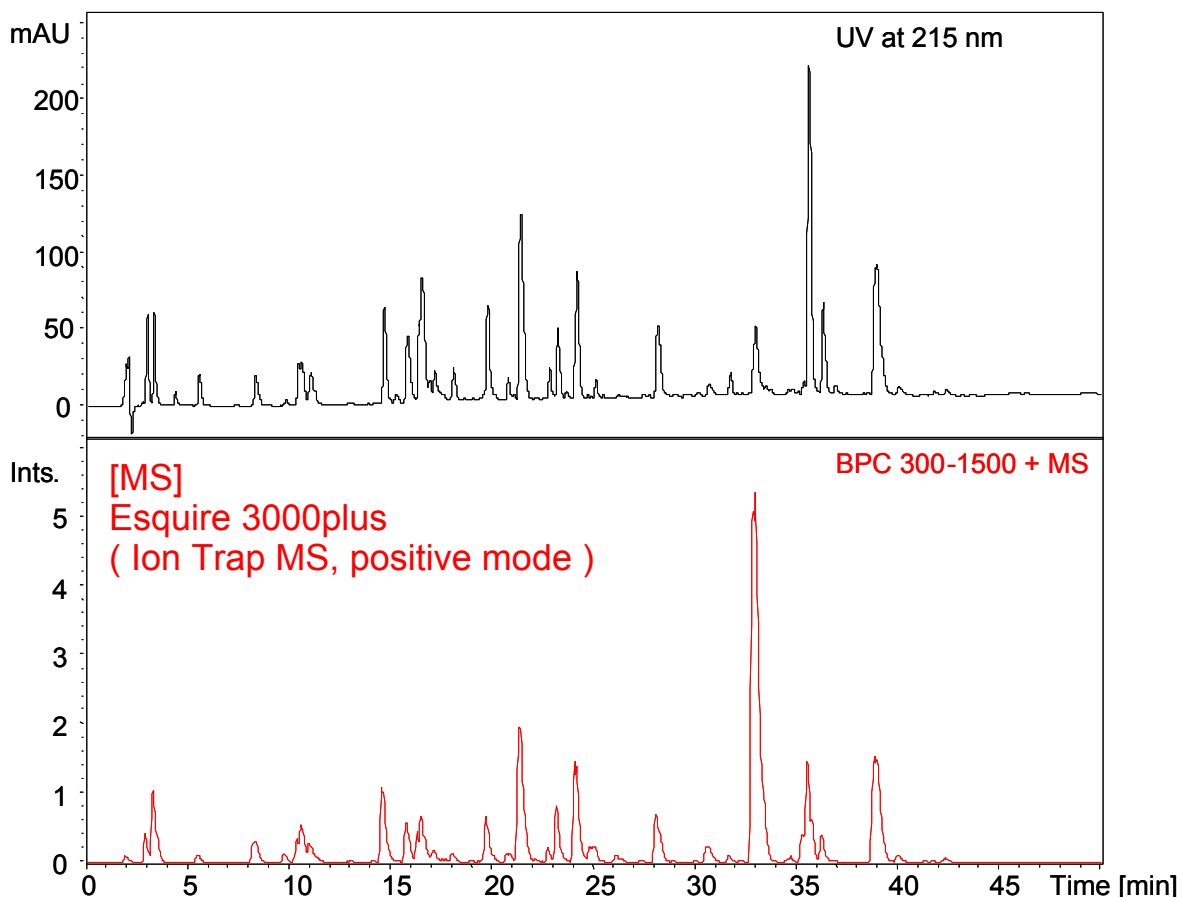
Cadenza CD-C18

150 x 2 mm

Application

LC-MS Application of Myoglobin Tryptic Digest

ミオグロビン酵素分解物のLC-MS



Cadenza CD-C18, 150 x 2 mm
 A: 0.01% TFA in water
 B: 0.01% TFA in acetonitrile
 2 - 50 %B (0 - 50 min)
 0.2 mL/min, 45 °C
 Myoglobin (Horse Heart), Tryptic digest

Courtesy of D.Higo, Bruker Daltonics K.K.

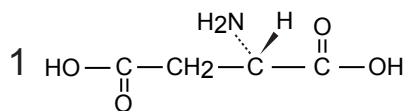
Unison UK-C18

250 x 4.6 mm

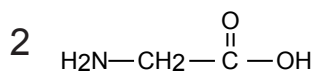
Application

Amino Acids - 1

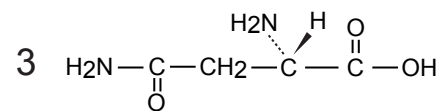
アミノ酸 - 1



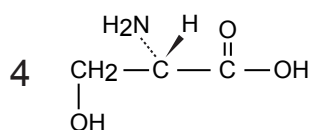
L-aspartic acid (Asp / D)



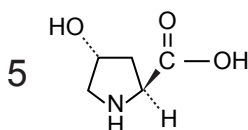
glycine (Gly / G)



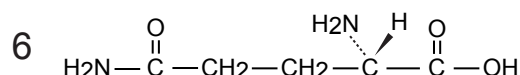
L-asparagine (Asn / N)



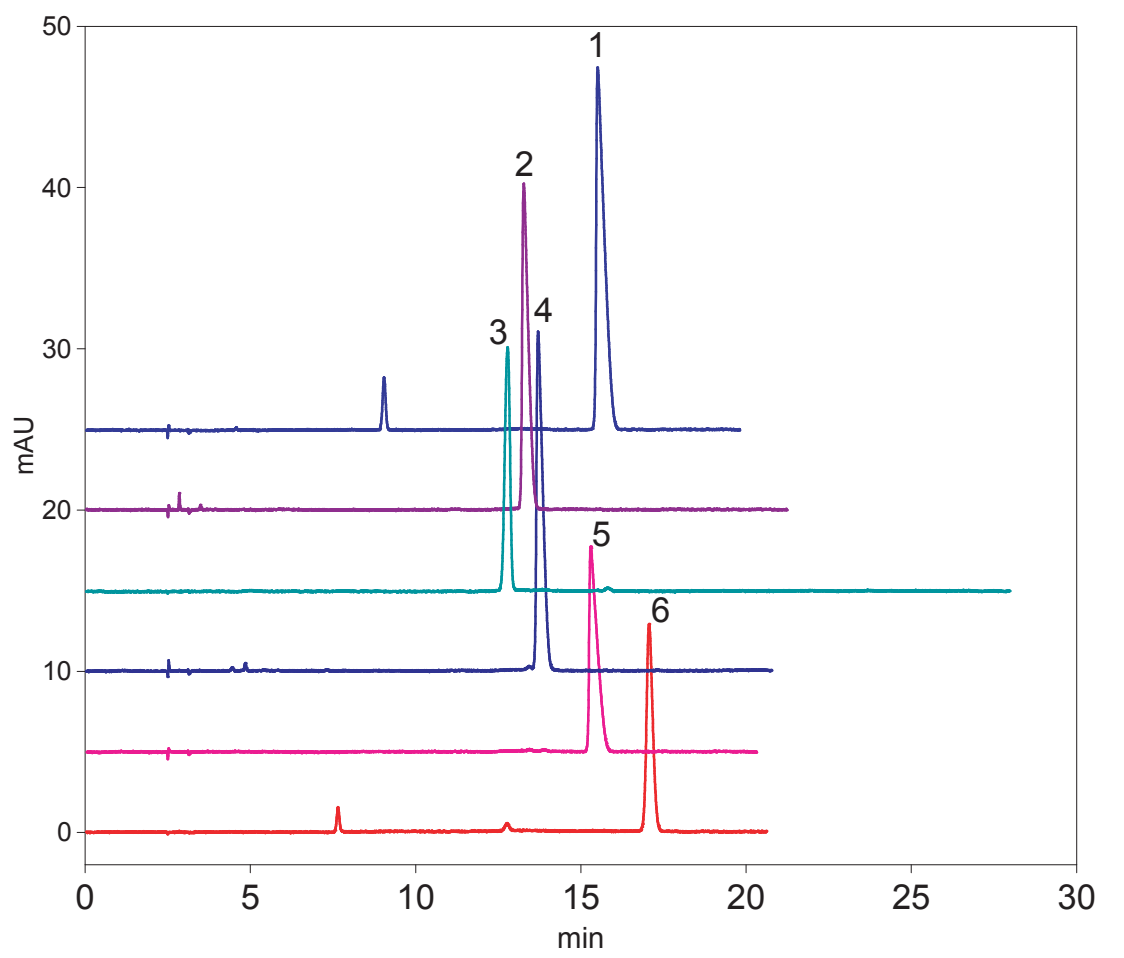
L-serine (Ser / S)



L-hydroxyproline



L-glutamine (Gln / Q)



Unison UK-C18, 250 x 4.6 mm
 50mM H₃PO₄ + 10mM sodium heptanesulfonate
 0.8 mL/min, 37 °C, 12.8 MPa, 210 nm, 2-10uL (4-20ug)

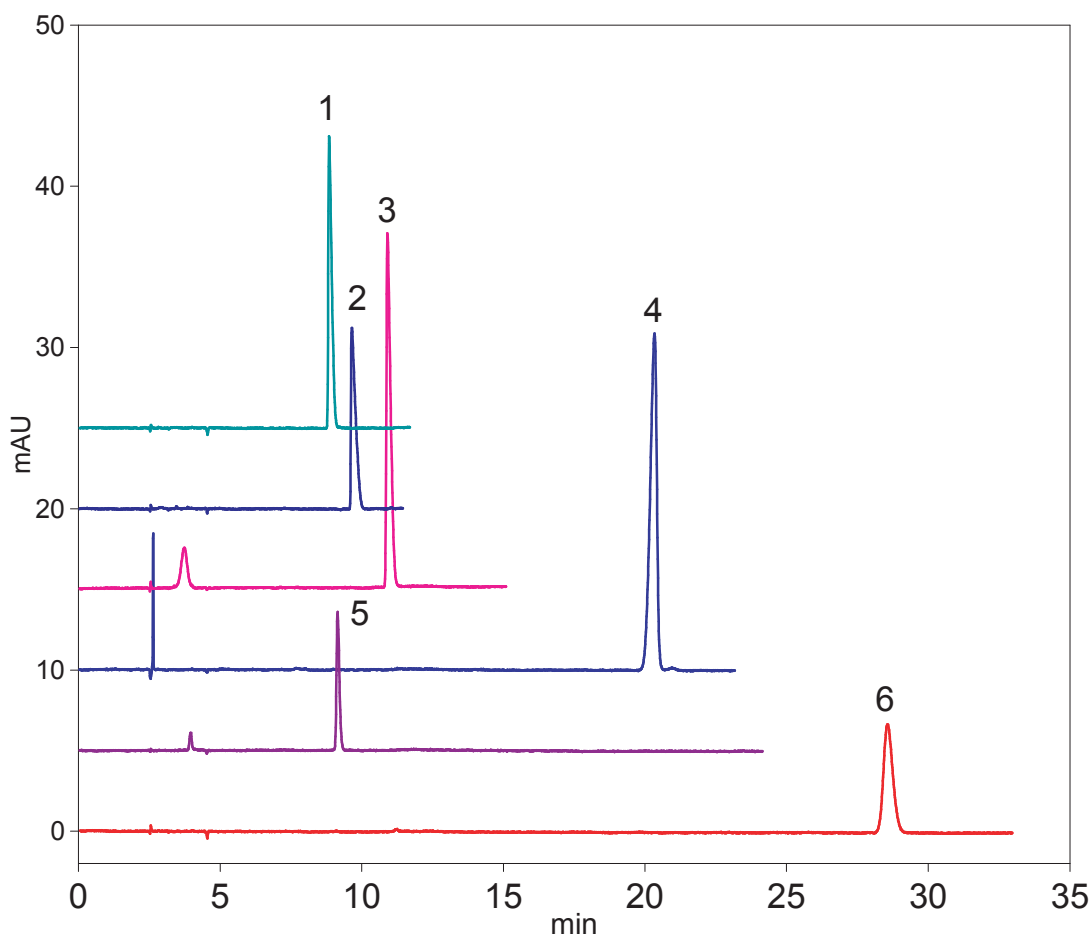
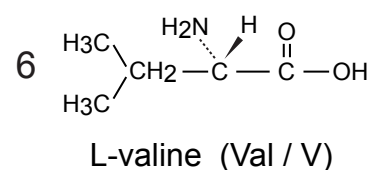
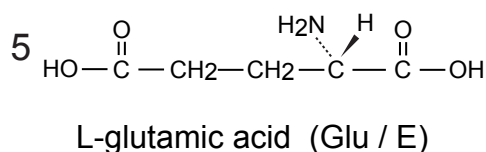
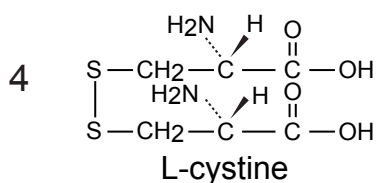
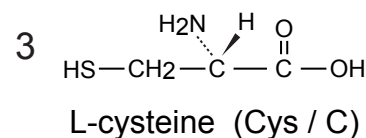
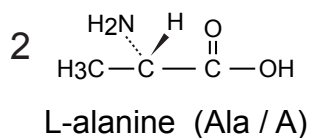
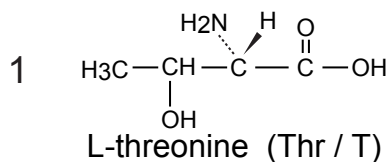
Unison UK-C18

250 x 4.6 mm

Application

Amino Acids - 2

アミノ酸 - 2



Unison UK-C18, 250 x 4.6 mm
 50mM H₃PO₄ + 10mM sodium heptanesulfonate / ACN = 92.5/7.5
 0.8 mL/min, 37 °C, 13.5 MPa, 210 nm, 2-5uL (4-10ug)

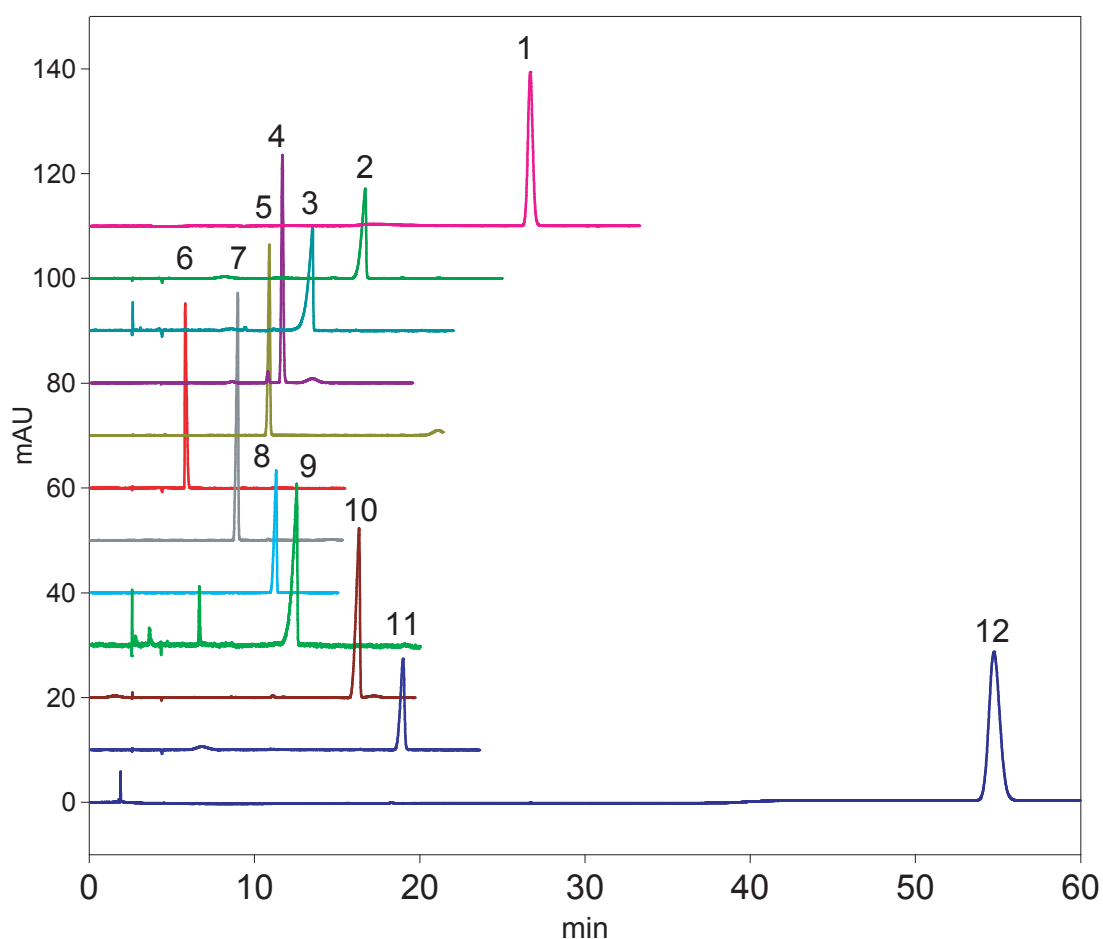
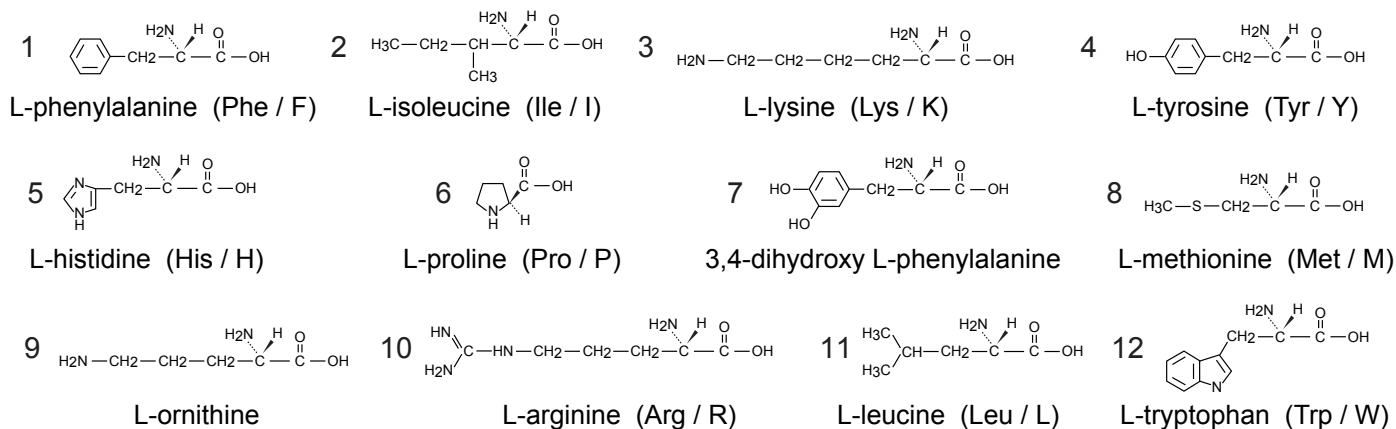
Unison UK-C18

250 x 4.6 mm

Application

Amino Acids - 3

アミノ酸 - 3

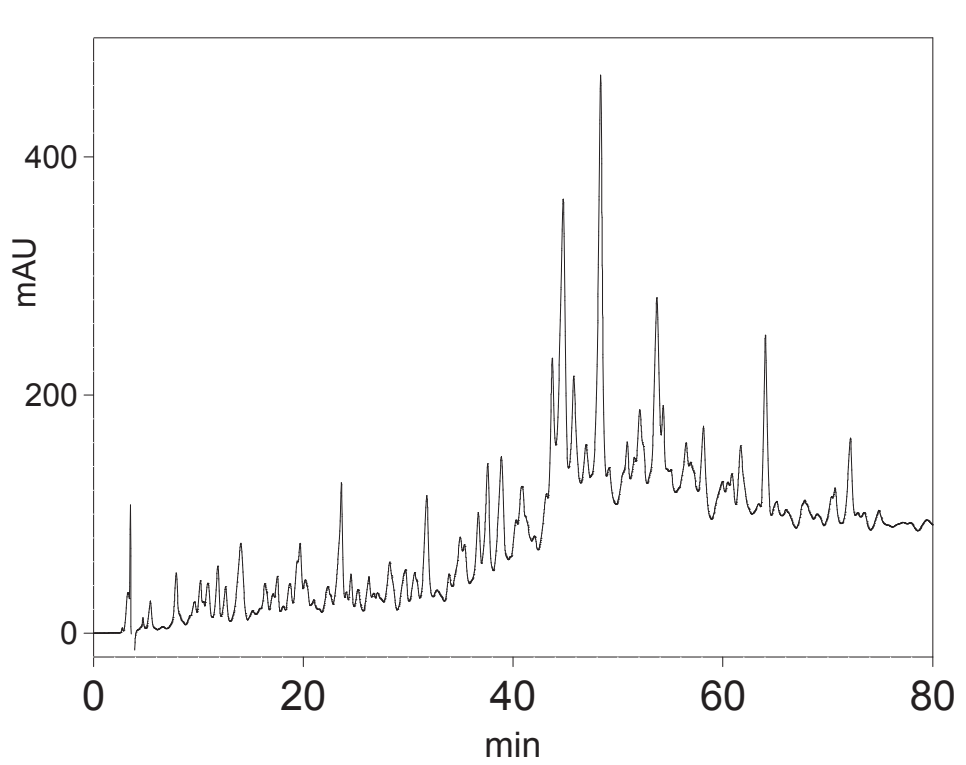


Unison UK-C18, 250 x 4.6 mm
 50mM H₃PO₄ + 10mM sodium heptanesulfonate / ACN = 85 / 15
 0.8 mL/min, 37 °C, 14.2 MPa, 210 nm, 0.4-10 uL (4-20 ug)

Cadenza CD-C18

250 x 1 mm

Application

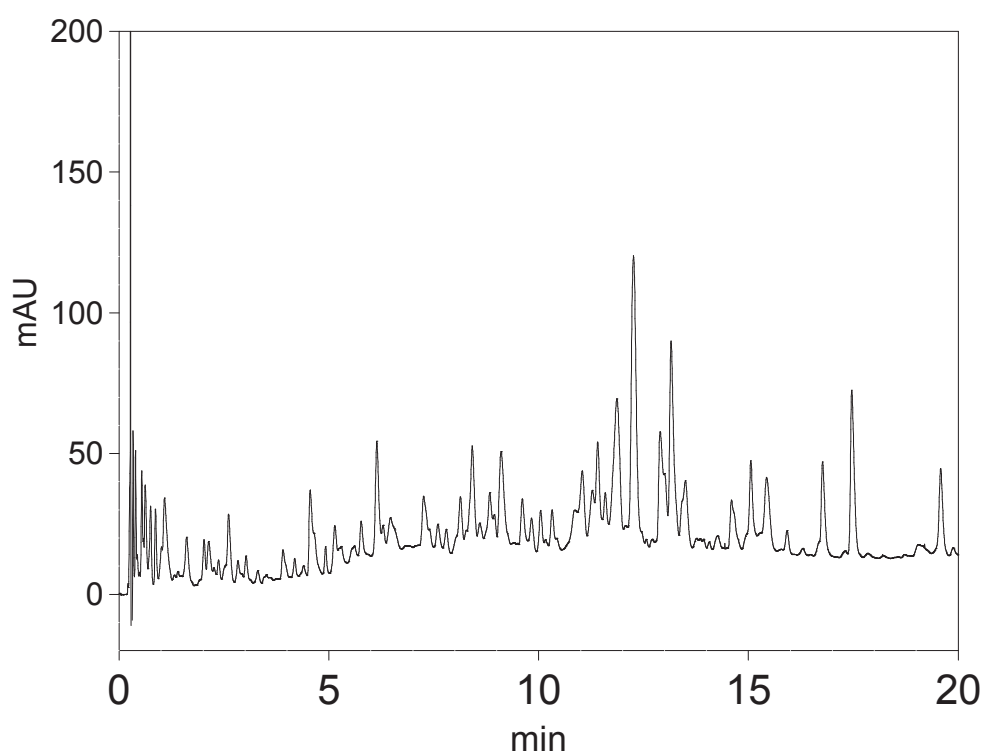
Peptides, Tryptic Digest of α -Caseinペプチド(α -カゼインのトリプシン分解物)

Cadenza CD-C18, 250 x 1 mm
A: 0.05% TFA in water
B: 0.05% TFA in acetonitrile
5 - 45 %B (0 - 80 min)
0.05 mL/min, 12 MPa, 37 °C, 210 nm
5 μ L

Cadenza CD-C18

50 x 2 mm

Application

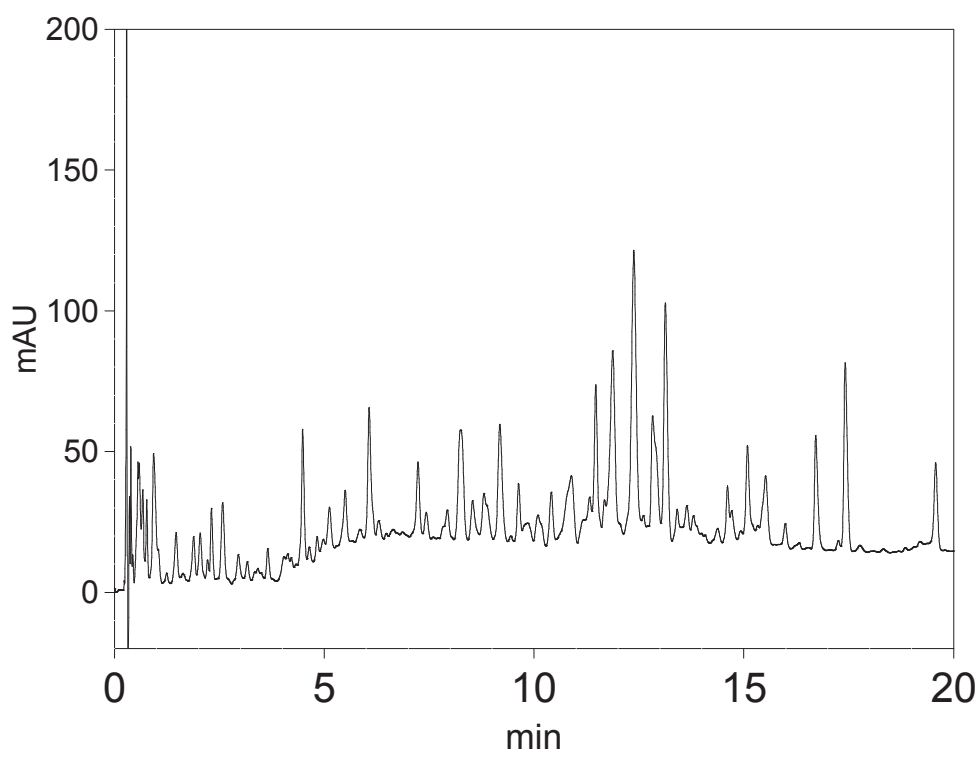
Peptides, Tryptic Digest of α -Caseinペプチド(α -カゼインのトリプシン分解物)

Cadenza CD-C18, 50 x 2 mm
A: 0.05% TFA in water
B: 0.05% TFA in acetonitrile
5 - 35 %B (0 - 20 min)
0.5 mL/min, 10 MPa, 37 °C, 210 nm
5 μ L

Unison UK-C18

50 x 2 mm

Application

Peptides, Tryptic Digest of α -Caseinペプチド(α -カゼインのトリプシン分解物)

Unison UK-C18, 50 x 2 mm
A: 0.05% TFA in water
B: 0.05% TFA in acetonitrile
5 - 35 %B (0 - 20 min)
0.5 mL/min, 9 MPa, 37 °C, 210 nm
5 μ L

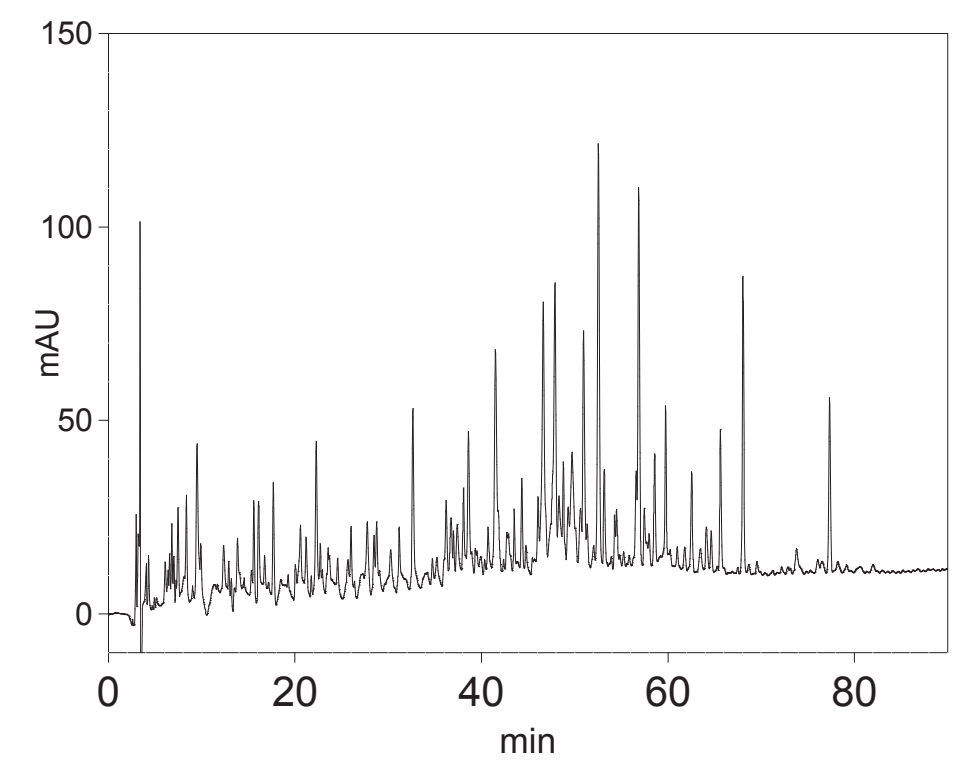
Unison UK-C18

250 x 2 mm

Application

Peptides, Tryptic Digest of α -Casein

ペプチド(α -カゼインのトリプシン分解物)



Unison UK-C18, 250 x 2 mm
A: 0.05% TFA in water
B: 0.05% TFA in acetonitrile
5 - 45 %B (0 - 90 min)
0.2 mL/min, 14 MPa, 37 °C, 210 nm
5 μ L

Cadenza CD-C18

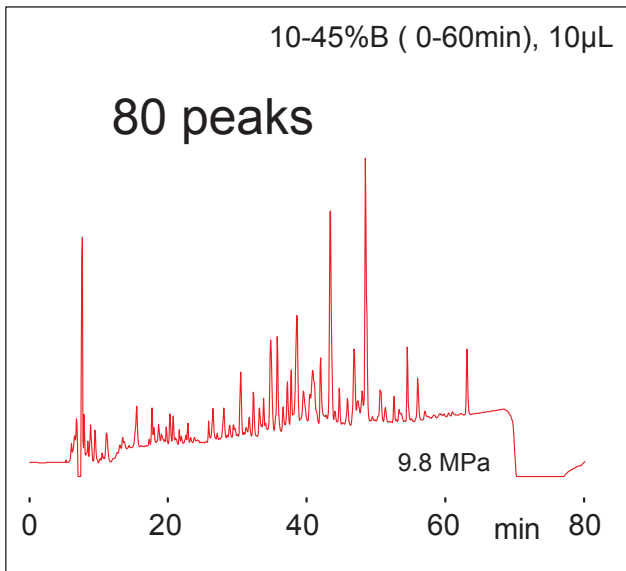
500 x 4.6 mm

Application

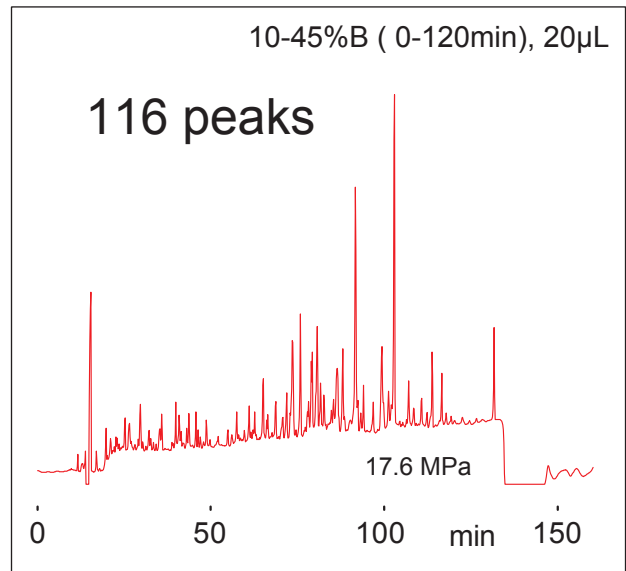
Peptides, Tryptic Digest of α -Casein

 ペプチド(α -カゼインのトリプシン分解物)

Conventional ODS 5 μ m
250 x 4.6 mm



Cadenza CD-C18 3 μ m
500 x 4.6 mm



A: water / TFA, B:acetonitrile / TFA
0.5 mL/min, room temp., 220 nm

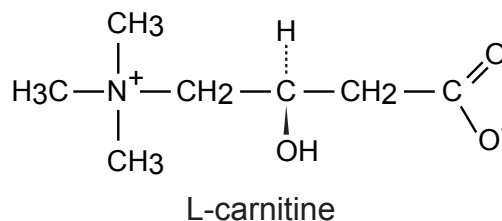
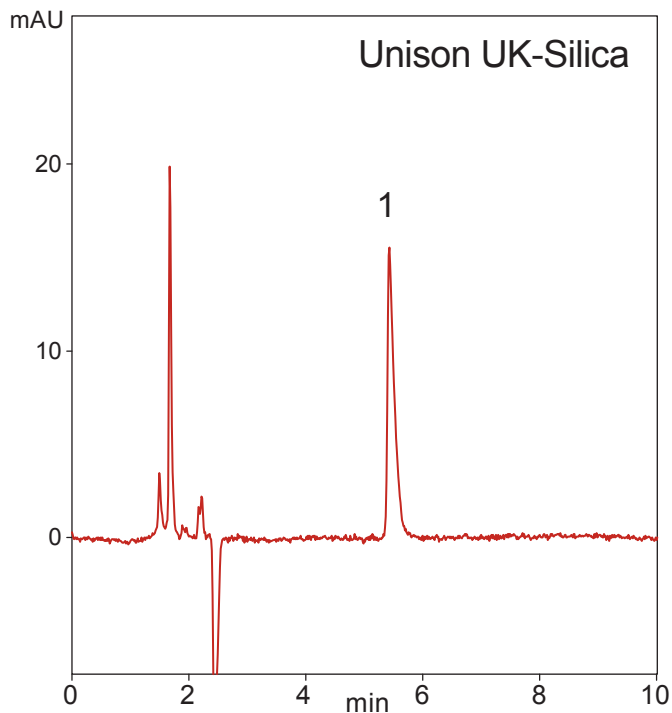
Unison UK-Silica
Unison UK-C18

150 x 3 mm
75 x 4.6 mm

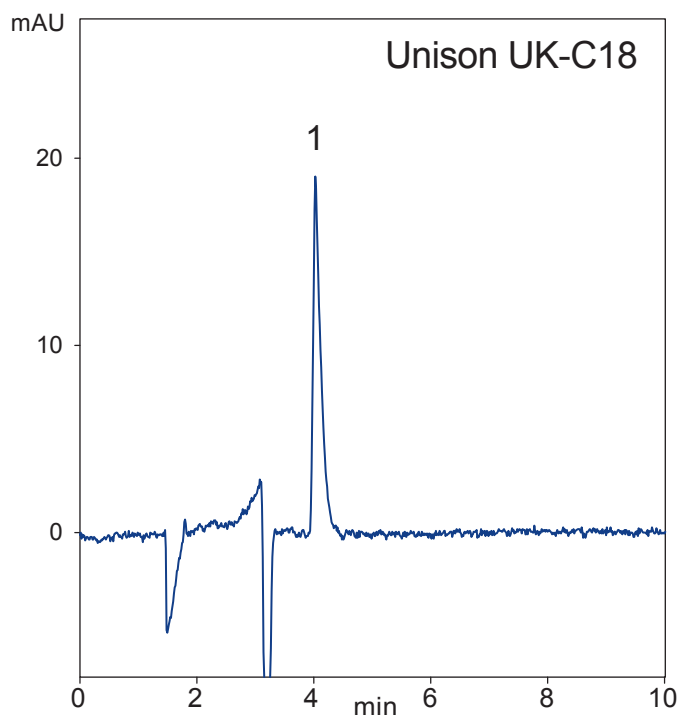
Application

L-Carnitine

L-カルニチン



Unison UK-Silica, 150 x 3 mm
acetonitrile / 50mM ammonium acetate
= 65 / 35, 0.5 mL/min (7MPa)
37 °C, 210 nm, 2µL(20µg)



Unison UK-C18, 75 x 4.6 mm
water / heptafluoro-n-butyric acid
= 100 / 0.1, 1 mL/min (7MPa)
37 °C, 210 nm, 2µL(20µg)

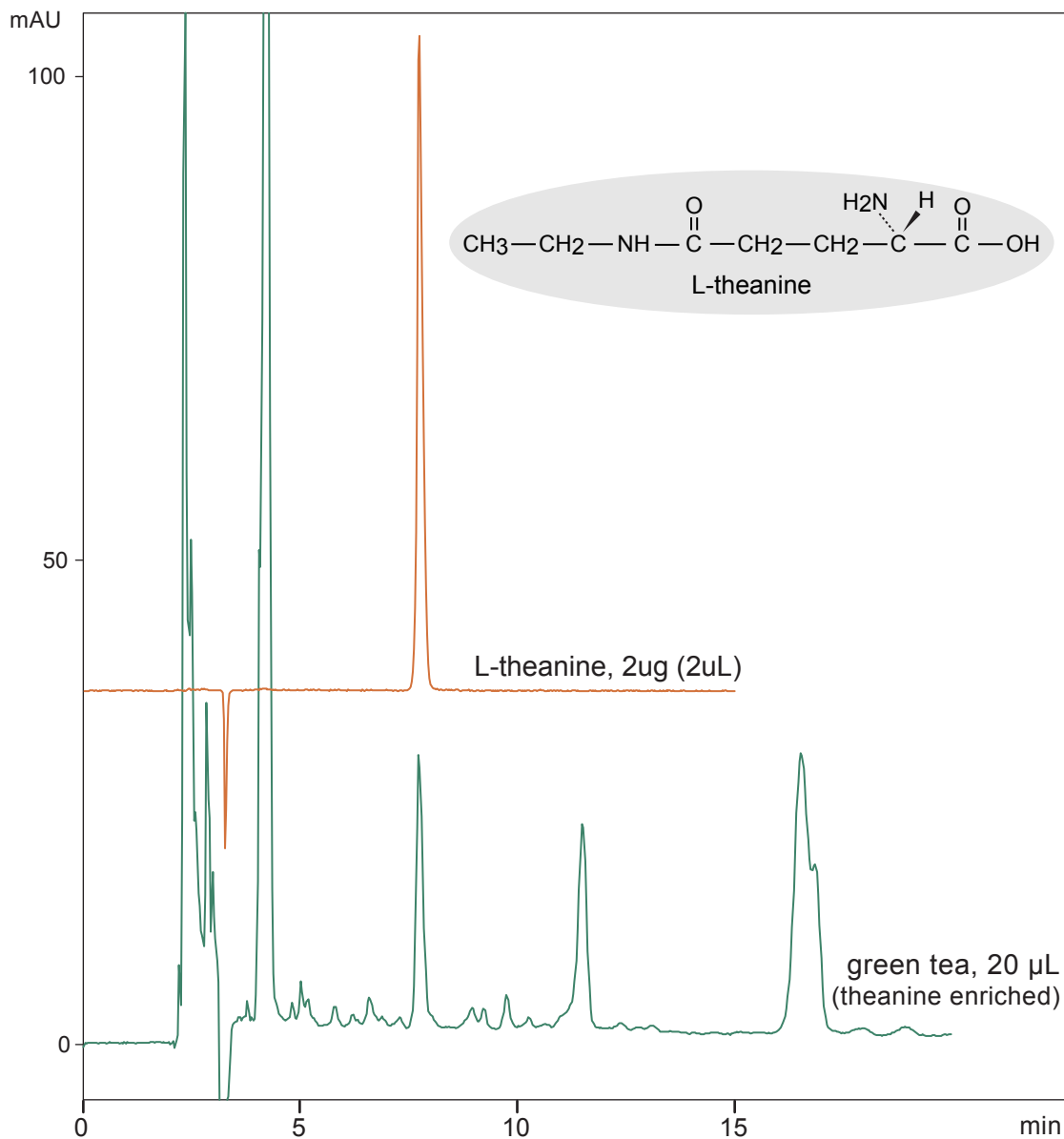
Cadenza CL-C18

250 x 3 mm

Application

Theanine in Green Tea

緑茶中のテアニン



Cadenza CL-C18, 250 x 3 mm
water / trifluoroacetic acid = 100 / 0.1
0.5 mL/min (15MPa), 37 deg.C, 210 nm

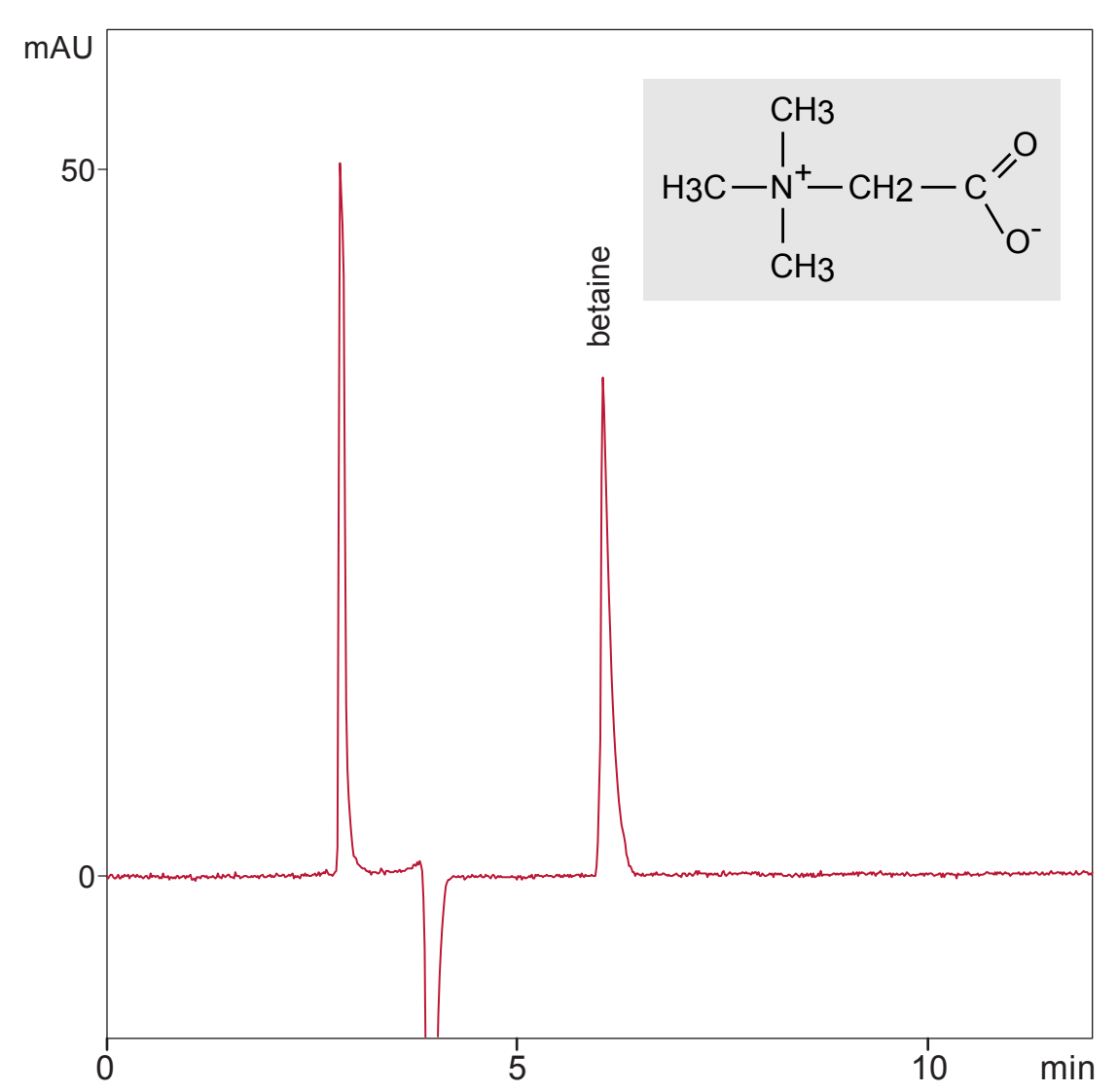
Unison UK-Silica

250 x 3 mm

Application

Betaine

ベタイン



Unison UK-Silica, 250 x 3 mm
 acetonitrile / 50mM ammonium formate = 70 / 30
 0.5 mL/min (10MPa), 37 deg.C, 210 nm, 2uL(20ug)

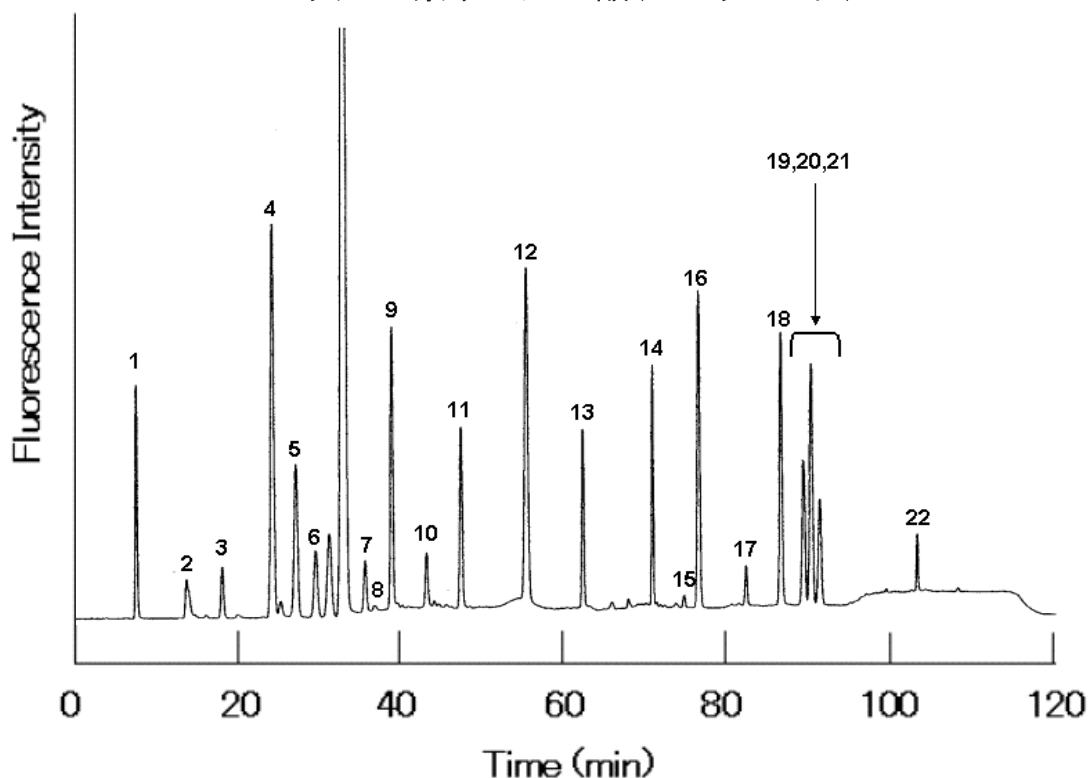
Cadenza CD-C18

250 x 4.6 mm

Application

NBD-amino acids from rat plasma

ラット血漿中のアミノ酸(NBDラベル化)



A representative chromatogram of rat plasma amino acids derivatized with NBD-F.
 1:NBD-Tau, 2:NBD-His, 3:NBD-Asn, 4:NBD-Gln, 5:NBD-Ser, 6:NBD-Arg, 7:NBD-Cit,
 8:NBD-Asp, 9:NBD-Gly, 10:NBD-Glu, 11:NBD-Thr, 12:NBD-Ala, 13:NBD-Pro,
 14:NBD- -amino-n-caproic acid (IS.), 15:NBD-Met, 16:NBD-Val, 17:NBD-Orn,
 18:NBD-Lys, 19:NBD-Ile, 20:NBD-Leu, 21:NBD-Phe, 22:NBD-Tyr.

Cadenza CD-C18, 250 x 4.6 mm

A) water /acetonitrile /2-propanol /TFA = 90 /10 /0.8 /0.08

B) water /acetonitrile /2-propanol /TFA = 90 /10 /5 /0.08

C) water /acetonitrile = 90 /10

D) water /acetonitrile /TFA = 10 /90 /0.08

100%A, 0%BCD (0-25min), 100-0%A, 0-100%B (25-32min), 100%B (32-35min),

100-97%B, 0-3%D (35-39min), 97-0%B, 0-90%C, 3-10%D (39-45min),

90-65%C, 10-35%D (45-60min), 0-15%B, 65-55%C, 35-30%D (60-63min),

15%B, 55%C, 30%D (63-68min), 15%B, 55-50%C, 30-35%D (68-70min),

15%B, 50%C, 35%D (70-82min), 15-0%B, 50-40%C, 35-60%D (82-85min),

40%C, 60%D (85-100min), 100%A, 0%BCD (100-115min)

0.7 mL/min, 40 deg.C

Ex.470nm, Em.540nm

Ref.) M.Tomiya, T.Fukushima, J.Kawai, C.Aoyama, S.Mitsuhashi, T.Santa, K.Imai and T.Toyo'oka
 Univ. of Shizuoka, Univ. of Tokyo and Musashino Univ.
 Biomedical Chromatography, 20, 628-633 (2006)

Courtesy of Dr. Takeshi Fukushima, Univ. of Shizuoka

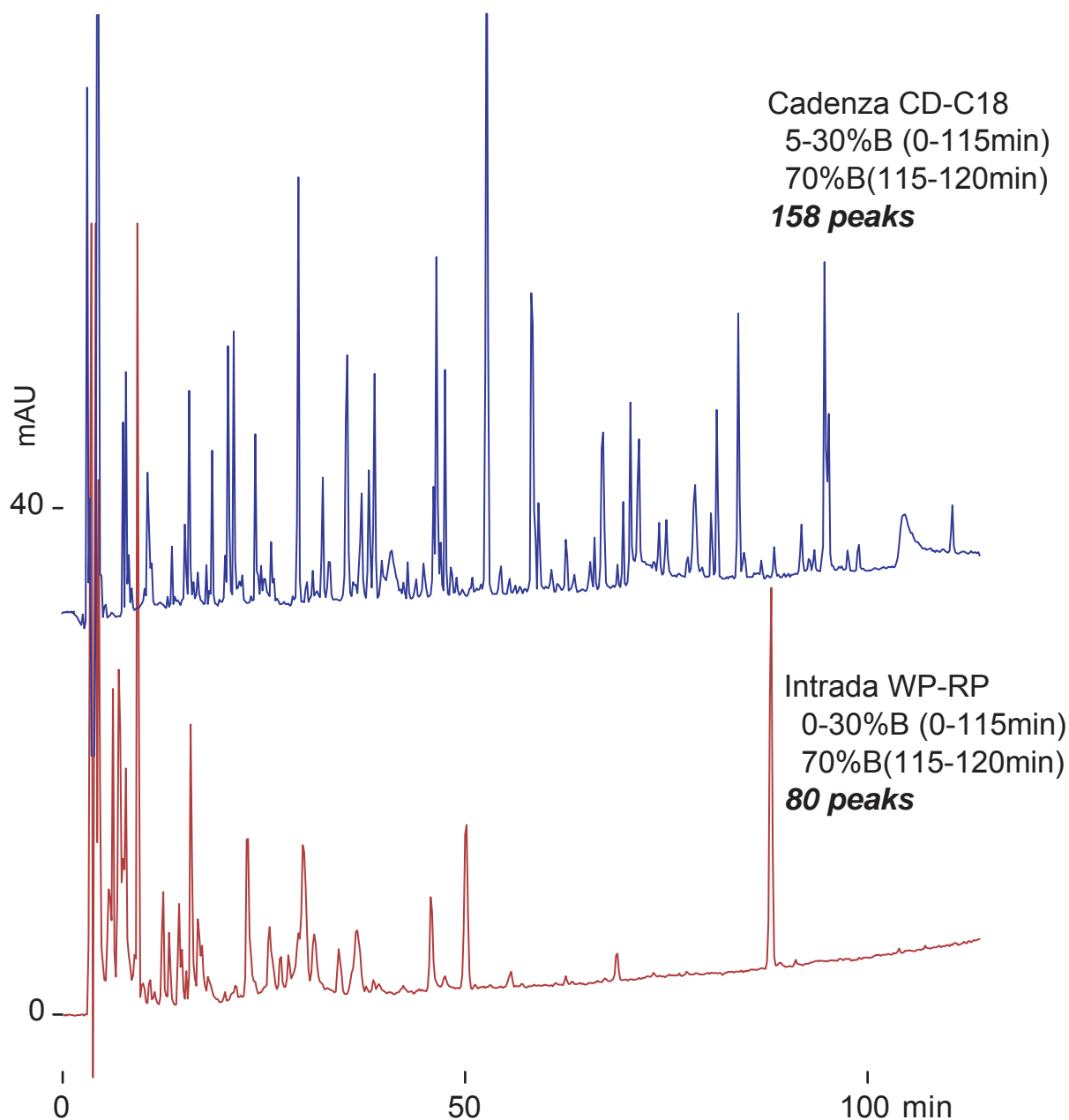
Cadenza CD-C18
Intrada WP-RP

250 x 3 mm

Application

Peptides, Tryptic Digest of Hemoglobin (Human)

ペプチド(ヒトヘモグロビンのトリプシン分解物)



250 x 3 mm

A: water /trifluoroacetic acid = 100 /0.1, B: acetonitrile /trifluoroacetic acid =100 /0.05
0.4 mL/min, 37 deg.C, 220 nm

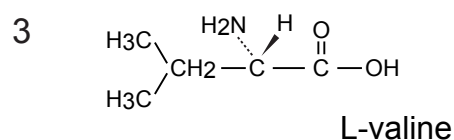
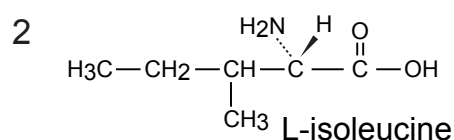
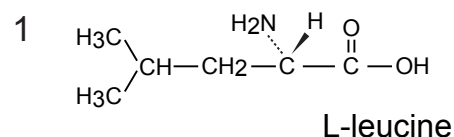
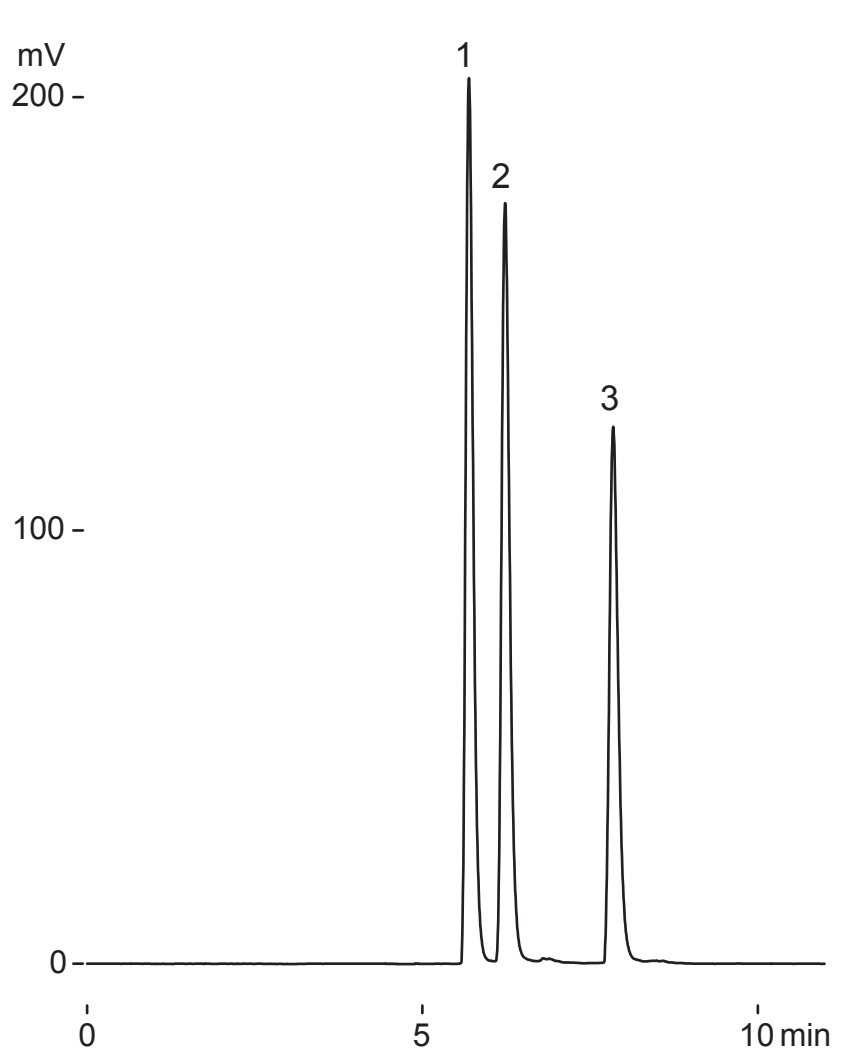
Unison UK-Amino

150 x 2 mm

Application

Branched-chain Amino Acids

分岐鎖アミノ酸



Unison UK-Amino, 150 x 2 mm
 acetonitrile / 10mM ammonium acetate = 85 / 15
 0.2 mL/min (4MPa), 37 deg.C, ELSD
 0.5 uL (1.5ug)

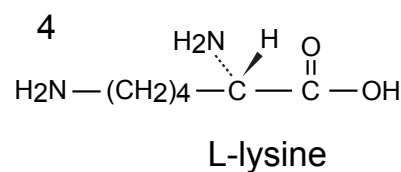
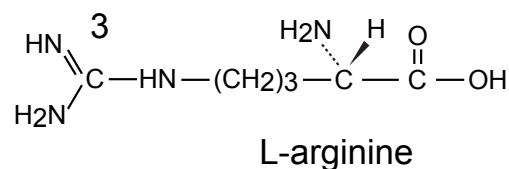
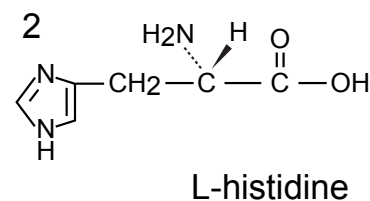
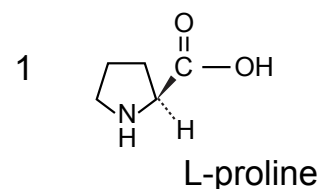
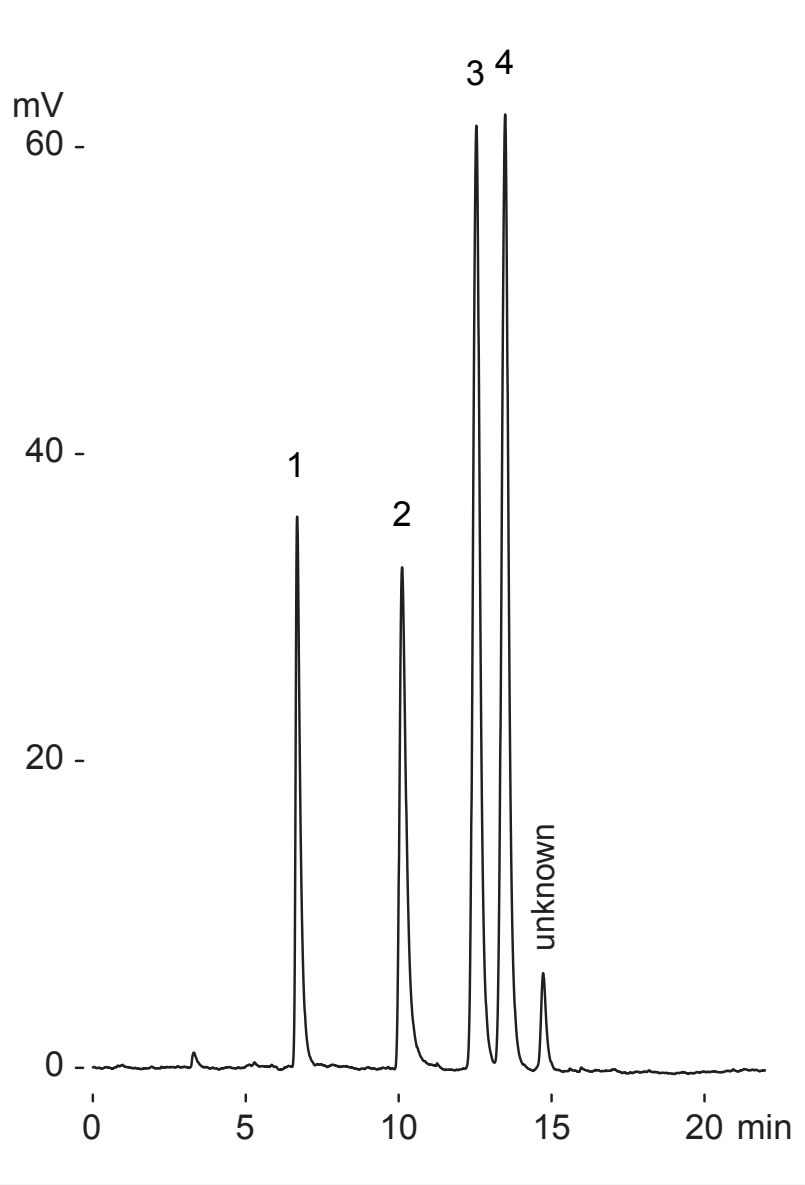
Unison UK-Amino

250 x 4.6 mm

Application

Basic Amino Acids

塩基性アミノ酸



Unison UK-Amino, 250 x 4.6 mm
acetonitrile / 100mM ammonium formate = 76 / 24
1 mL/min (10MPa), 37 deg.C, ELSD, 3uL (1ug)

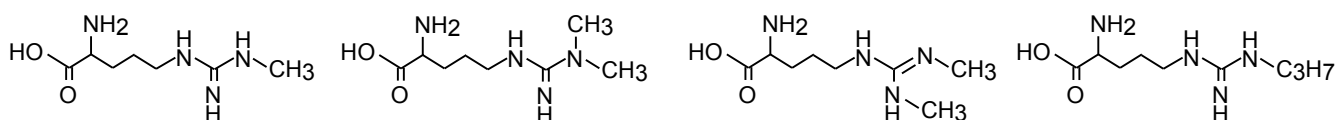
Unison UK-C18

150 x 4.6 mm

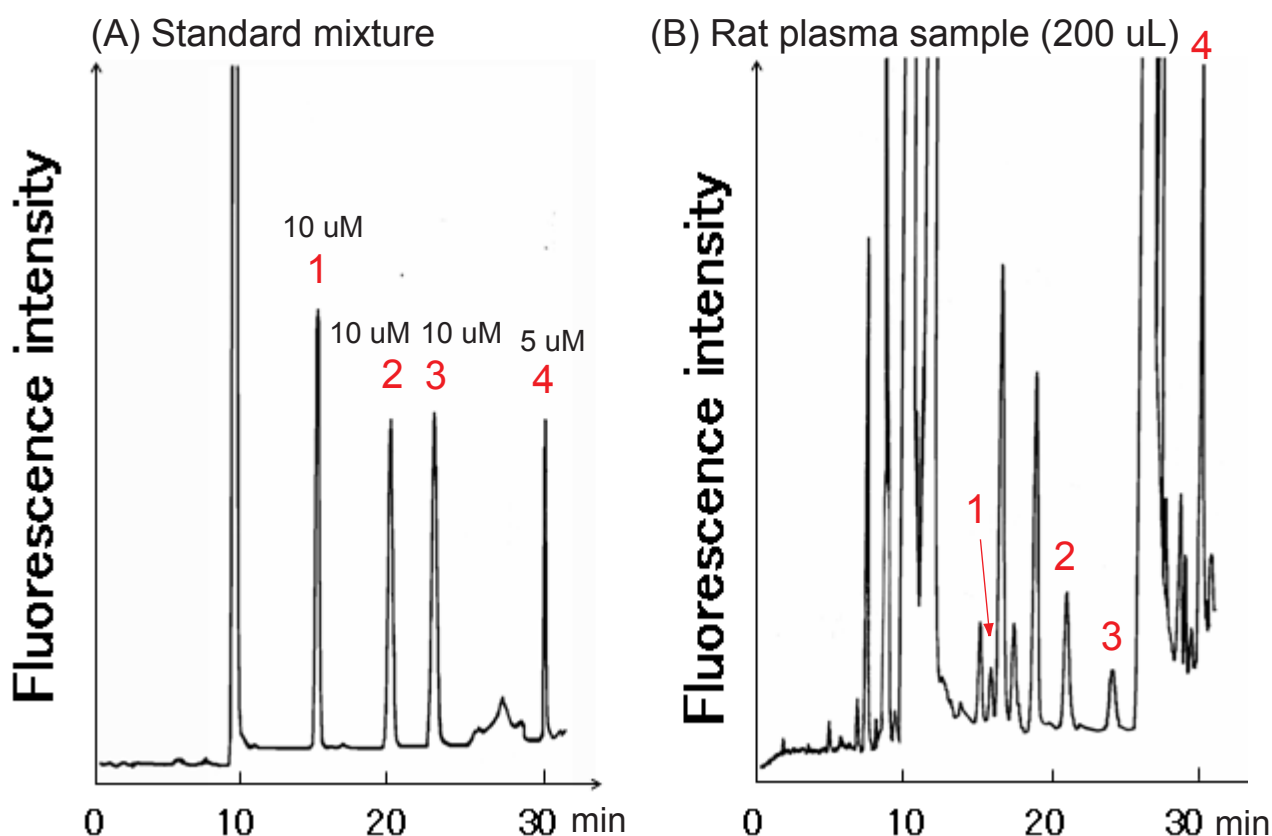
Application

HPLC assay of methylated arginines using NBD-F as a fluorescent reagent

蛍光ラベル化剤NBD-Fを用いたラット血漿中のメチル化アルギニンのHPLC分析



- 1: N^G -monomethyl-L-arginine (L-NMMA) 2: N^G,N^G -dimethyl-L-arginine (ADMA) 3: $N^G,N^{G'}$ -dimethyl-L-arginine (SDMA) 4: N^ω -propyl-L-arginine (N-PLA)



Unison UK-C18, 150 x 4.6 mm

A: 50mM sodium phosphate buffer (pH 3.2) / acetonitrile = 91 / 9 (v/v)

B: acetonitrile

0%B (0-18 min), 0-30%B (18-28 min), 30%B (28-32 min)

0.75 mL/min, 40 deg.C, Ex.470 nm / Em. 530 nm

Pre-column derivatization: 105 μ l of 100mM borate buffer (pH 9.0) and 30 μ l of 40mM NBD-F in acetonitrile were added to the 30 μ l of sample. Then, the reaction was incubated at 40 deg.C for 3 min. To stop the reaction, 435 μ l of 0.5% acetic acid (v/v) was added. A 10 μ l aliquot of sample was injected onto the HPLC.

Journal of Chromatography A, 1066 (2005) 41-45

Courtesy of Dr. TSUNODA, University of Tokyo, JAPAN

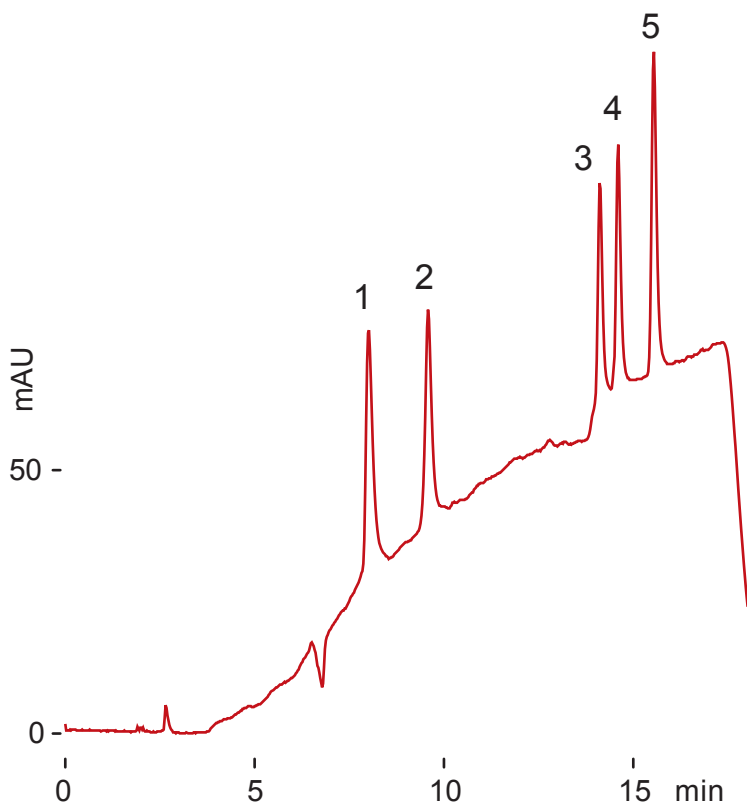
Unison UK-Amino
Unison UK-C18

150 x 3 mm

Application

Angiotensins

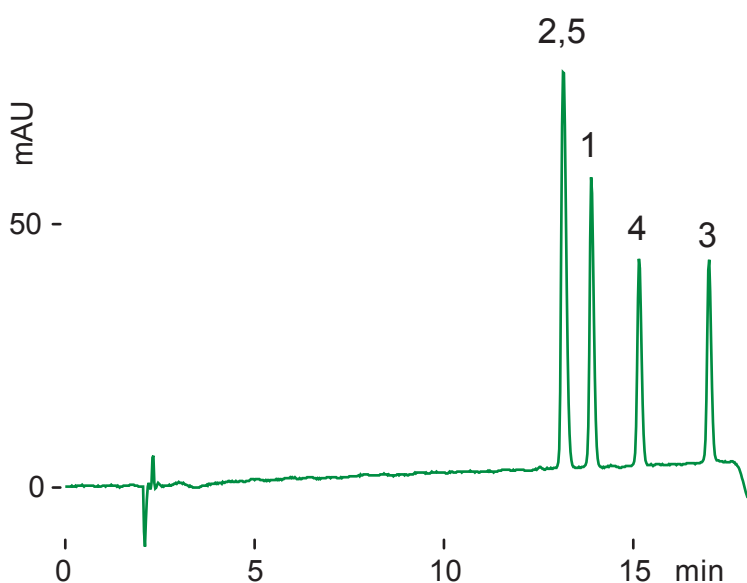
アンジオテンシン類



1. Angiotensin IV (Human)
Val-Tyr-Ile-His-Pro-Phe
2. Angiotensin III (Human)
Arg-Val-Tyr-Ile-His-Pro-Phe
3. Angiotensin I (Human)
Asp-Arg-Val-Tyr-Ile-His-Pro-Phe-His-Ile
4. [Val⁵]-Angiotensin I (Bovine)
Asp-Arg-Val-Tyr-Val-His-Pro-Phe-His-Ile
5. Angiotensin II (Human)
Asp-Arg-Val-Tyr-Ile-His-Pro-Phe

normal phase

Unison UK-Amino
150 x 3 mm,
A: acetonitrile
B: 50mM ammonium acetate
10-35%B(0-15min)
0.4 mL/min 37 deg.C
220 nm, 2 uL (0.4ug)



reversed phase

Unison UK-C18
150 x 3 mm
A: water/ TFA = 100/ 0.1
B: acetonitrile/ TFA = 100/ 0.1
20-30%B(0-15min)
0.4 mL/min, 37 deg.C
220 nm, 2 uL (0.4ug)

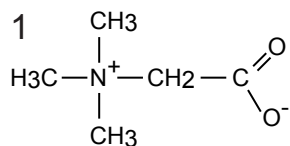
Unison UK-Amino

50 x 3 mm

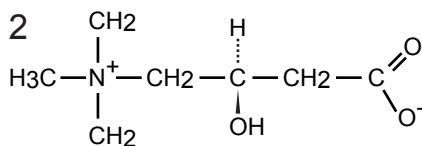
Application

Betaine, Carnitine, GABA

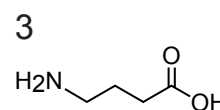
ベタイン, カルニチン, GABA



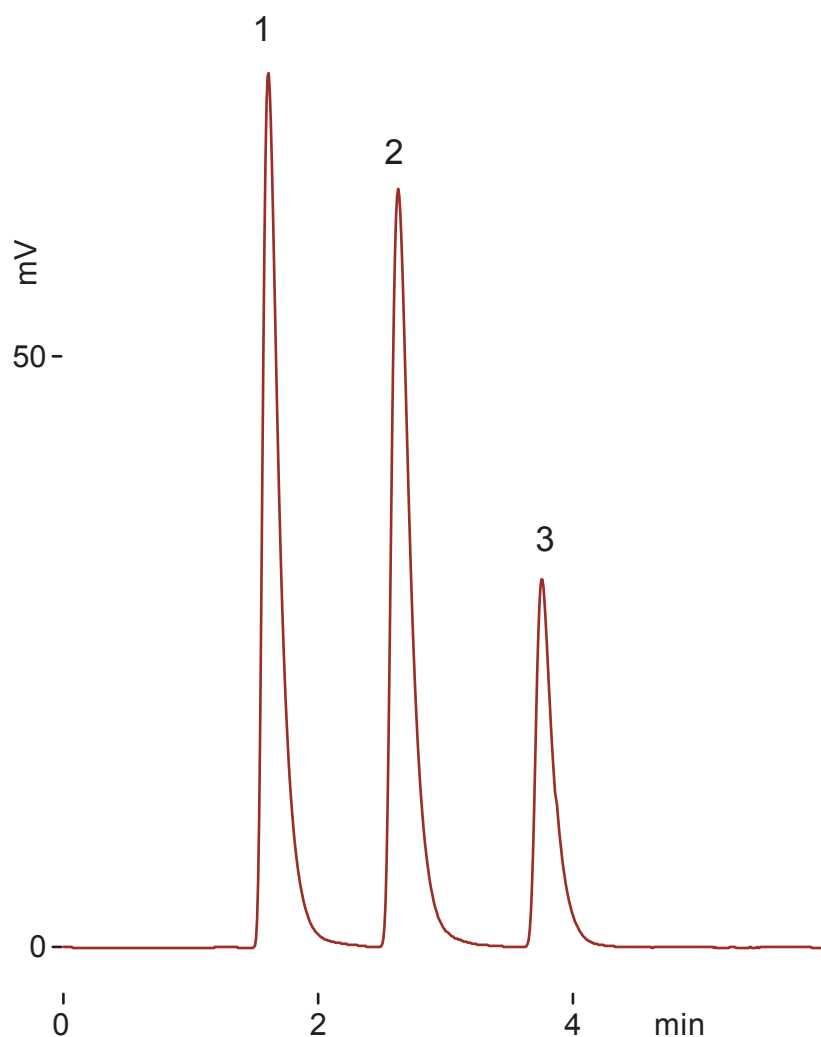
betaine



L-carnitine



GABA



Unison UK-Amino, 50 x 3 mm
 A: acetonitrile
 B: 10mM ammonium acetate
 15-30%B(0-5min)
 0.5 mL/min, 37 deg.C, ELSD, 1 uL (1ug)

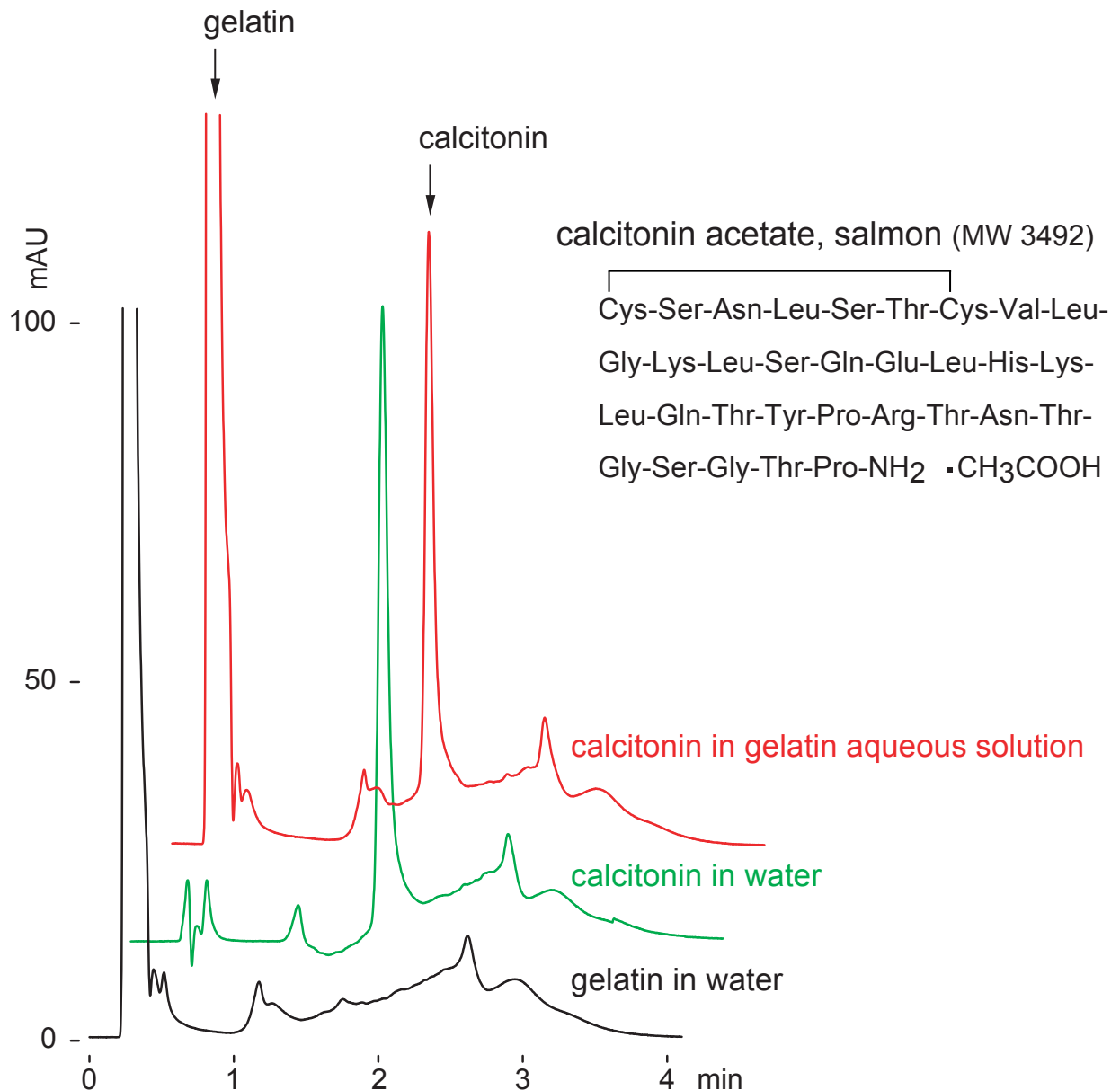
Cadenza HS-C18

30 x 3 mm

Application

Calcitonin in Gelatin Aqueous Solution

ゼラチン水溶液中のカルシトニン



Cadenza HS-C18, 30 x 3mm

A: water /trifluoroacetic acid = 100 /0.1

B: acetonitrile /trifluoroacetic acid = 100 /0.07

0-45%B (0-2min), 0.4mL/min (3MPa), 37deg.C, 220nm
 2uL (calcitonin: 1ug, gelatin: 10ug)

Cadenza CD-C18

Cadenza CL-C18

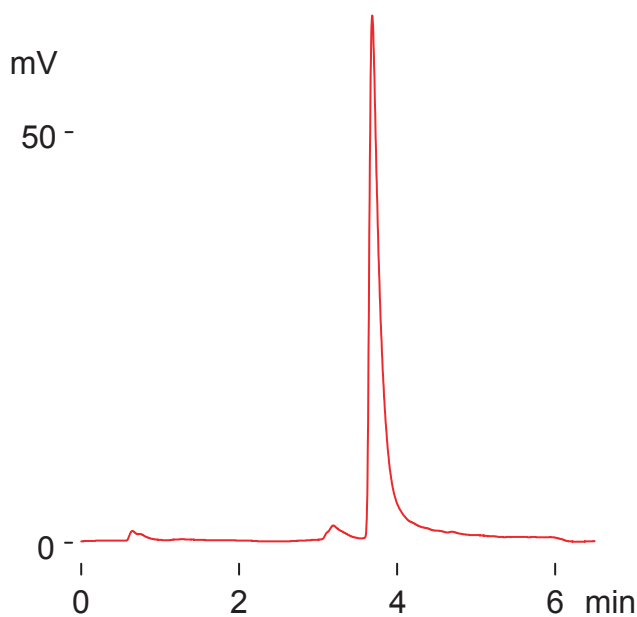
Cadenza CW-C18

Unison UK-C18 Unison UK-Amino 100 x 3 mm

Application

Calcitonin, Salmon

カルシトニン(サケ)



calcitonin acetate, salmon (MW 3492)

Cys-Ser-Asn-Leu-Ser-Thr-Cys-Val-Leu-
Gly-Lys-Leu-Ser-Gln-Glu-Leu-His-Lys-
Leu-Gln-Thr-Tyr-Pro-Arg-Thr-Asn-Thr-
Gly-Ser-Gly-Thr-Pro-NH₂ ·CH₃COOH

normal phase

Unison UK-Amino, 100 x 3 mm

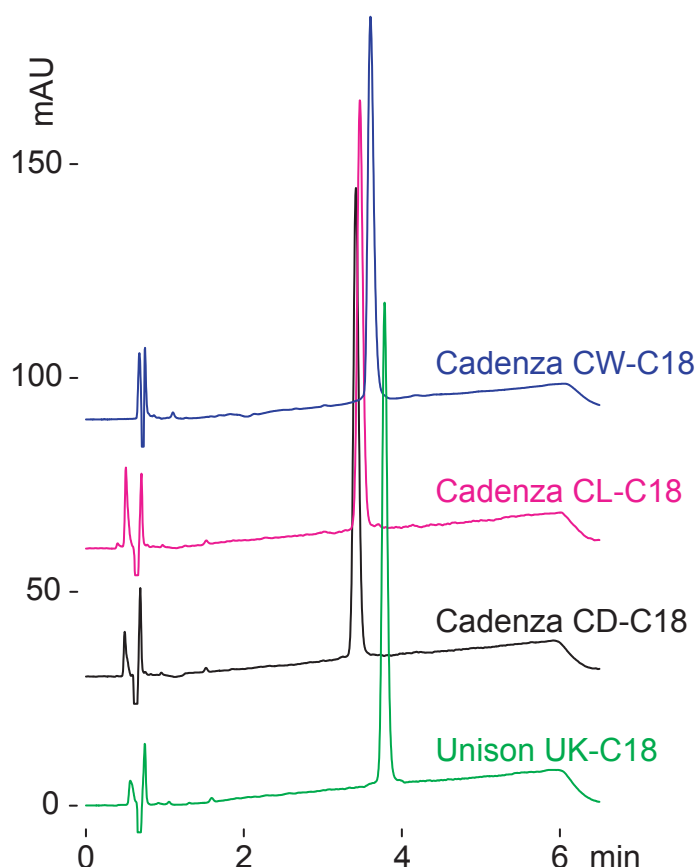
A: acetonitrile

B: 50mM ammonium acetate

5-100%B(0-5min)

0.4mL/min (2MPa), 37deg.C, ELSD

1.5uL (1.5ug)



reversed phase

100 x 3 mm

A: water /TFA = 100 /0.1

B: acetonitrile /TFA = 100 /0.07

30-50%B(0-5min)

0.4mL/min (4MPa), 37deg.C, 220nm

1uL (1ug)

Unison UK-Amino

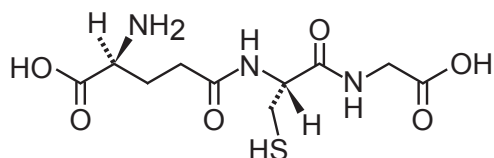
100 x 4.6 mm

Application

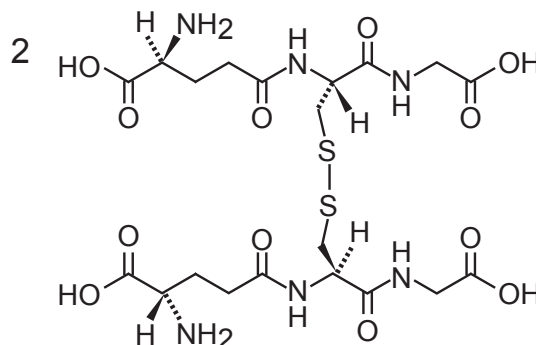
Glutathiones

グルタチオン

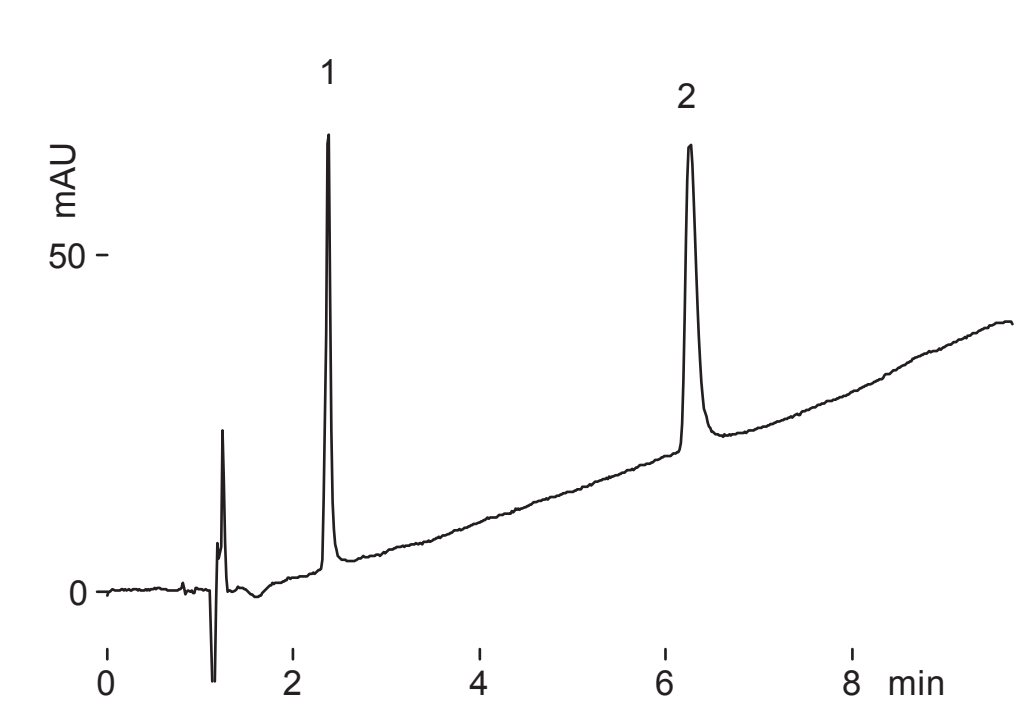
1



glutathione reduced (GSH)



glutathione oxidized (GSSG)



UK-Amino, 100 x 4.6 mm

A: acetonitrile, B: 50mM ammonium acetate

80-100 %B (0-8min), 1 mL/min

37 deg.C, 220 nm, 5 uL(5ug)

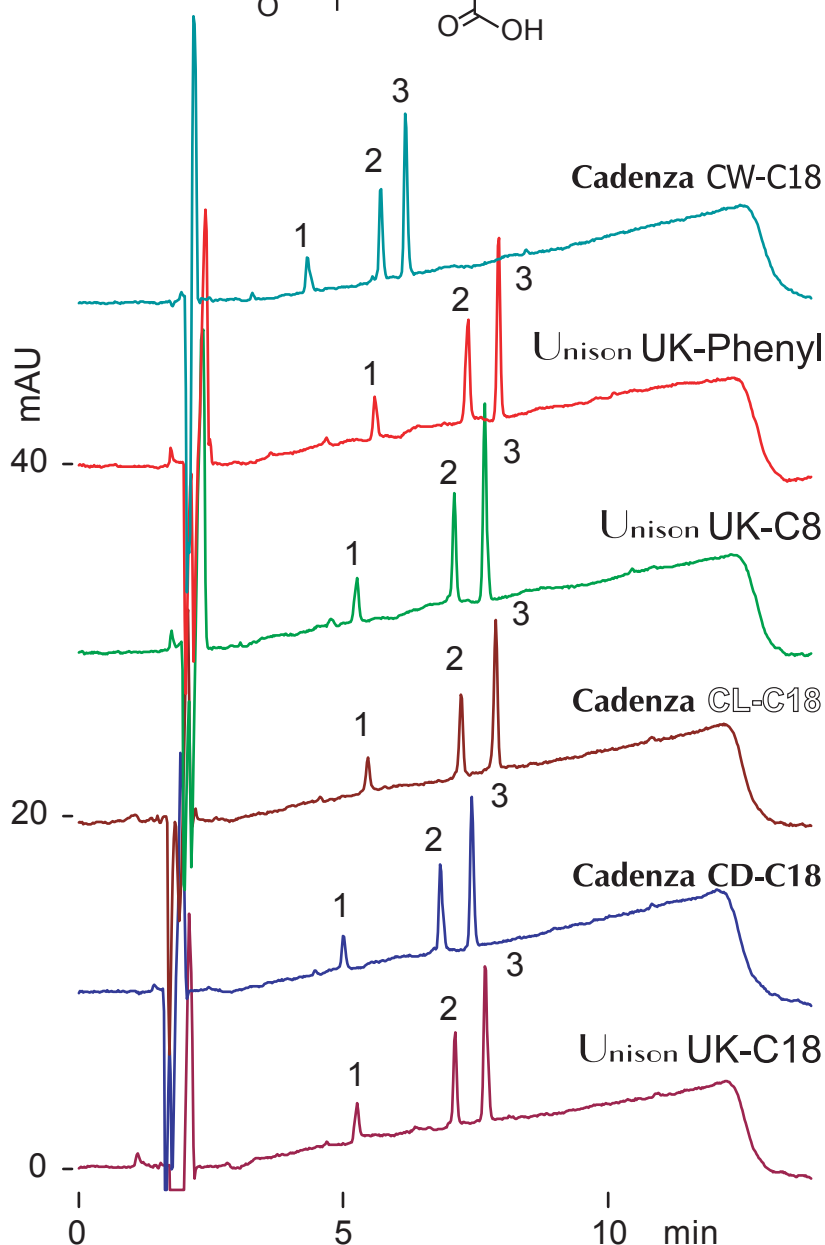
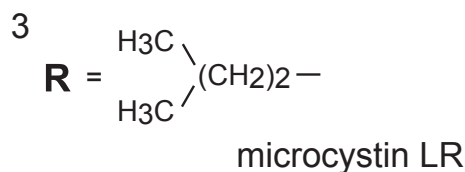
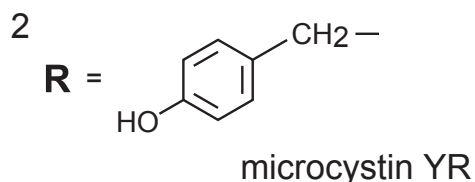
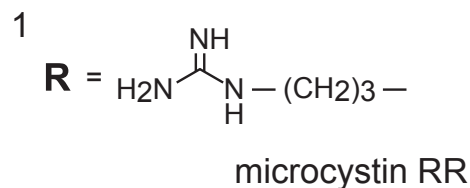
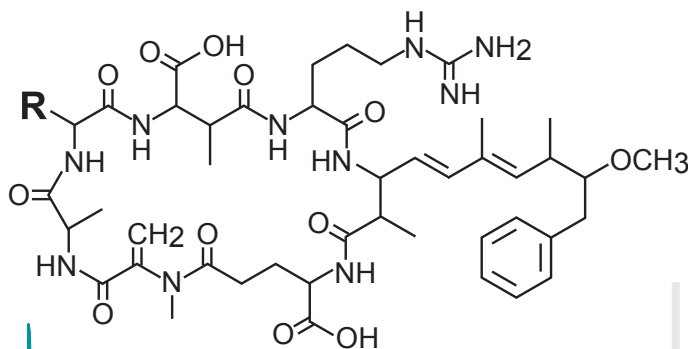
Cadenza CW-C18
 Unison UK-Phenyl
 Unison UK-C8
 Cadenza CL-C18
 Cadenza CD-C18
 Unison UK-C18

150 x 3 mm

Application

Microcystins

マイクロシスチン類



150 x 3 mm,
 A: water / TFA = 100 / 0.05
 B: acetonitrile / TFA = 100 / 0.05
 35-60 %B (0-10min)
 0.4 mL/min, 37 deg.C
 220 nm, 5 uL (5 ppm)

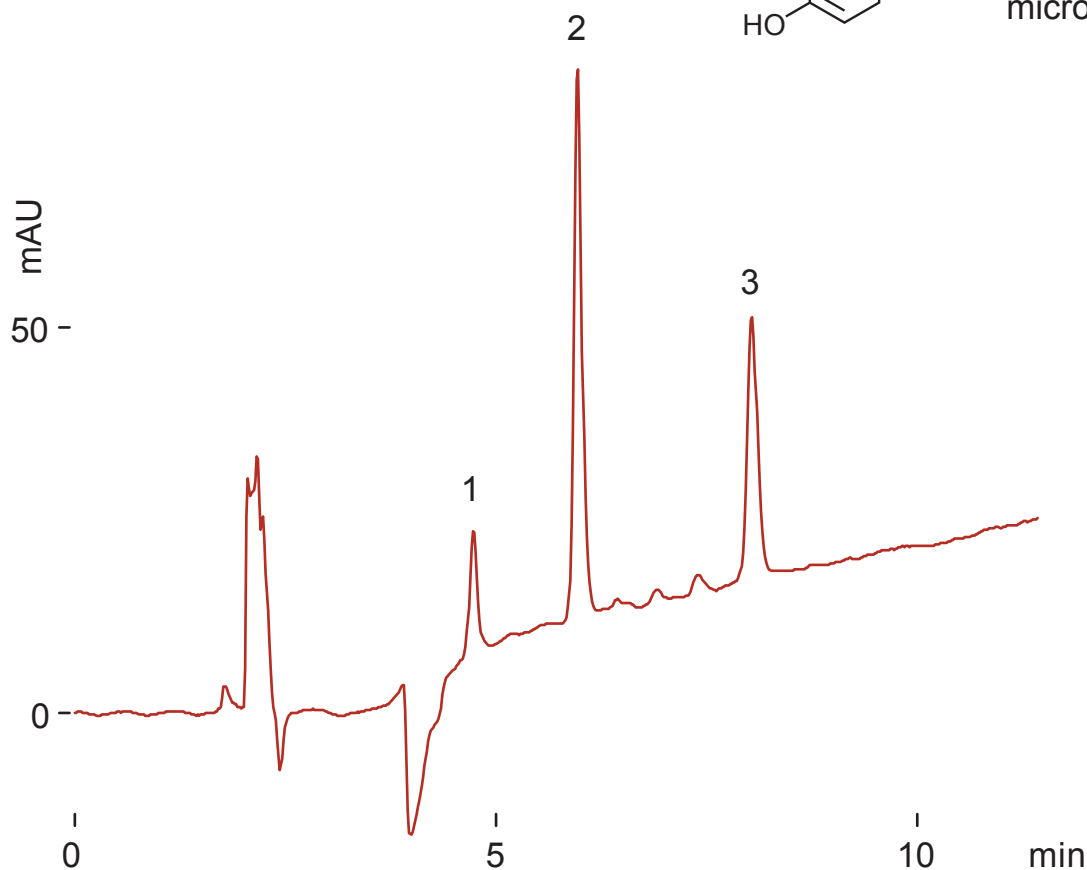
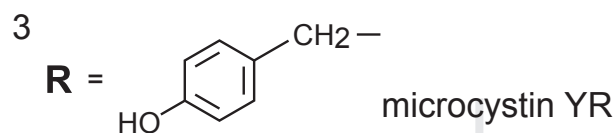
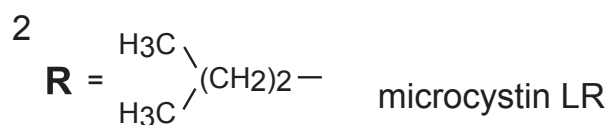
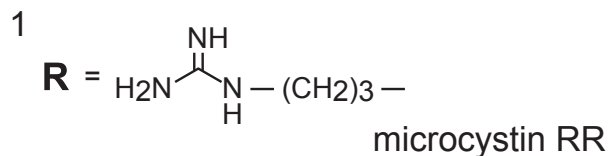
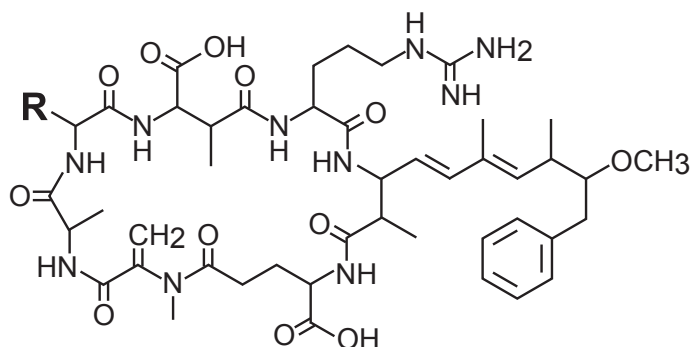
Unison UK-Amino

150 x 3 mm

Application

Microcystins

マイクロシスチン類



Unison UK-Amino, 150 x 3 mm

A: acetonitrile, B: 50mM ammonium acetate, 20-30 %B (0-10min)
 0.4 mL/min (4MPa), 37 deg.C, 220 nm, 5 uL (50 ppm)

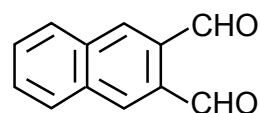
Cadenza CD-C18

150 x 2 mm

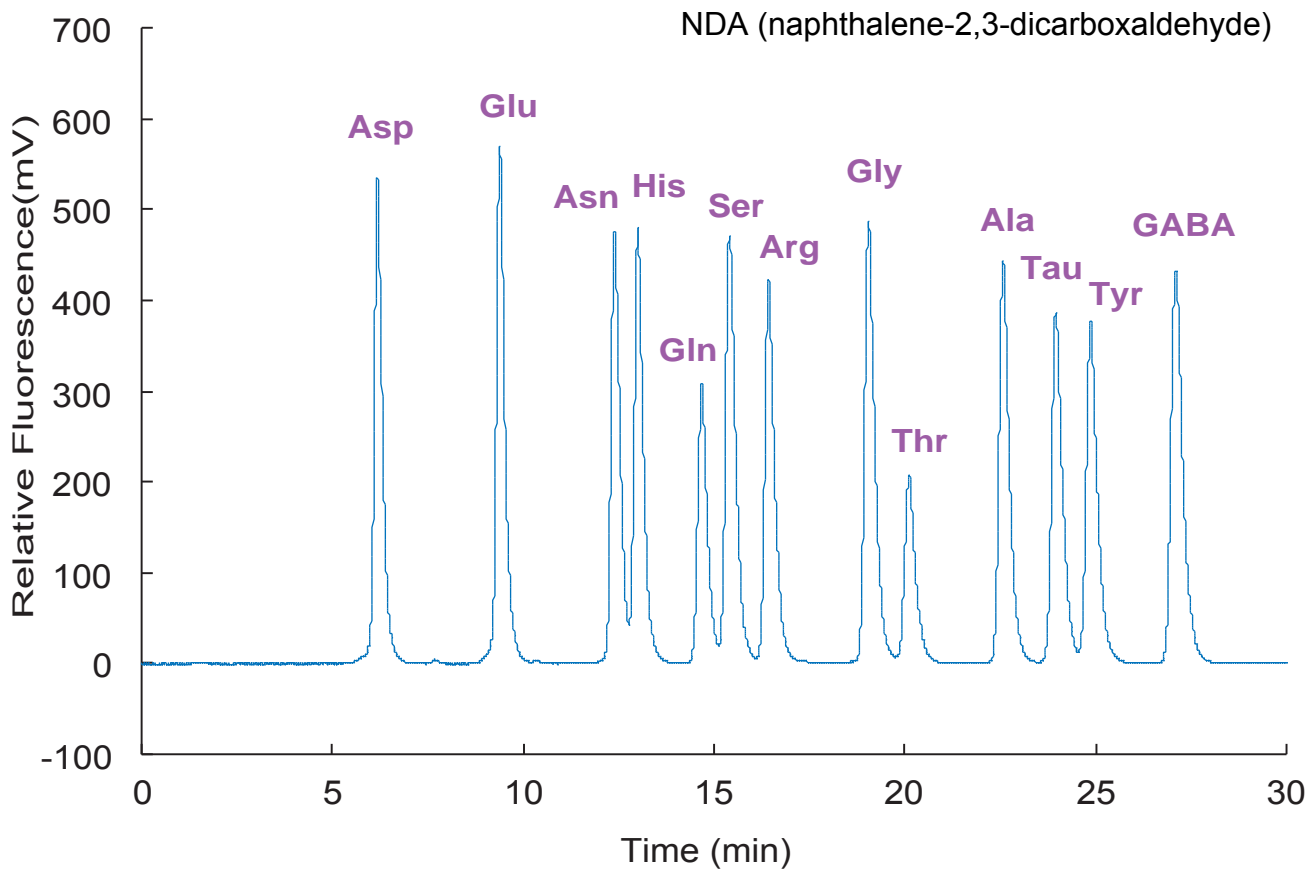
Application

NDA-amino acids

NDAアミノ酸



NDA (naphthalene-2,3-dicarboxaldehyde)



Cadenza CD-C18, 150 x 2 mm

A: 50mM phosphate buffer (pH 5.8) /acetonitrile /methanol = 15 /2 /3

B: 50mM phosphate buffer (pH 5.8) /acetonitrile /THF = 73 /18 /9

0-100%B (0-30min), 0.3 mL/min, 37 deg.C, FLS (Ex.420nm, Em.480nm)

standard amino acids (10 pmol) derivatized with NDA

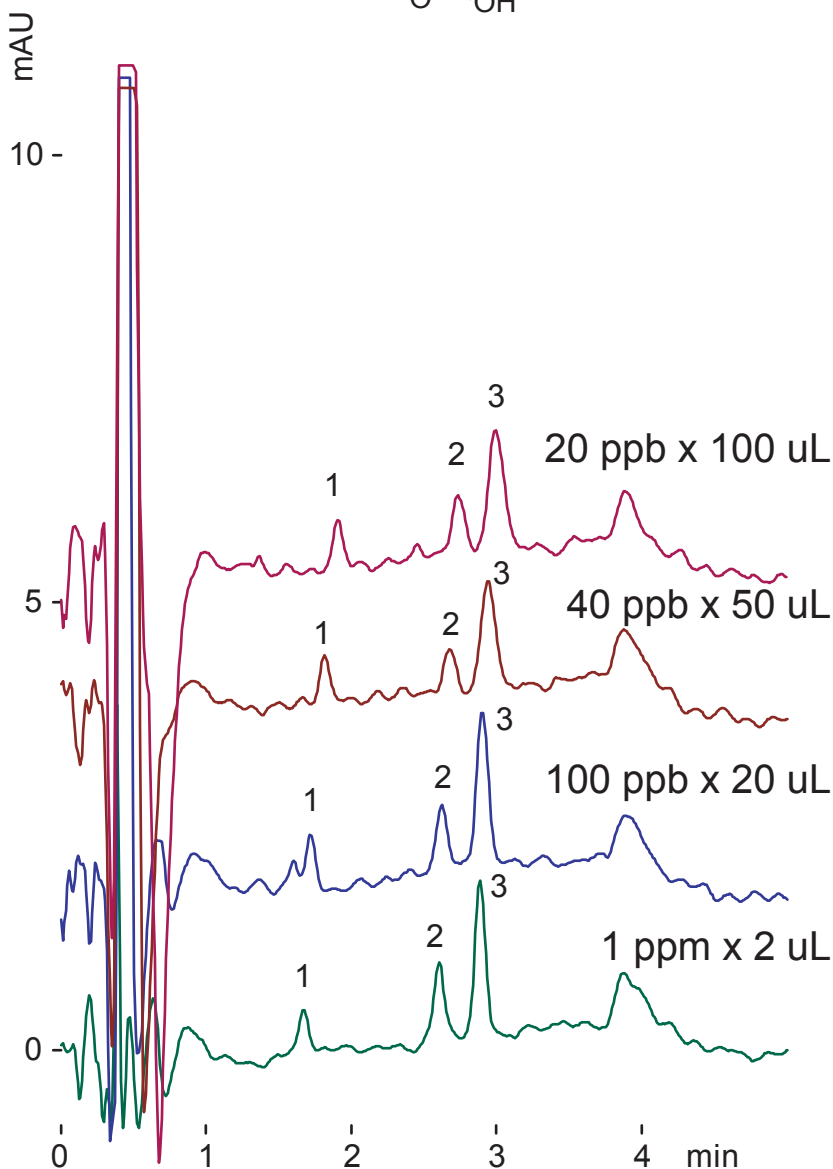
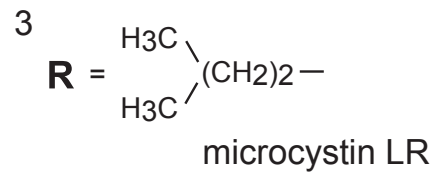
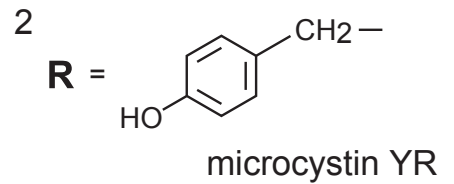
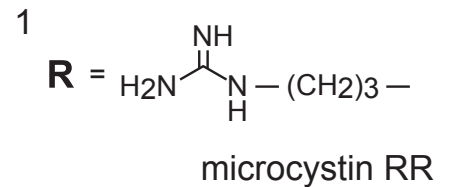
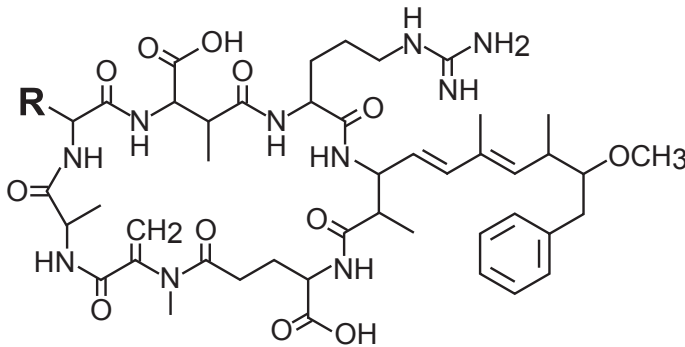
Unison US-C18

50 x 2 mm

Application

Microcystins

マイクロシスチン類



Unison US-C18, 50 x 2 mm
 A: water / TFA = 100 / 0.05
 B: ACN / TFA = 100 / 0.05
 30-40 %B (0-13min)
 0.4 mL/min
 37 deg.C, 240 nm

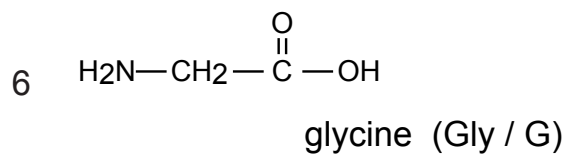
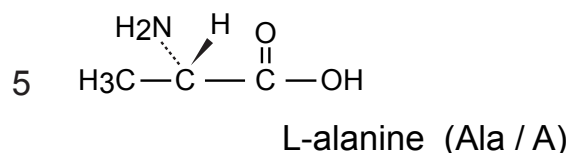
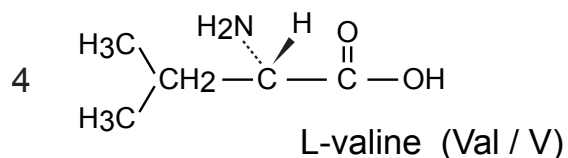
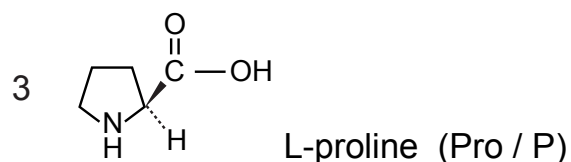
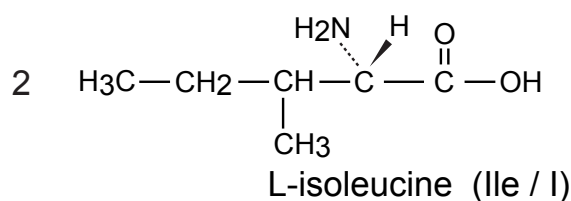
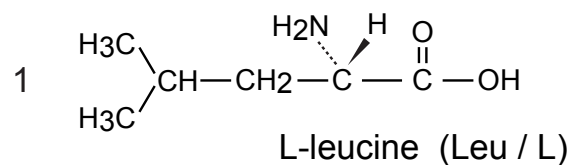
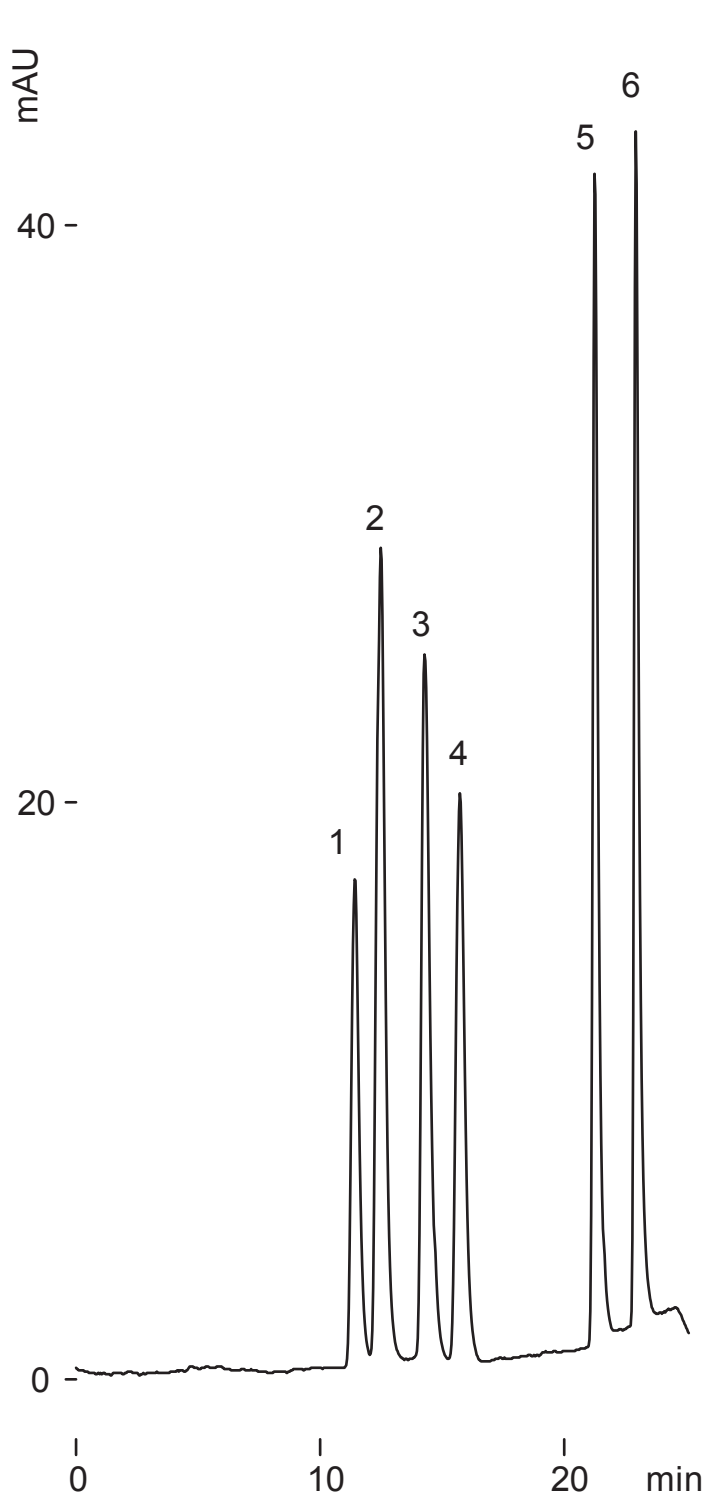
Unison UK-Amino

250 x 2 mm

Application

Aliphatic Amino Acids

脂肪族アミノ酸



Unison UK-Amino, 250 x 2 mm
A: acetonitrile
B: 10mM ammonium acetate
10-30 %B (0-20min)
0.16 mL/min (5MPa)
37 deg.C, ELSD, 1 uL (0.5 ug)

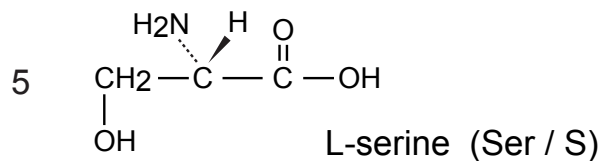
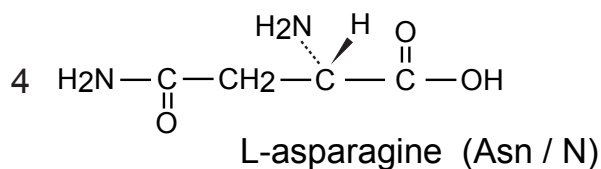
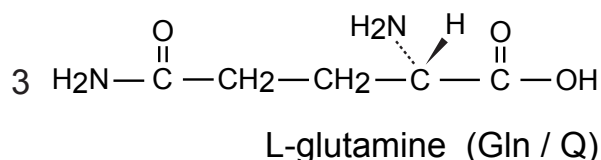
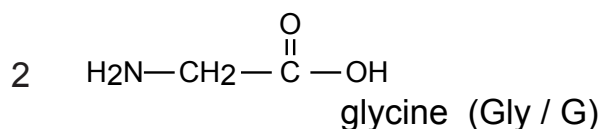
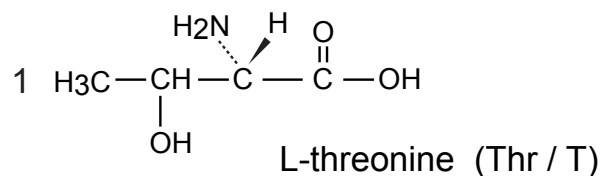
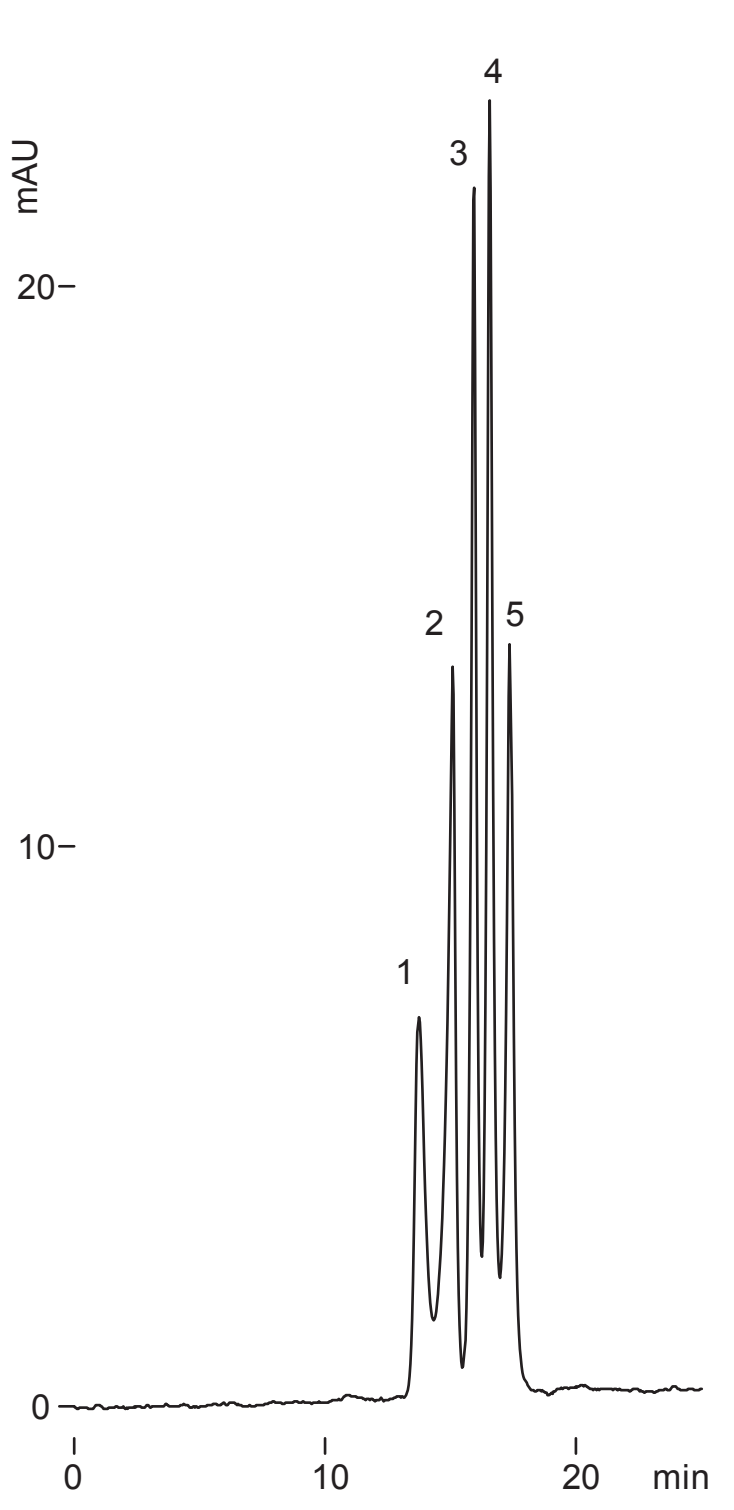
Unison UK-Amino

250 x 2 mm

Application

Hydrophilic Amino Acids

親水性アミノ酸



Unison UK-Amino, 250 x 2 mm
A: acetonitrile
B: water /acetic acid = 100 /1
20-25 %B (0-20min)
0.2 mL/min (8MPa)
37 deg.C, ELSD, 0.4 uL (0.4 ug)

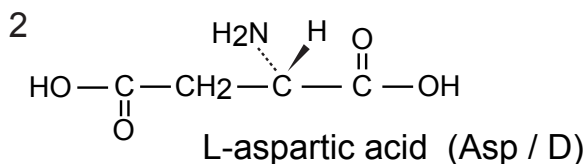
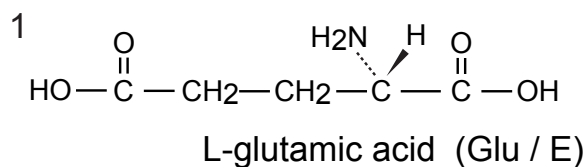
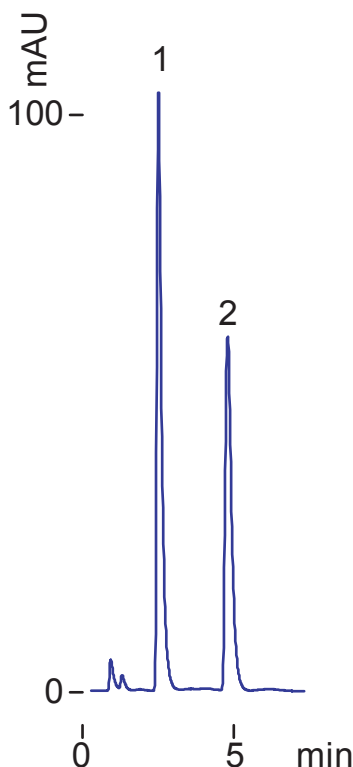
Unison UK-Amino

50 x 2 mm
250 x 2 mm

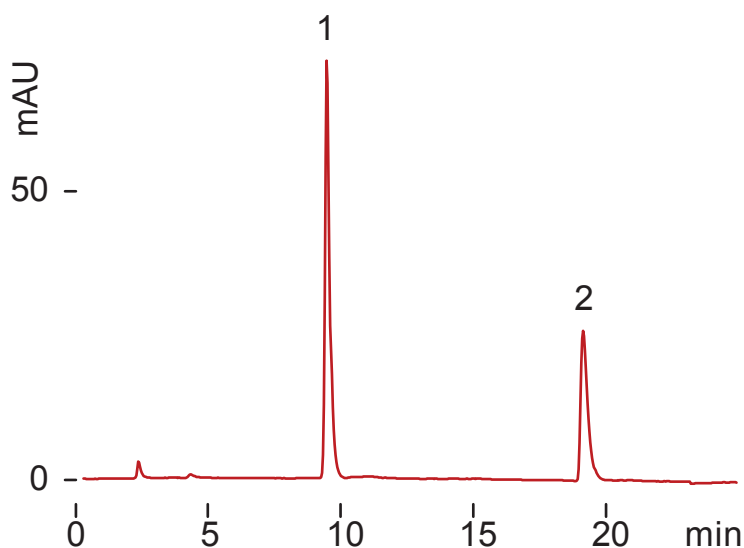
Application

Acidic Amino Acids

酸性アミノ酸



Unison UK-Amino, 50 x 2 mm
A: acetonitrile
B: water /acetic acid = 100 /1
70-90 %B (0-5min)
0.2 mL/min (3MPa)
37 deg.C, ELSD, 1 uL (1ug)



Unison UK-Amino, 250 x 2 mm
A: acetonitrile
B: water /acetic acid = 100 /1
70-90 %B (0-20min)
0.2 mL/min (16MPa)
37 deg.C, ELSD, 2 uL (2ug)

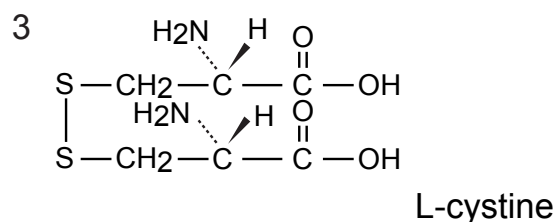
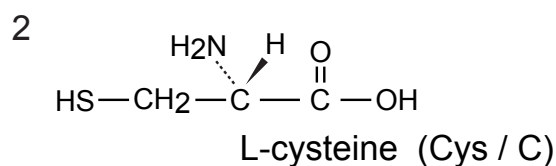
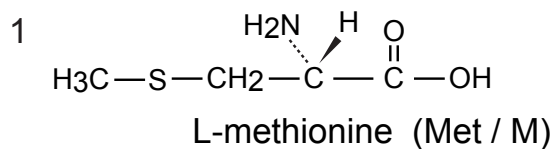
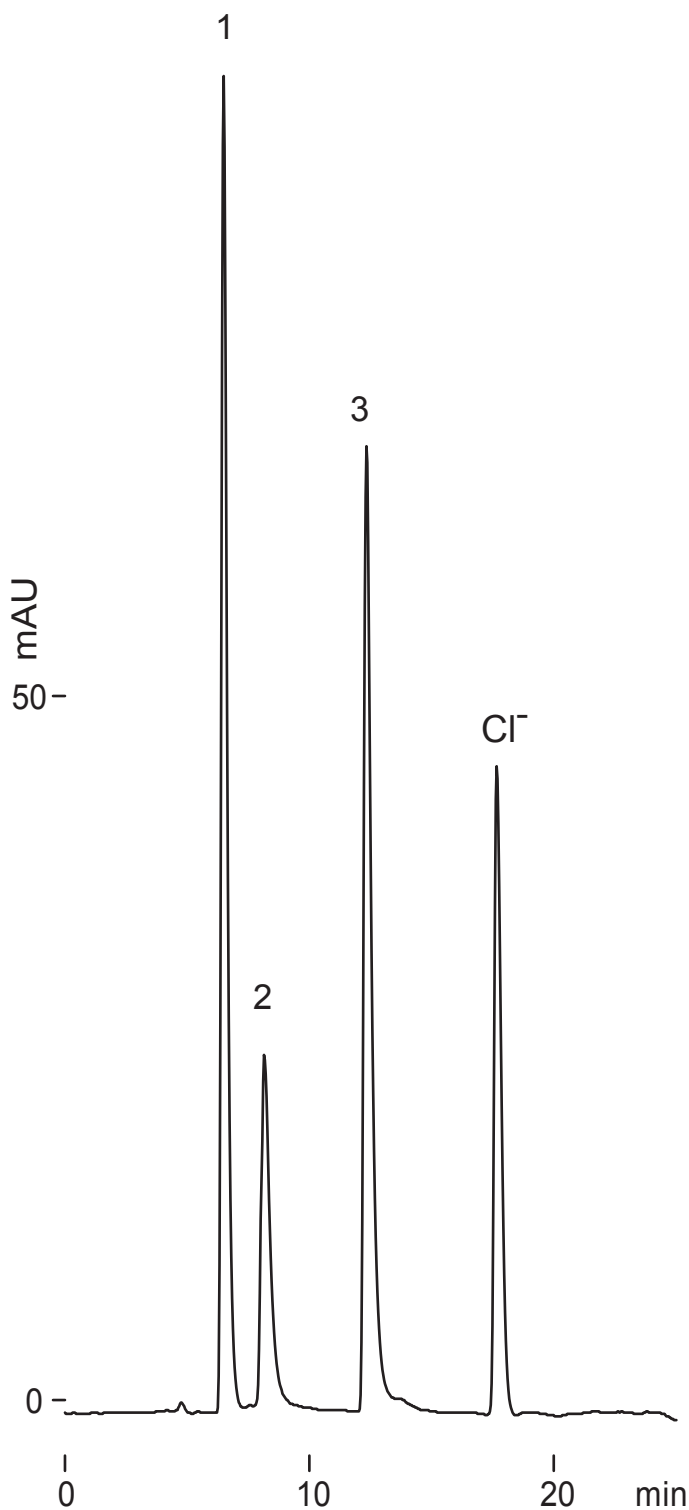
Unison UK-Amino

250 x 2 mm

Application

Sulfur-containing Amino Acids

含硫アミノ酸



Unison UK-Amino, 250 x 2 mm
 A: acetonitrile
 B: 50mM ammonium acetate
 50-90 %B (0-20min)
 0.2 mL/min (7MPa)
 37 deg.C, ELSD, 5 uL (2-5ug)

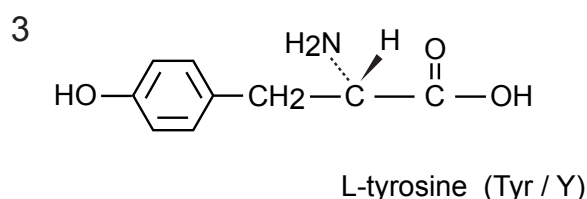
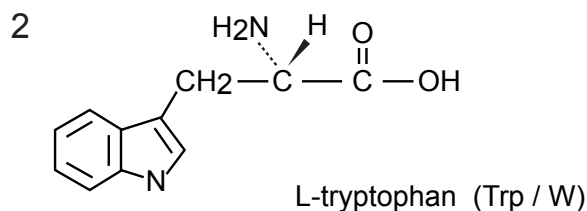
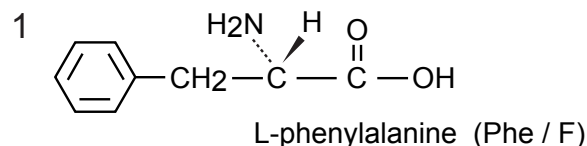
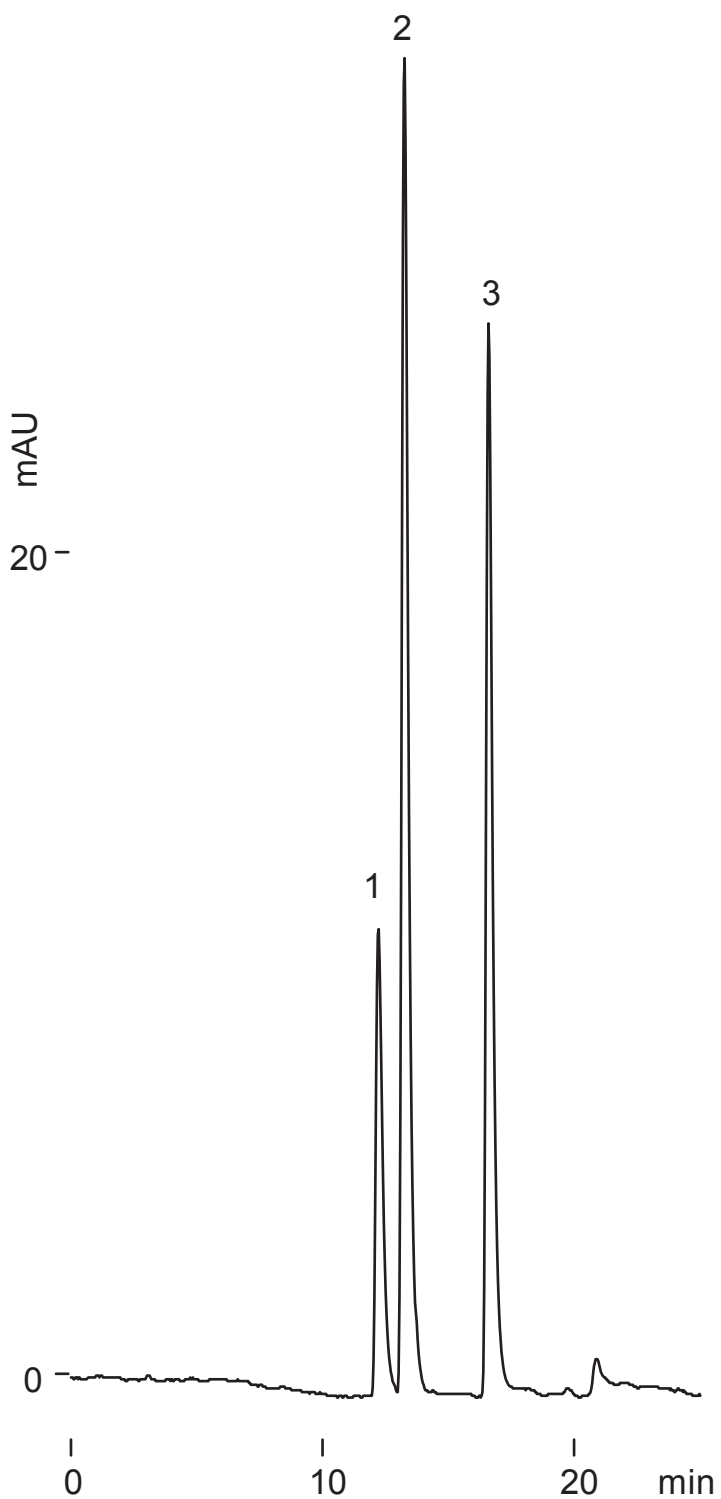
Unison UK-Amino

250 x 2 mm

Application

Aromatic Amino Acids

芳香族アミノ酸



Unison UK-Amino, 250 x 2 mm
 A: acetonitrile
 B: 10mM ammonium acetate
 20-50 %B (0-20min)
 0.2 mL/min (6MPa)
 37 deg.C, ELSD, 2 uL (1 ug)

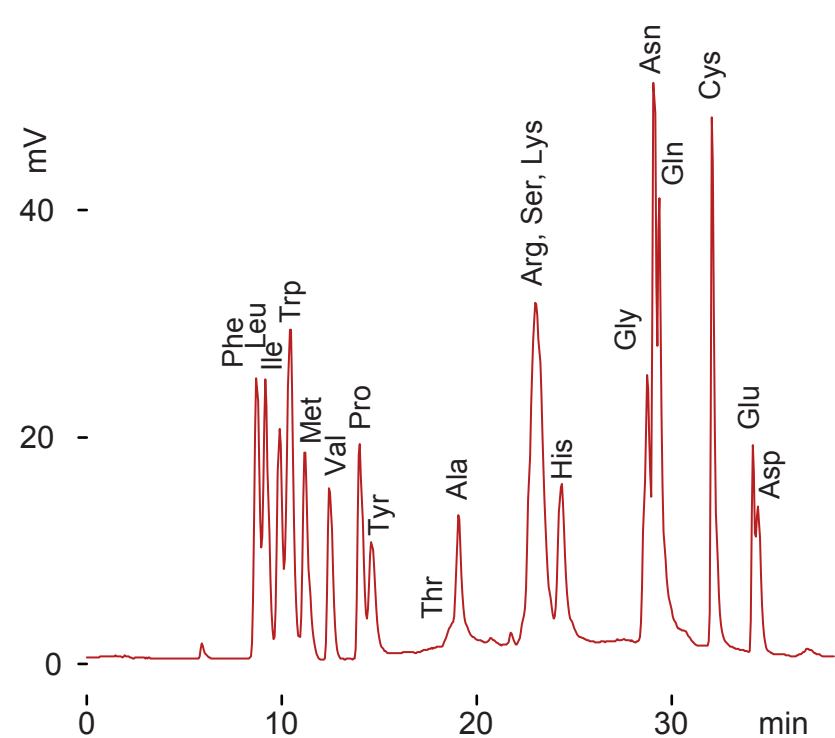
Unison UK-Amino

100 x 3 mm

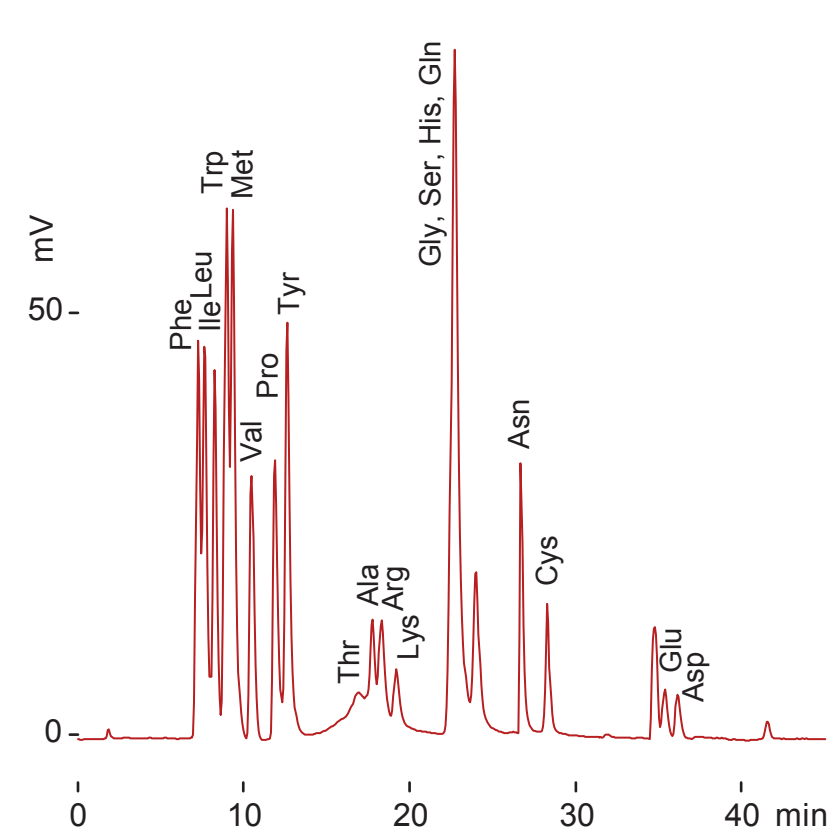
Application

Normal Phase Separation for Amino Acids

アミノ酸の順相分離



Unison UK-Amino, 100 x 3 mm
 A: ACN^{*1} / THF^{*2} / 50mM TFAA^{*3}
 = 46 / 46 / 8
 B: MeOH^{*4} / 50mM HCOONH₄
 = 20 / 80 □
 0-5 %B(0-15min)
 8 %B(15-25min)
 8-60 %B(25-35min)
 0.4 mL/min, 37 deg.C, ELSD
 2 uL(1-4ug)
 *1 : acetonitrile
 *2 : tetrahydrofuran
 *3 : ammonium trifluoroacetate
 *4 : methanol



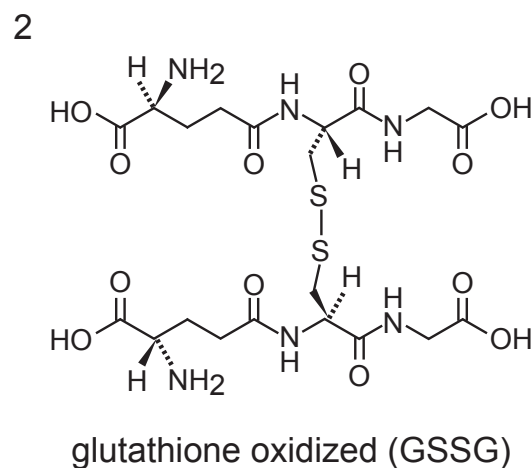
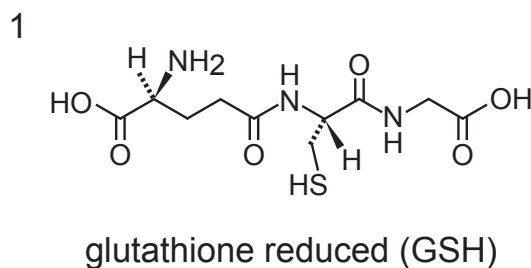
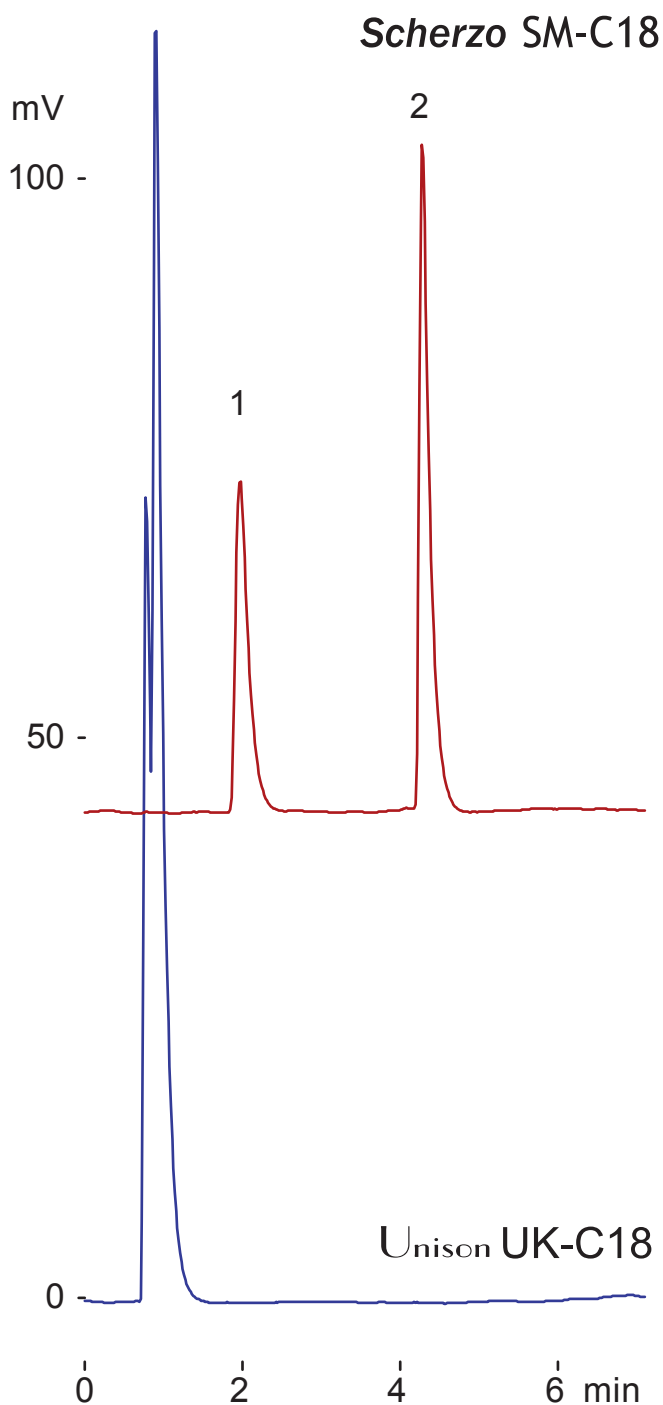
Unison UK-Amino, 100 x 3 mm
 A: ACN^{*1} / THF^{*2} / 50mM TFAA^{*3}
 = 46 / 46 / 8
 B: MeOH^{*4} / 50mM HCOONH₄
 / 50mM TFAA = 20 / 20 / 60 □
 0-5 %B(0-20min)
 5 %B(20-25min)
 30-60 %B(25-40min)
 0.5 mL/min, 37 deg.C, ELSD
 2 uL(1-2ug)
 *1 : acetonitrile
 *2 : tetrahydrofuran
 *3 : ammonium trifluoroacetate
 *4 : methanol

Scherzo SM-C18
Unison UK-C18

50 x 3 mm

Application

Glutathiones
グルタチオン



50 x 3 mm
 A: 5mM ammonium acetate
 B: 100mM ammonium acetate / ACN
 = 50 / 50
 0-100 %B (0-5min), 0 %B (5-10min)
 0.4 mL/min (3MPa), 37 deg.C, ELSD
 2 uL (2ug)

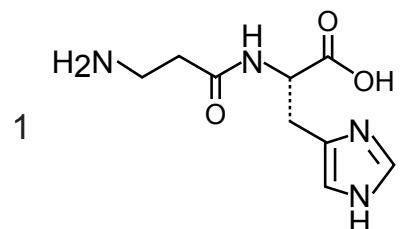
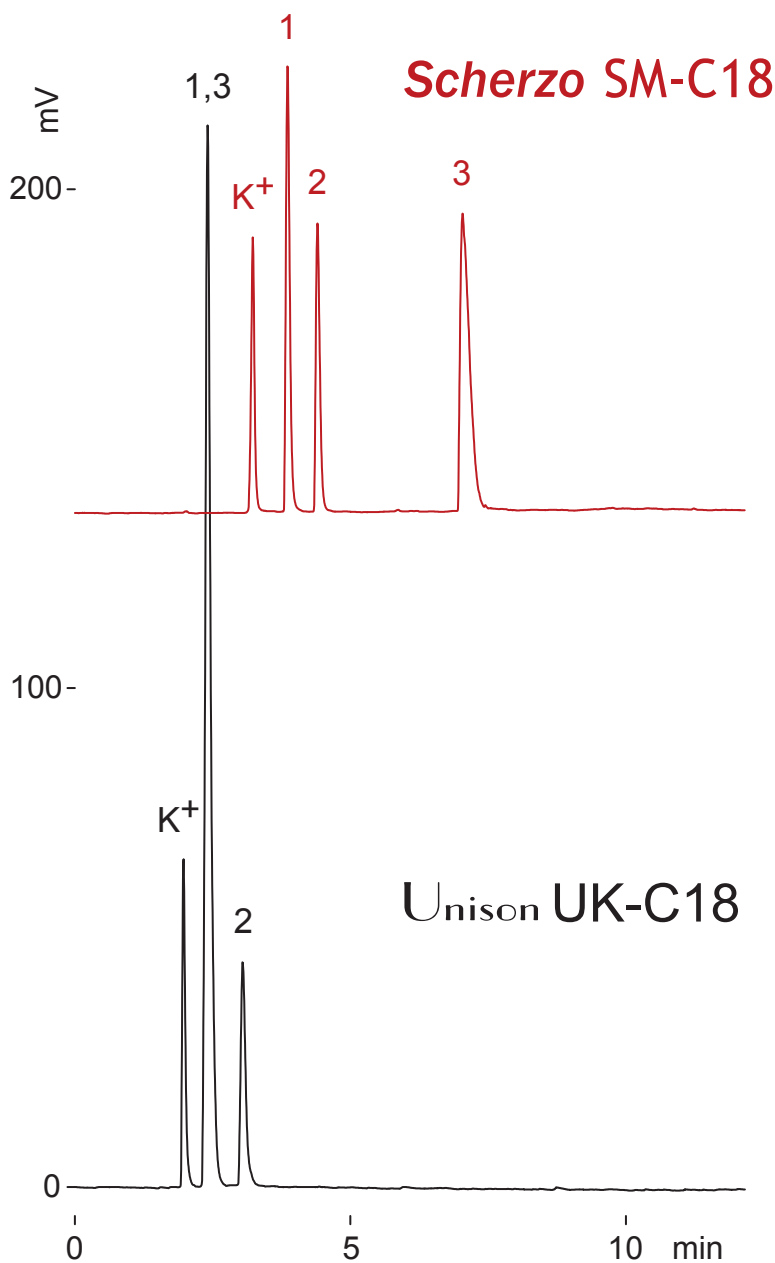
Scherzo SM-C18
Unison UK-C18

150 x 3 mm

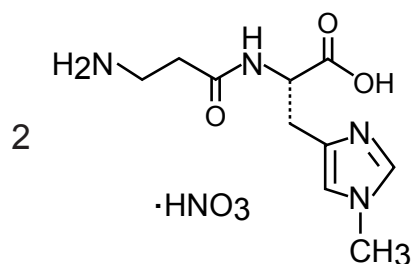
Application

Anserine and related compounds

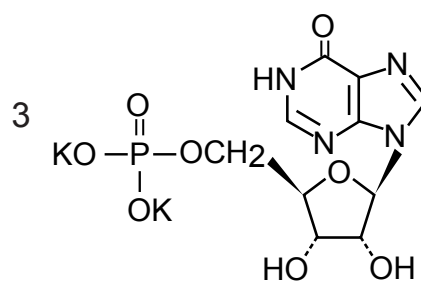
アンセリンおよび関連化合物



L- carnosine
(beta-alanyl-L-histidine)



L- anserine nitrate
(beta-alanyl-1-methyl-L-histidine nitrate)



Inosine 5'-monophosphate
dipotassium

150 x 3 mm

A: 10mM ammonium acetate

B: 50mM ammonium acetate / acetonitrile = 80 / 20

0-100%B (0-10min), 0.4 mL/min (9MPa), 37deg.C

ELSD (spray chamber 50 deg.C, drift tube 100 deg.C)

5 uL (2-6ug)

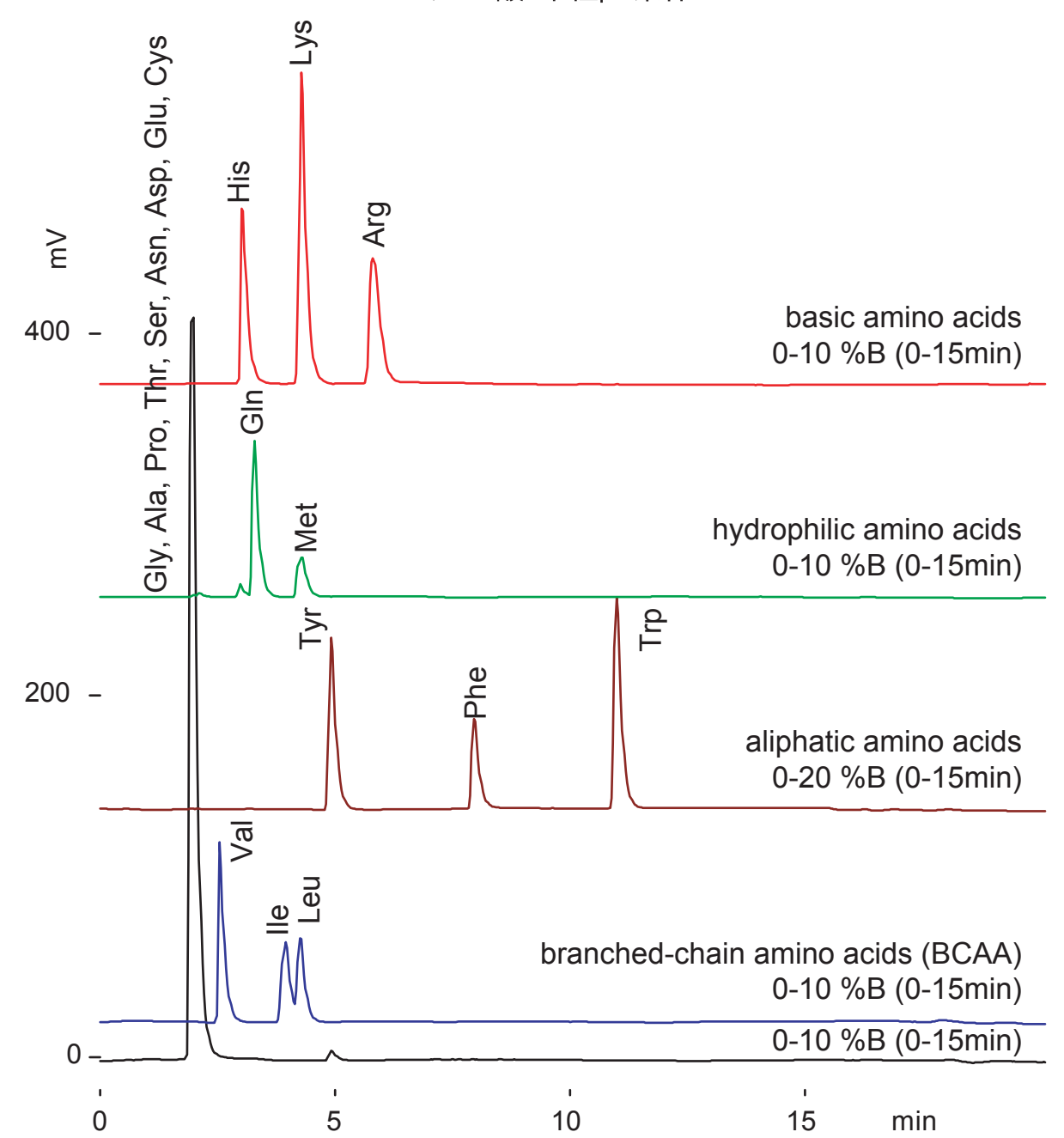
Scherzo SM-C18

150 x 3 mm

Application

Amino acids: neutral pH condition

アミノ酸: 中性pH条件



Scherzo SM-C18, 150 x 3 mm

A: 5mM ammonium acetate

B: 125mM ammonium acetate / acetonitrile = 20 / 80

0.4 mL/min (8MPa), 37 deg.C

ELSD (spray chamber 50 deg.C, drift tube 100 deg.C)

2-5 uL (2.5-4ug)

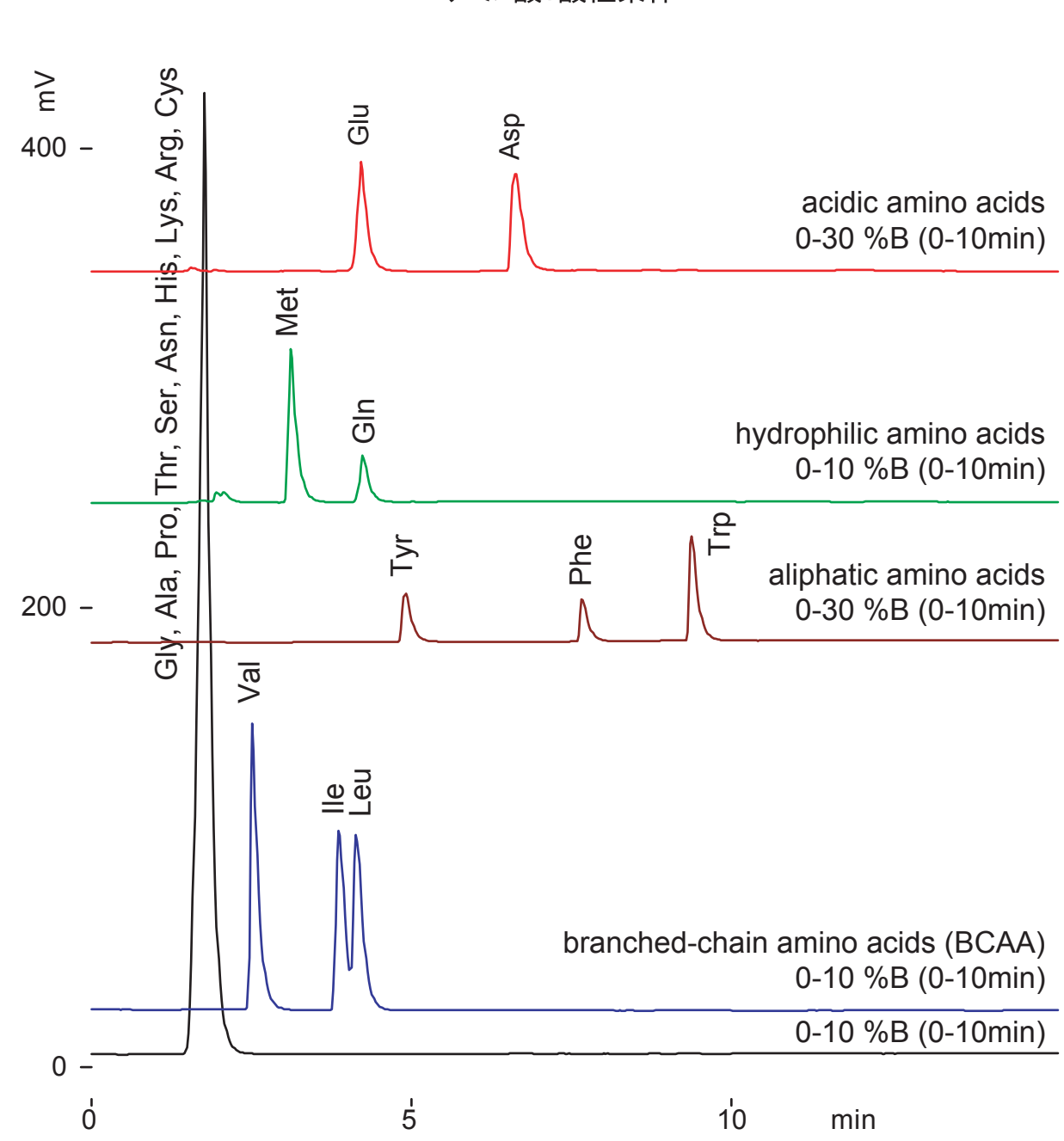
Scherzo SM-C18

150 x 3 mm

Application

Amino acids: acidic condition

アミノ酸:酸性条件



Scherzo SM-C18, 150 x 3 mm

A: water / acetic acid = 100 / 0.1

B: acetonitrile / acetic acid = 100 / 1

0.4 mL/min (8MPa), 37 deg.C,

ELSD (spray chamber 50 deg.C, drift tube 100 deg.C)

2-5 uL (1-5ug)

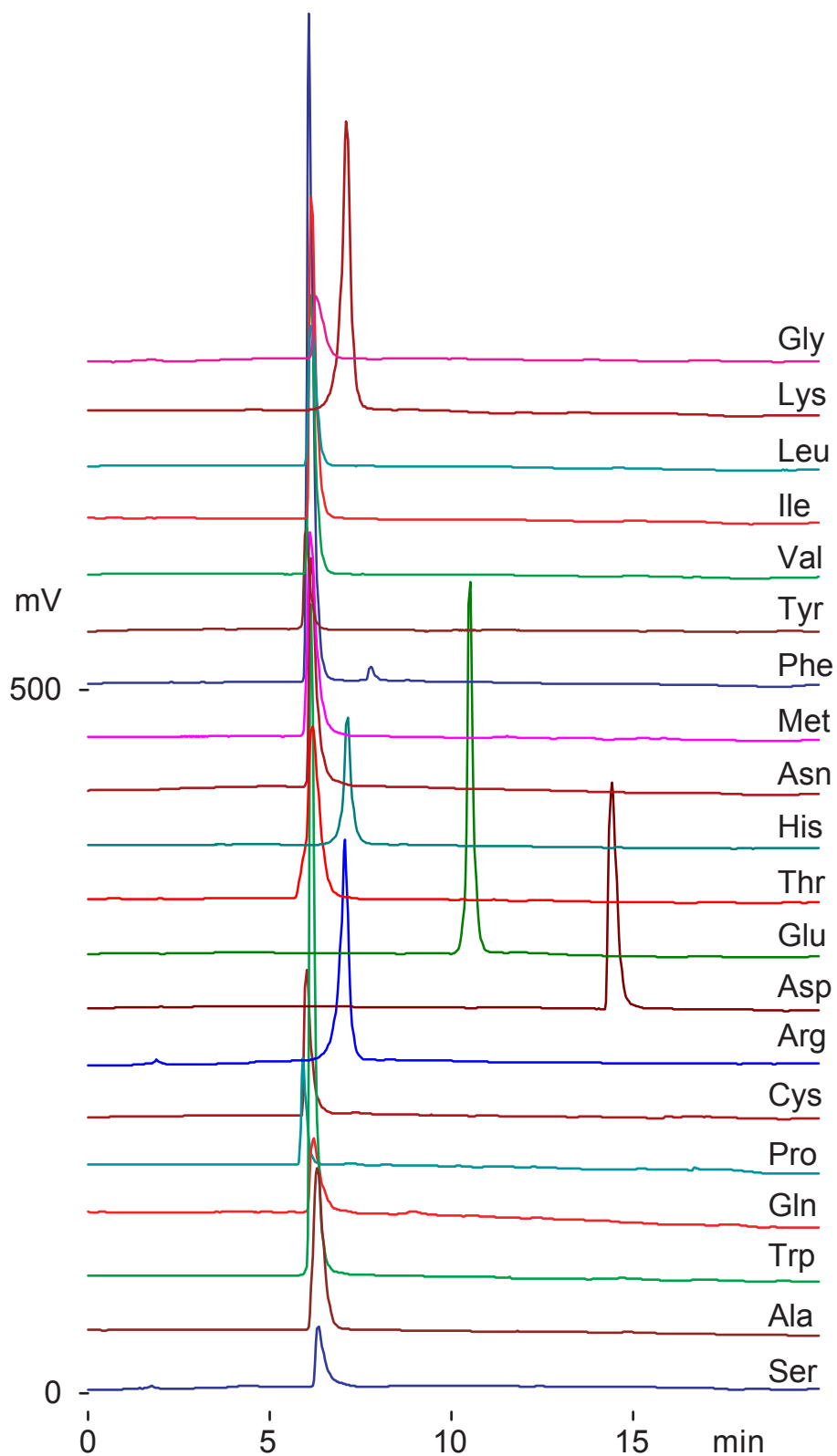
Scherzo SM-C18

150 x 3 mm

Application

Amino acids: normal phase

アミノ酸:順相条件



Scherzo SM-C18
 150 x 3 mm
 A: acetonitrile / acetic acid
 = 100 / 0.5
 B: water / acetic acid
 = 100 / 0.5
 2-50 %B(0-15min)
 0.4 mL/min (3MPa)
 37 deg.C,
 ELSD
 (spray chamber 50 deg.C,
 drift tube 100 deg.C)

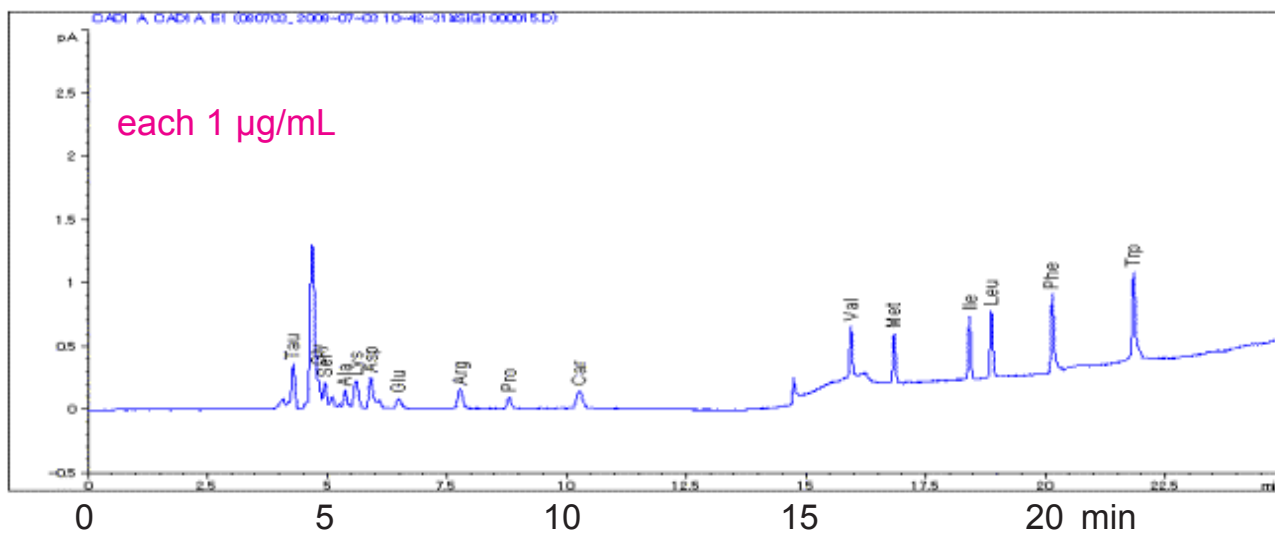
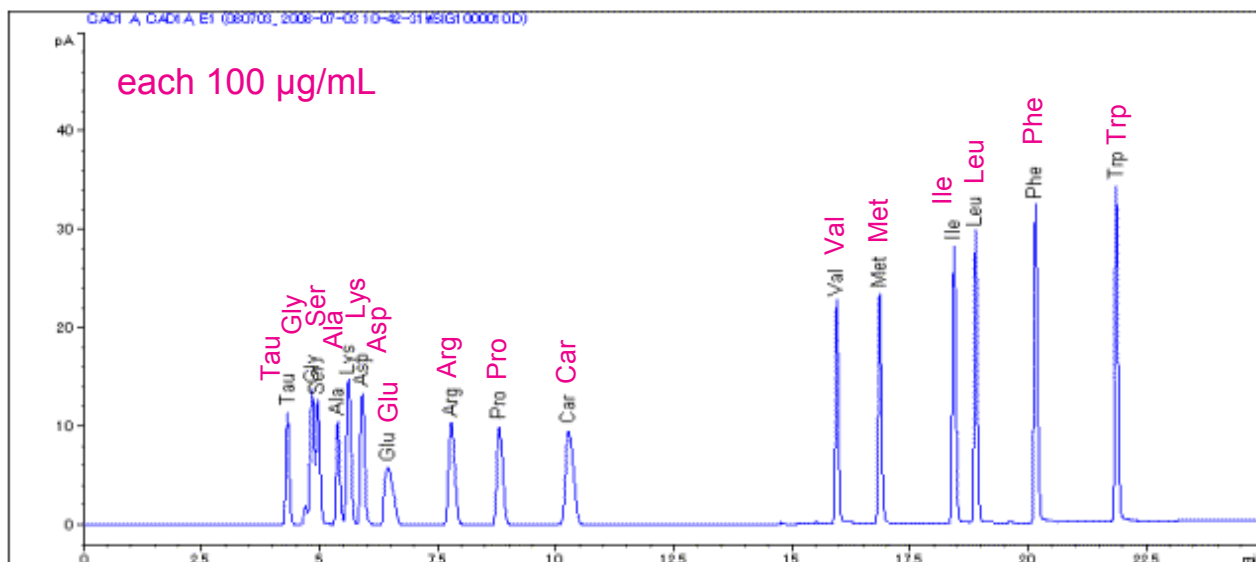
Cadenza CD-C18

250 x 4.6 mm

Application

RP analysis of intact amino acids using Corona CAD

Corona CAD を用いた非ラベル化アミノ酸分析



Cadenza CD-C18, 250 x 4.6 mm
 A: 0.15% TFA
 B: 0.15% TFA in acetonitrile
 0%B (0-5min), 0-40%B (5-20min), 40%B (20-23min)
 40-0%B (23-23.1min), 0%B (23.1-35min)
 0.6 mL/min, 25 °C
 Corona CAD (GAS=35psi, Filter: None)
 10 µL

Courtesy of Kyoko Fukushima, LMS CO., LTD. / JAPAN

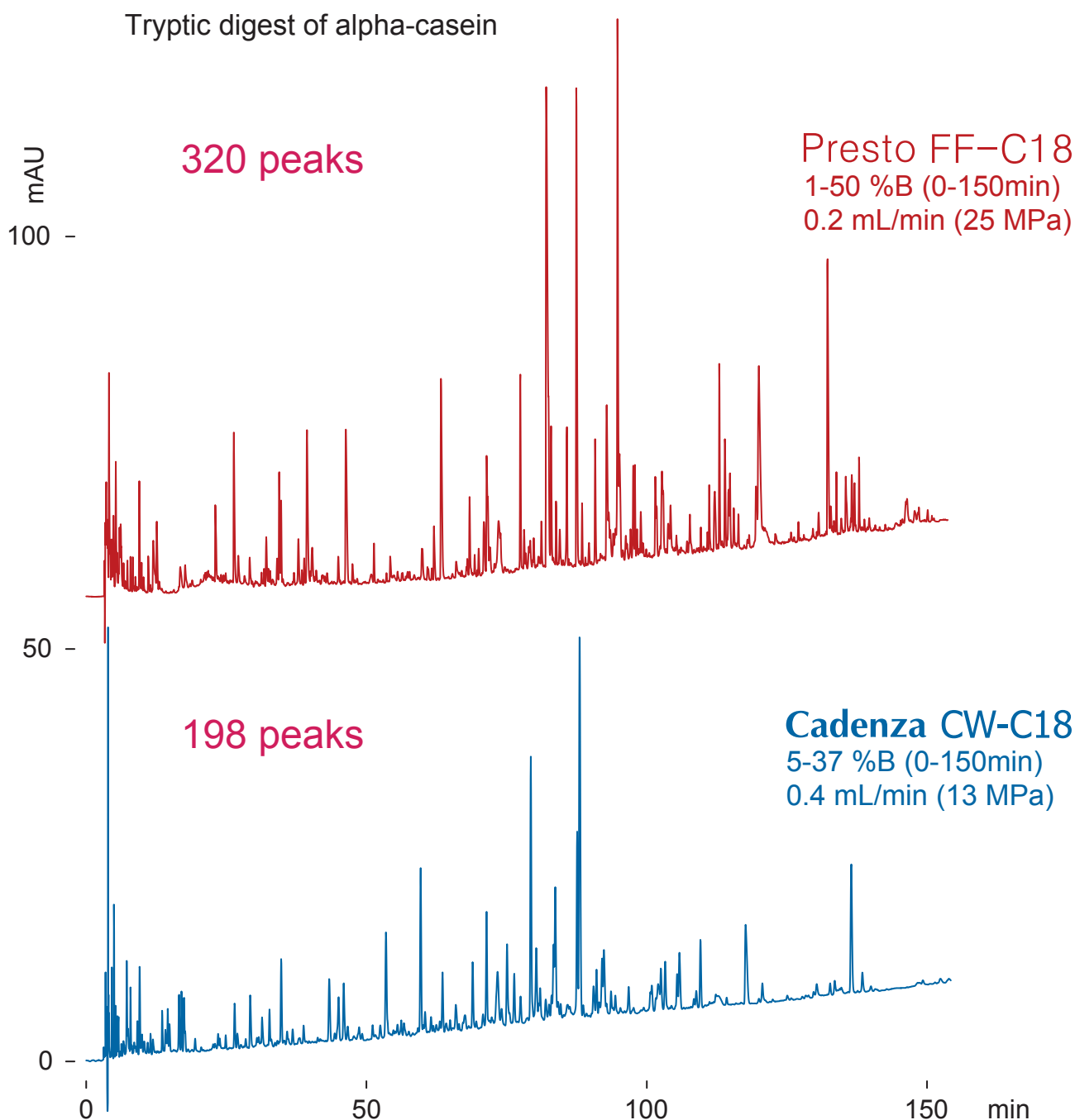
Presto FF-C18

Cadenza CW-C18

250 x 3 mm

Application

Peptide mapping
ペプチドマッピング



250 x 3 mm

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

50 deg.C, 220 nm, 5 uL

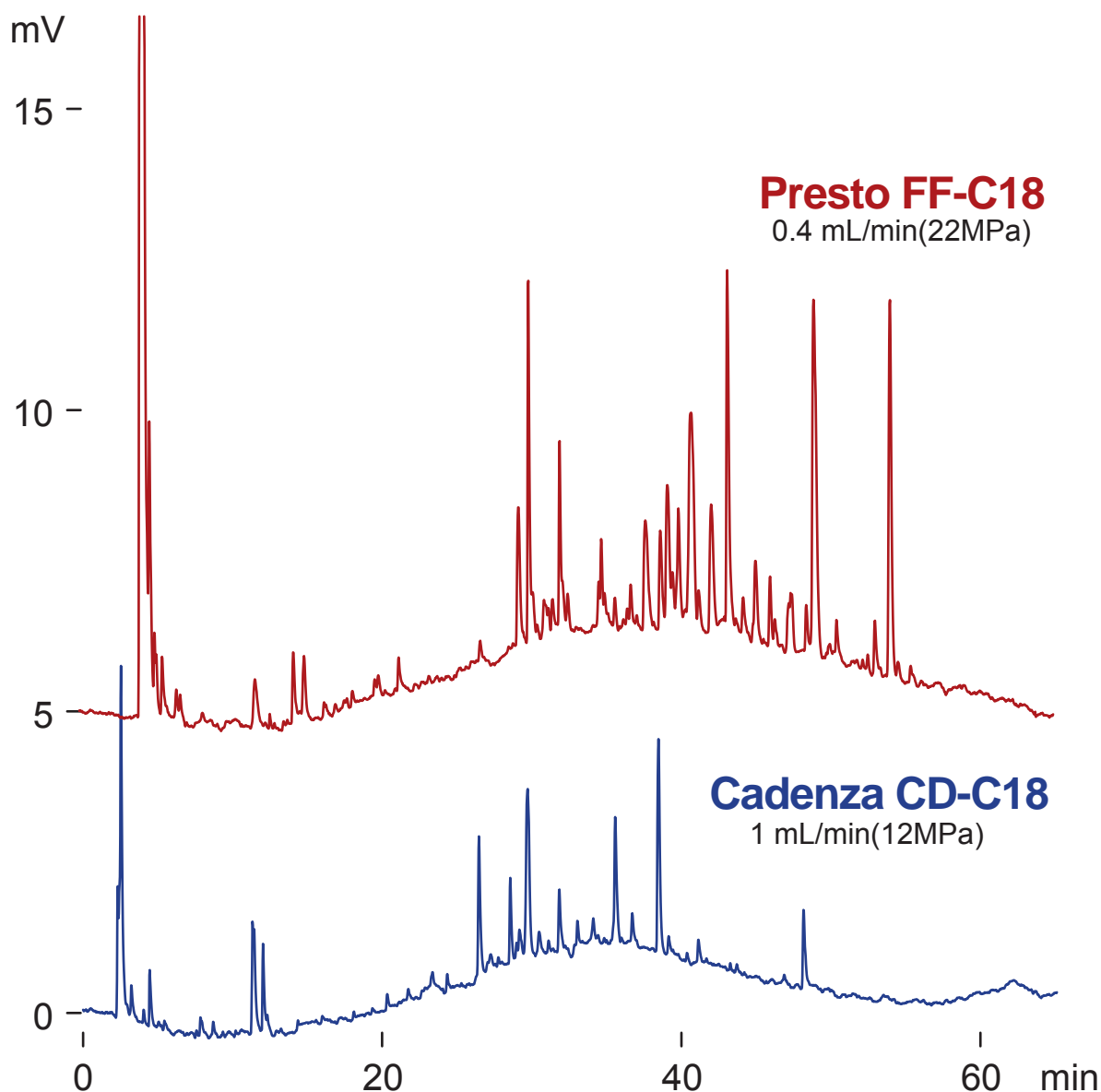
Presto FF-C18
Cadenza CD-C18

250 x 4.6 mm

Application

Peptide mapping (50°C, formic acid)

ギ酸移動相によるペプチドマッピング



250 x 4.6 mm□

A: water / formic acid = 100 / 0.5

B: acetonitrile / formic acid = 100 / 0.5

2-50 %B (0-60min)

50 deg.C, ELSD(spray chamber 35 deg.C, drift tube 100 deg.C)

tryptic digest of alpha-casein 20 uL

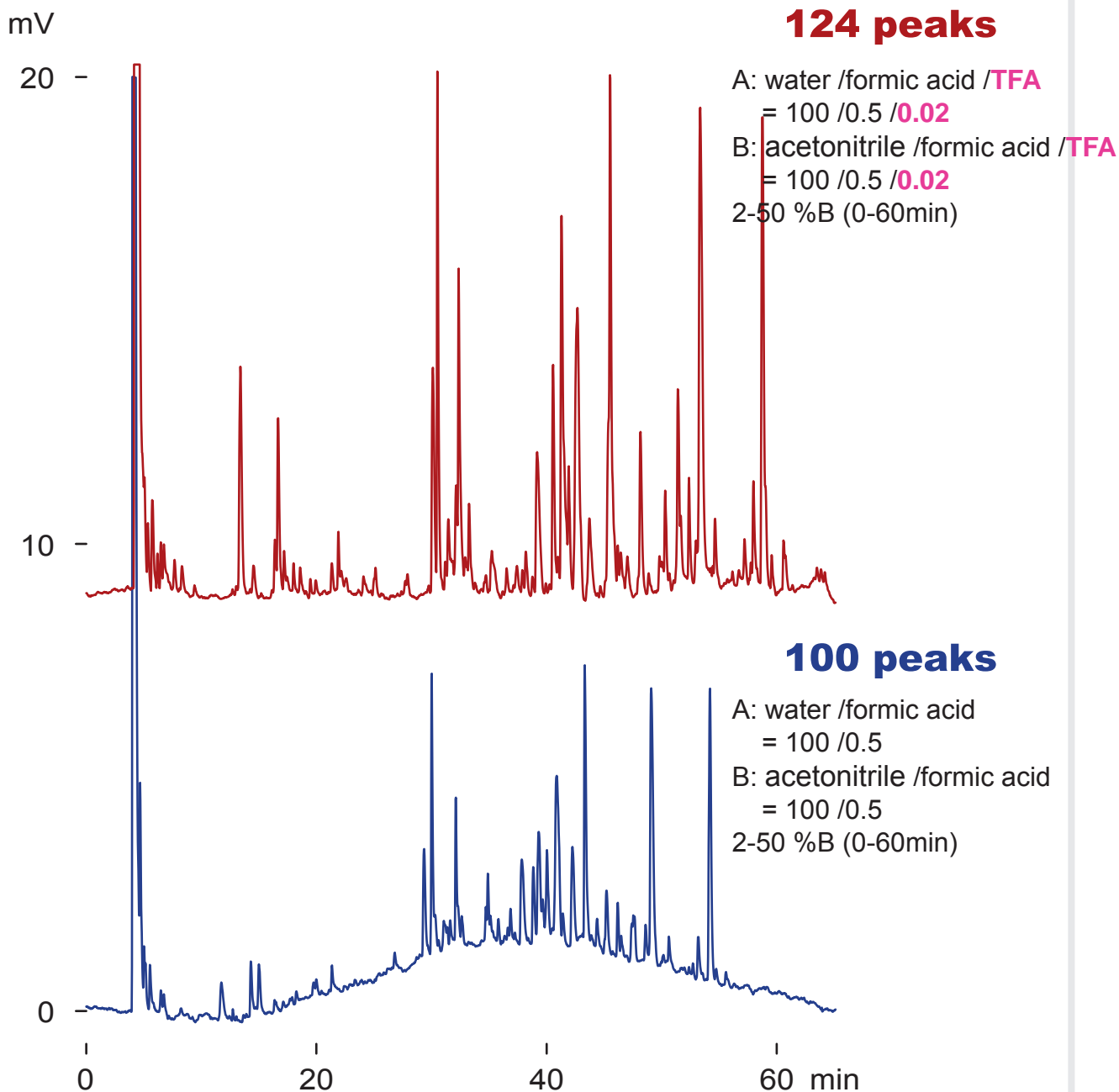
Presto FF-C18

250 x 4.6 mm

Application

The effect of TFA modifier on peptide mapping

ペプチドマッピングにおけるトリフルオロ酢酸の影響



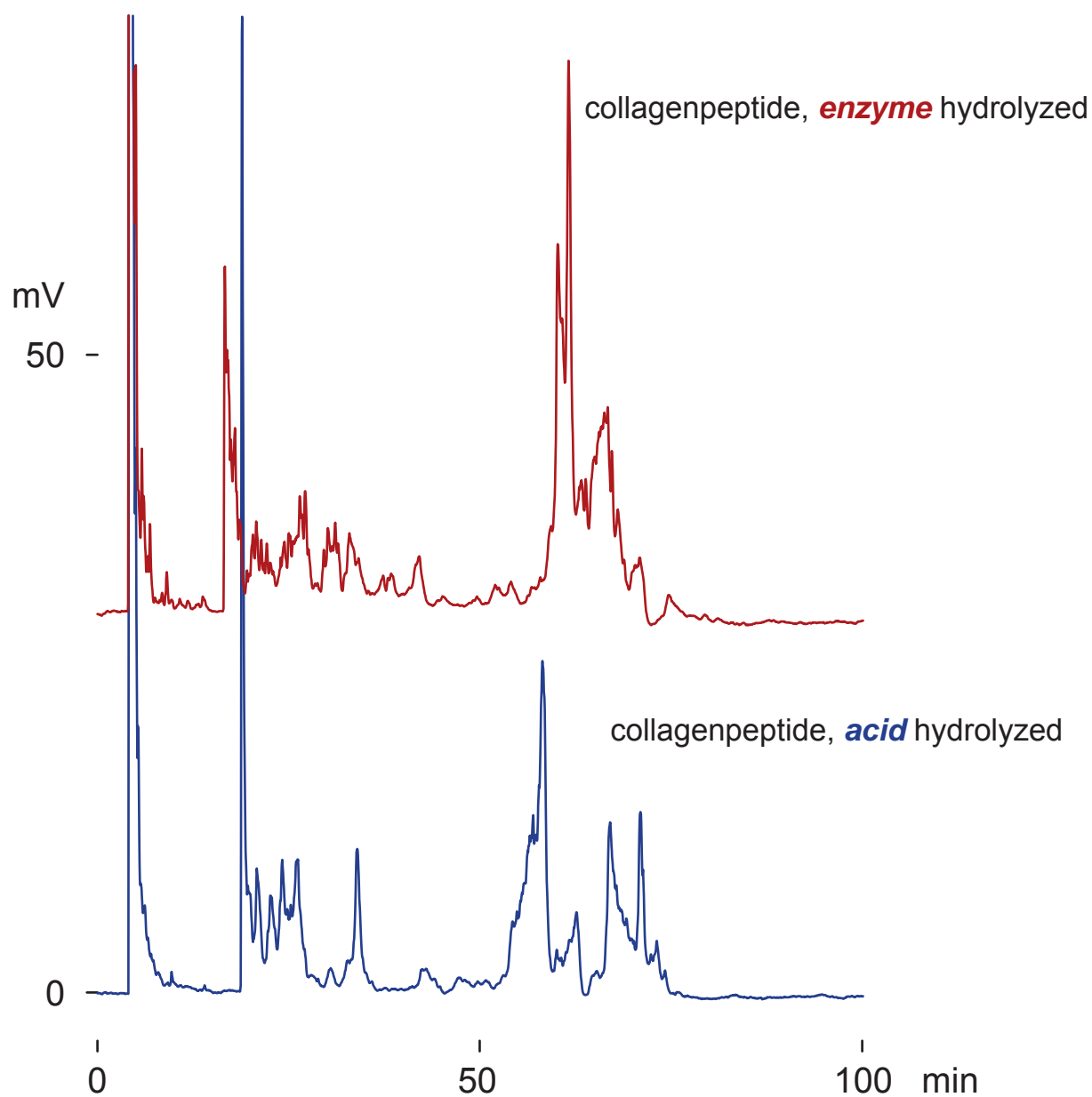
Presto FF-C18, 250 x 4.6 mm □
0.4 mL/min (22MPa), 50 deg.C
ELSD(spray chamber 35 deg.C, drift tube 100 deg.C)
tryptic digest of alpha-casein 20 uL

Presto FF-C18

250 x 4.6 mm

Application

Collagenpeptide
コラーゲンペプチド



Presto FF-C18, 250 x 4.6 mm

A: water / formic acid / TFA = 100 / 0.5 / 0.02

B: acetonitrile / formic acid / TFA = 100 / 0.5 / 0.02

1-50 %B (0-90min)

0.4 mL/min (21MPa), 50 deg.C

ELSD (spray chamber 35deg.C, drift tube 100deg.C)

20 uL (20ug, water)

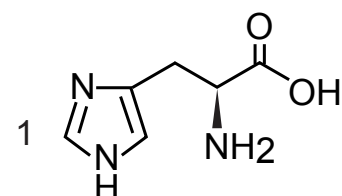
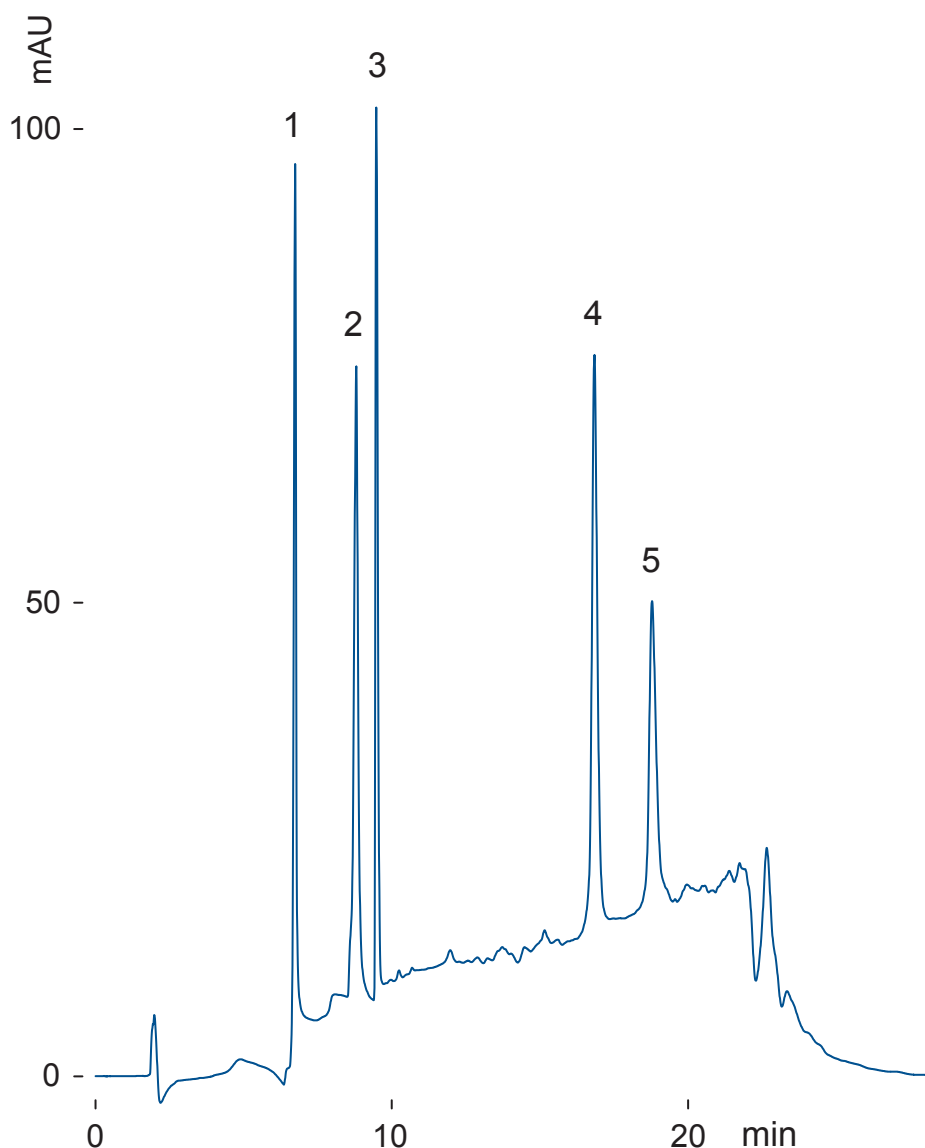
Scherzo SS-C18

150 x 3 mm

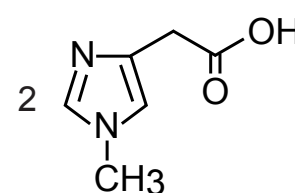
Application

Histamine related compounds

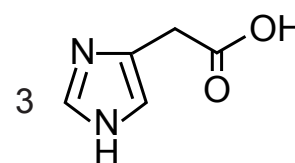
ヒスタミン関連化合物



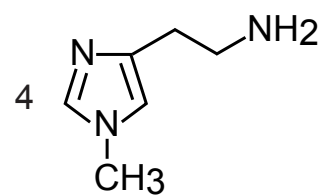
L-histidine



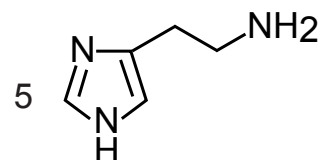
N-methyl-4-imidazoleacetic acid



4-imidazoleacetic acid



N-methylhistamine



histamine

Scherzo SS-C18, 150 x 3 mm

A: methanol

B: 100 mM ammonium formate : 100 mM ammonium hydroxide = 95 : 5 (pH8.1)

0-20 %B (0-20 min)

0.4 mL/min (6 MPa), 60 deg.C, 230 nm, 1.6 uL (0.6-2.8 ug, MeOH)

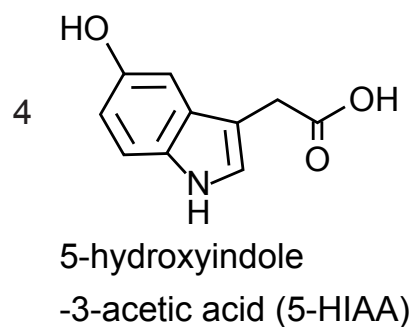
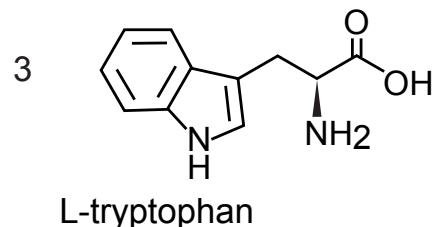
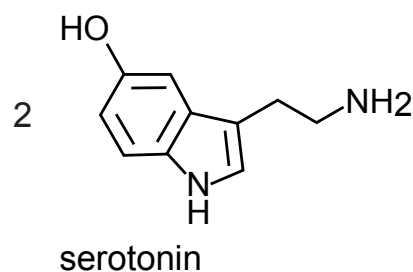
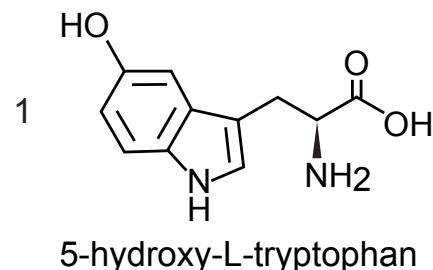
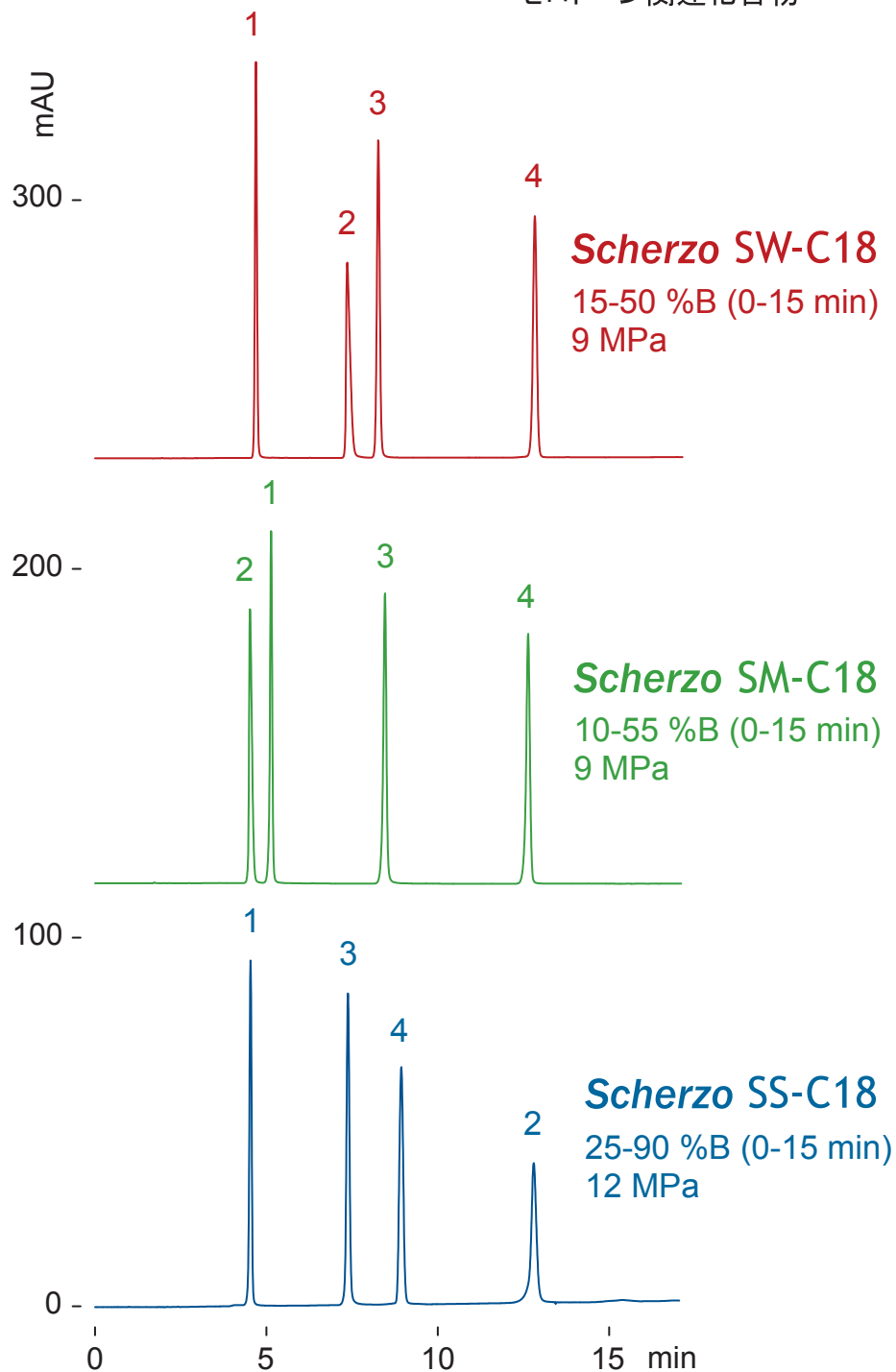
Scherzo SW-C18
Scherzo SM-C18
Scherzo SS-C18

150 x 3 mm

Application

Serotonin related compounds

セロトニン関連化合物



150 x 3 mm

A: water / formic acid = 100 / 0.1

B: 100 mM ammonium formate / acetonitrile = 70/ 30

0.4 mL/min, 37 deg.C, 260 nm, 1.2 uL (0.4 ug, 0.1% formic acid)

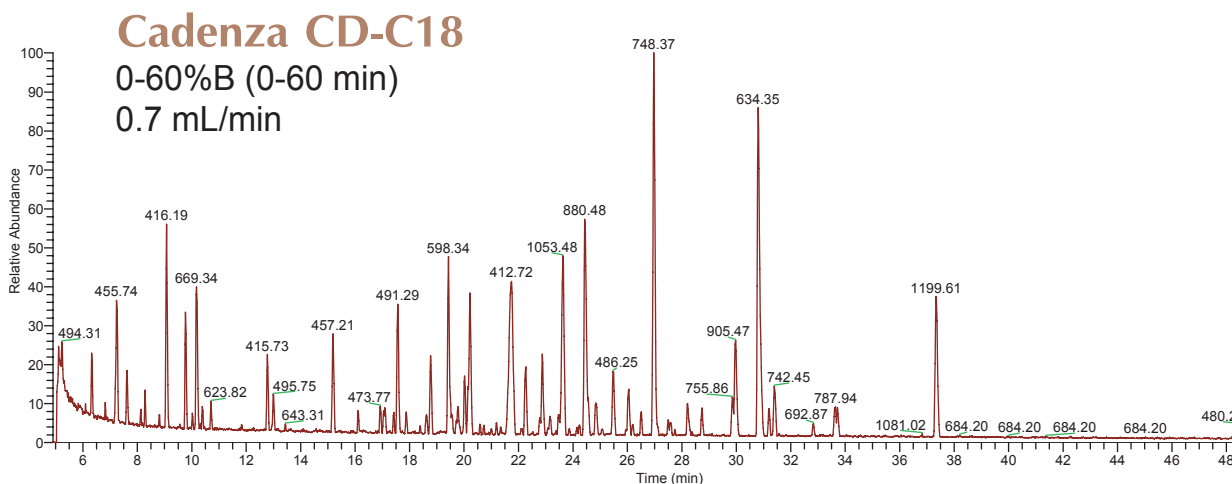
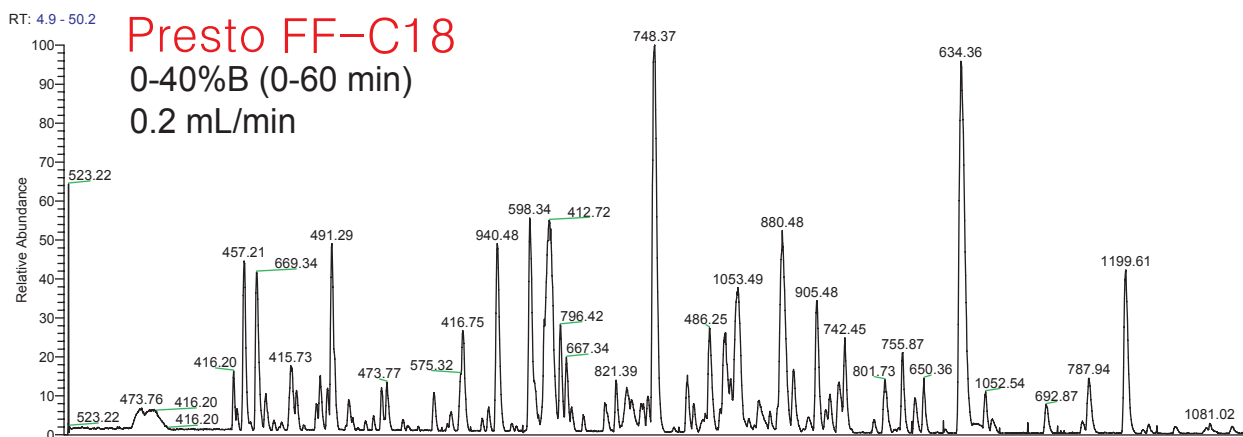
Presto FF-C18
Cadenza CD-C18

150 x 3 mm

Application

Peptide mapping using LC-FTMS

LC-FTMSによるペプチドマッピング



Presto FF-C18, Cadenza CD-C18, 150 x 3 mm

A: water / formic acid / TFA = 100 / 0.5 / 0.02

B: acetonitrile / formic acid / TFA = 100 / 0.5 / 0.02

50 deg.C, 2uL (tryptic digest of alpha-casein)

FTMS (Thermo Scientific Exactive), ESI-positive (Full ms)

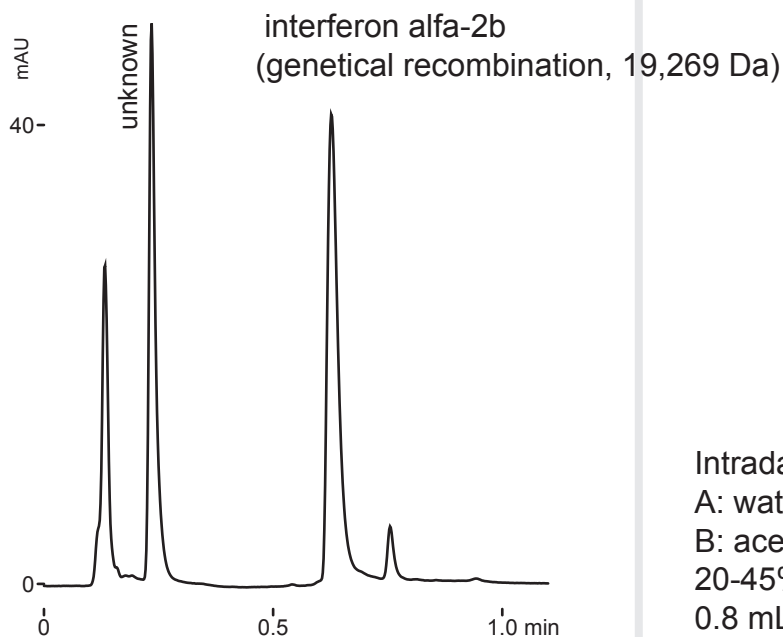
Courtesy of Dr. KUWATA Keiko, Kyoto University, JAPAN

Intrada WP-RP

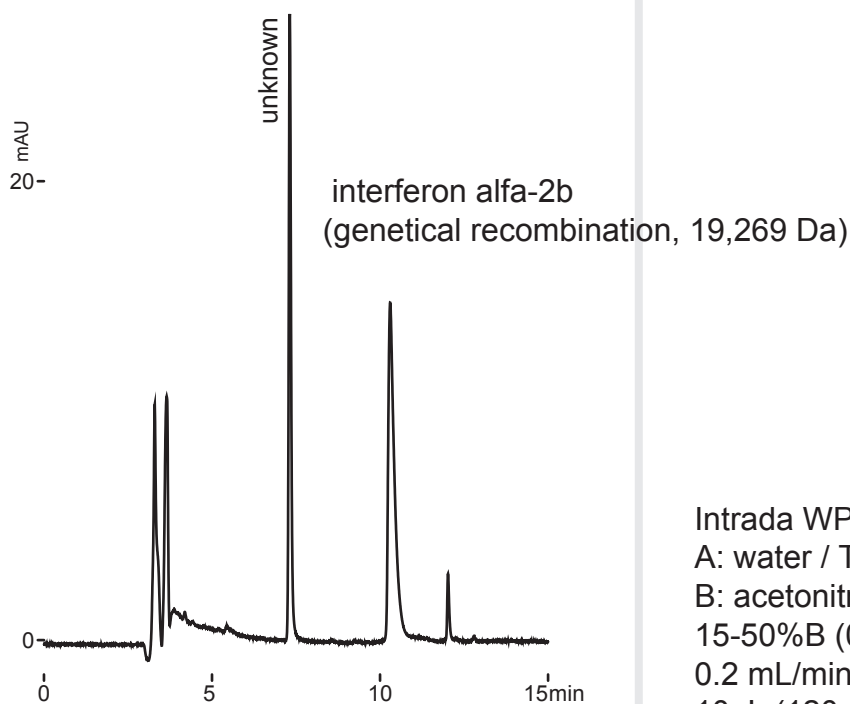
30 x 2 mm
250 x 2 mm

Application

Interferon
インターフェロン



Intrada WP-RP, 30 x 2mm
A: water / TFA = 100 / 0.1
B: acetonitrile / TFA = 100 / 0.07
20-45%B (0-0.5min), 45%B (0.5-1min)
0.8 mL/min(10 MPa), 37deg.C, 280nm
15uL (180ng)



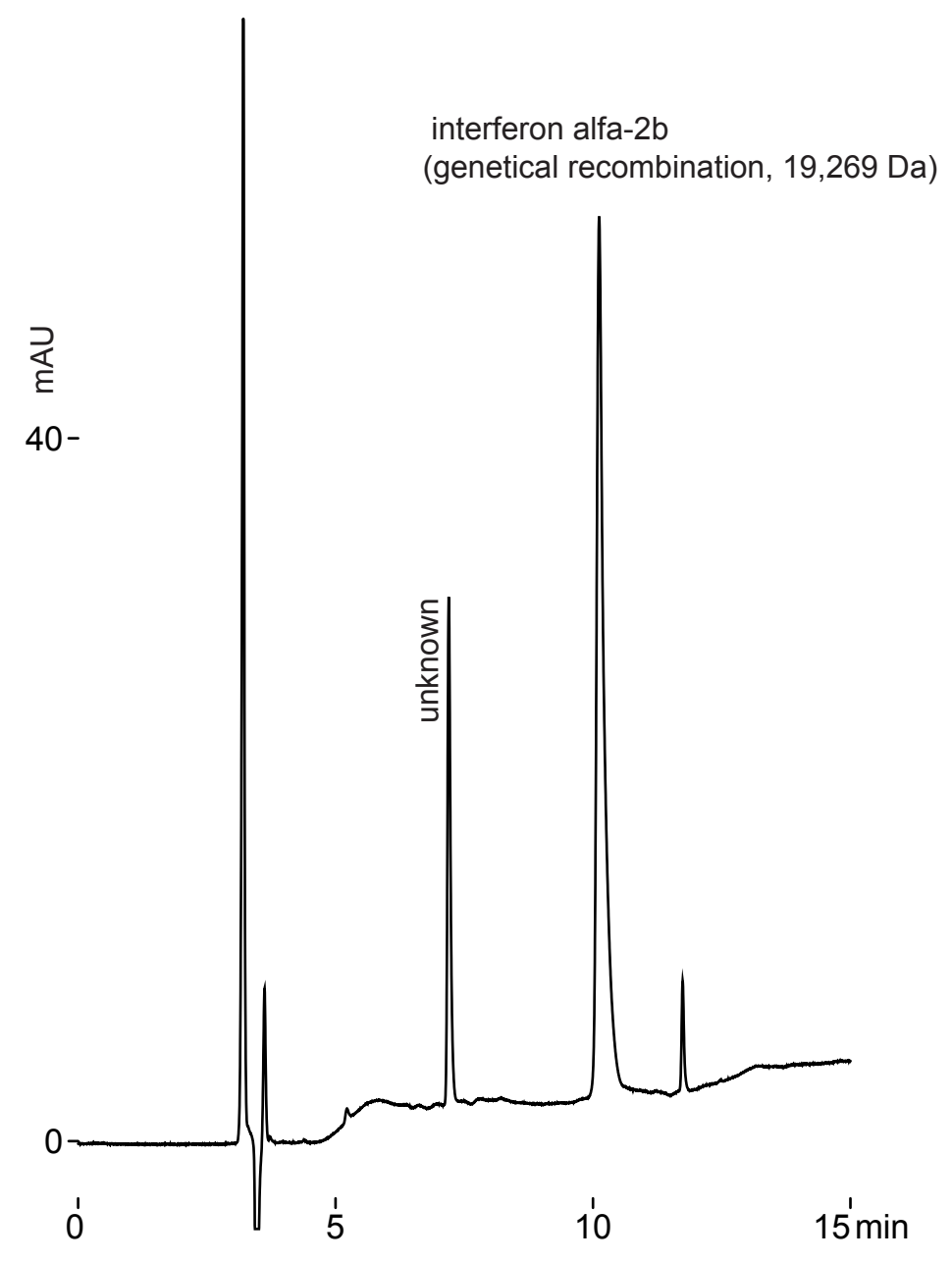
Intrada WP-RP, 250 x 2mm
A: water / TFA = 100 / 0.1
B: acetonitrile / TFA = 100 / 0.07
15-50%B (0-9min), 50%B (9-12min)
0.2 mL/min(13 MPa), 37deg.C, 280nm
10uL (120ng)

Intrada WP-RP

250 x 4.6 mm

Application

Interferon
インターフェロン

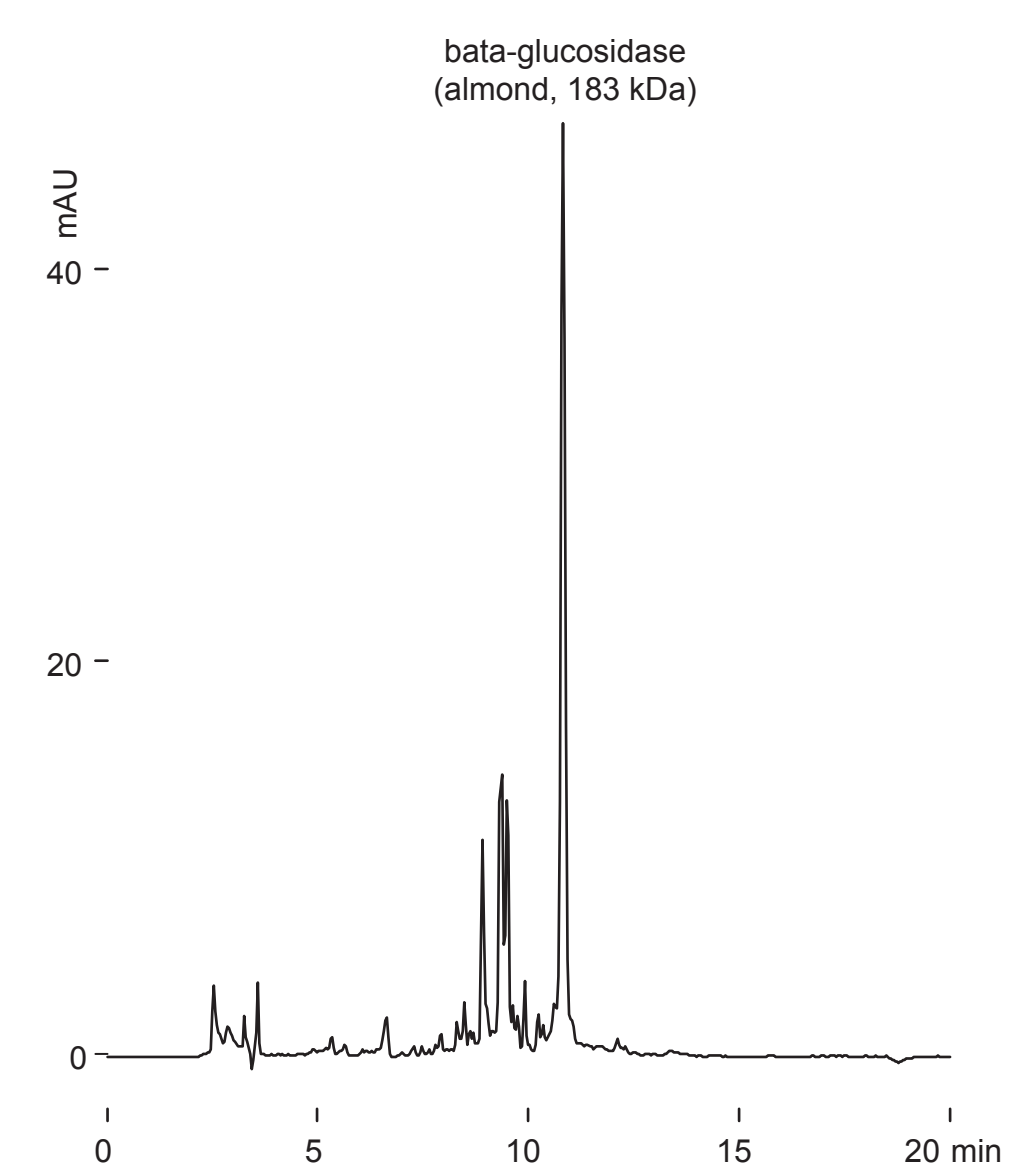


Intrada WP-RP, 250 x 4.6 mm
A: water / TFA = 100 / 0.1
B: acetonitrile / TFA = 100 / 0.07
15-50%B (0-9min), 50%B (9-12min)
1 mL/min (14 MPa), 37deg.C, 220nm
8uL (72ng)

Intrada WP-RP

250 x 4.6 mm

Application

Protein, beta-Glucosidaseタンパク質, β -グルコシダーゼ

Intrada WP- RP, 250 x 4.6 mm
A: water /TFA = 100 /0.1
B: acetonitrile /TFA = 100 /0.07
30-50%B (0-15min)
1.0 mL/min (16 MPa)
37 deg.C, 280 nm, 8 uL (42.4 ug)

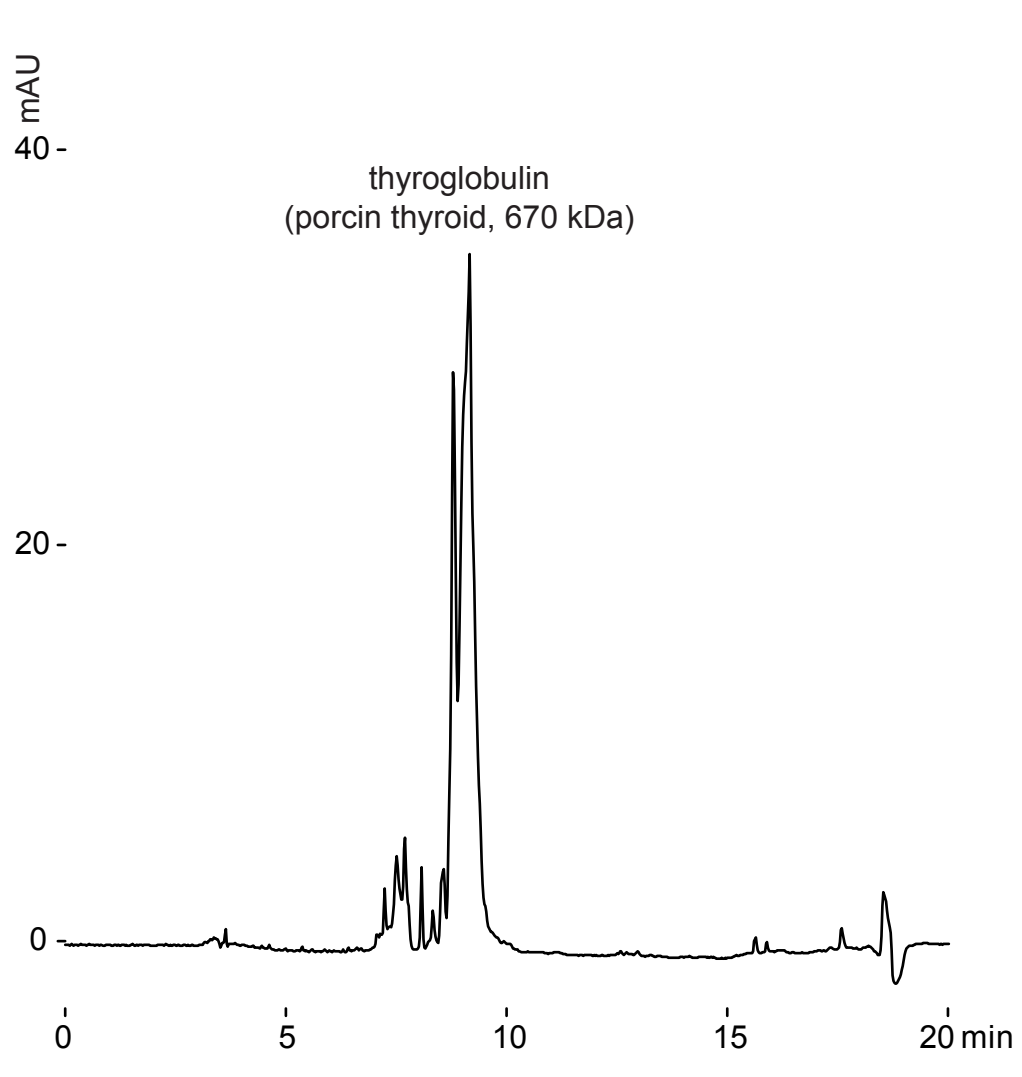
Intrada WP-RP

250 x 4.6 mm

Application

Protein, Thyroglobulin

タンパク質, サイログロブリン



Intrada WP- RP, 250 x 4.6 mm
A: water /TFA = 100 /0.1
B: acetonitrile /TFA = 100 /0.07
10-95%B (0-15min)
1.0 mL/min (16 MPa)
37 deg.C, 280 nm, 8 uL (40 ug)

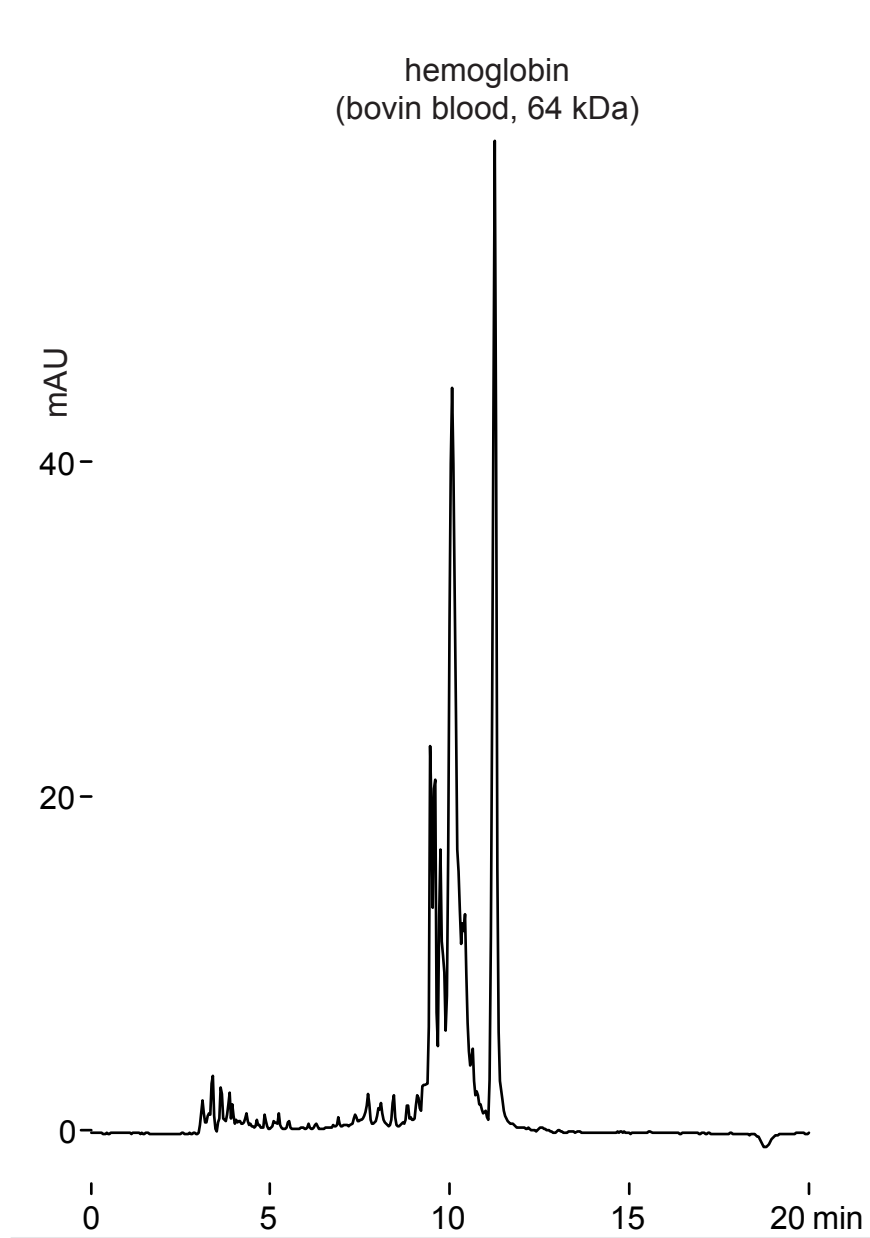
Intrada WP-RP

250 x 4.6 mm

Application

Protein, Hemoglobin

タンパク質, ヘモグロビン



Intrada WP- RP, 250 x 4.6 mm
A: water /TFA = 100 /0.1
B: acetonitrile /TFA = 100 /0.07
20-65%B (0-15min)
1.0 mL/min (16 MPa)
37 deg.C, 280 nm, 8 uL (42.4 ug)

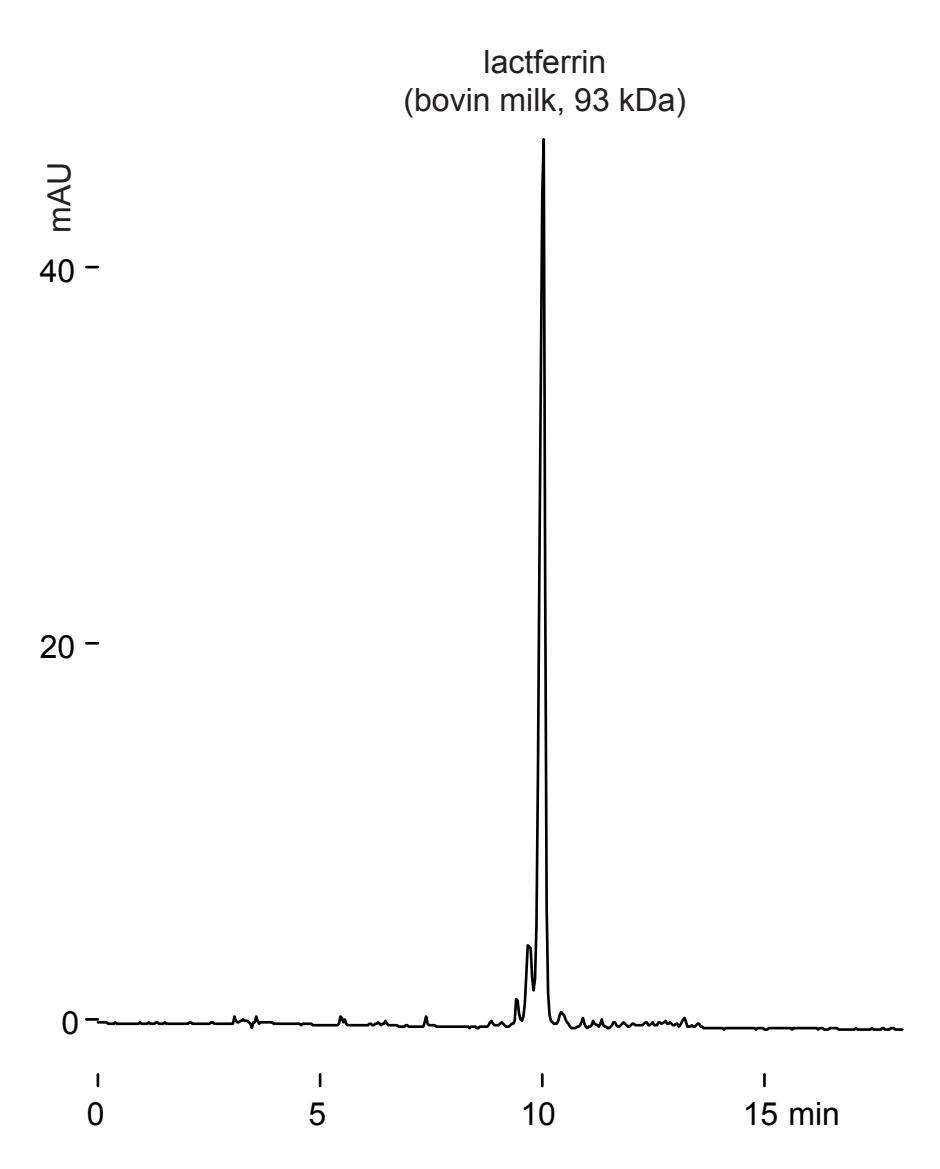
Intrada WP-RP

250 x 4.6 mm

Application

Protein, Lactferrin

タンパク質, ラクトフェリン



Intrada WP- RP, 250 x 4.6 mm
A: water /TFA = 100 /0.1
B: acetonitrile /TFA = 100 /0.07
20-50%B (0-15min)
1.0 mL/min (16 MPa)
37 deg.C, 280 nm, 3 uL (15.3ug)

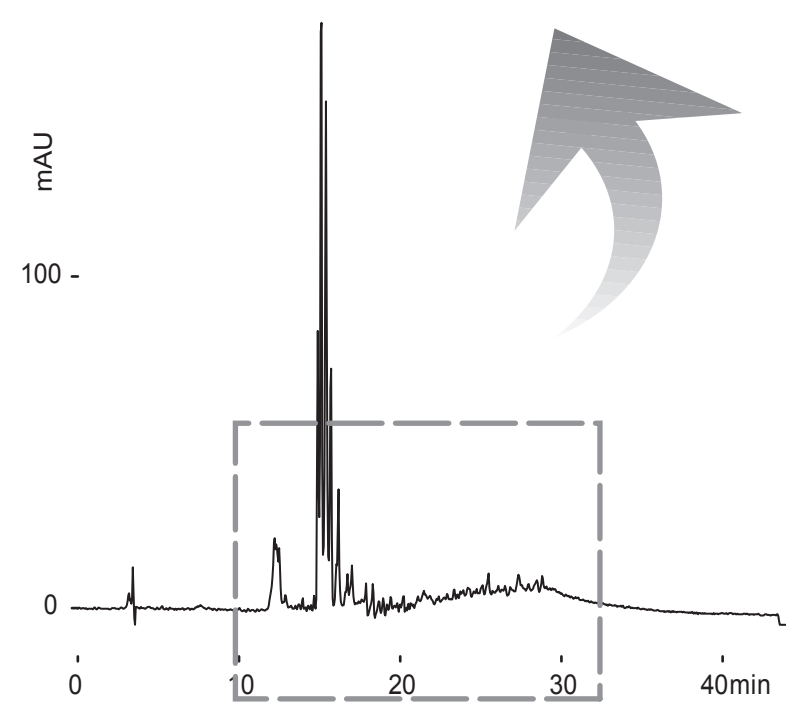
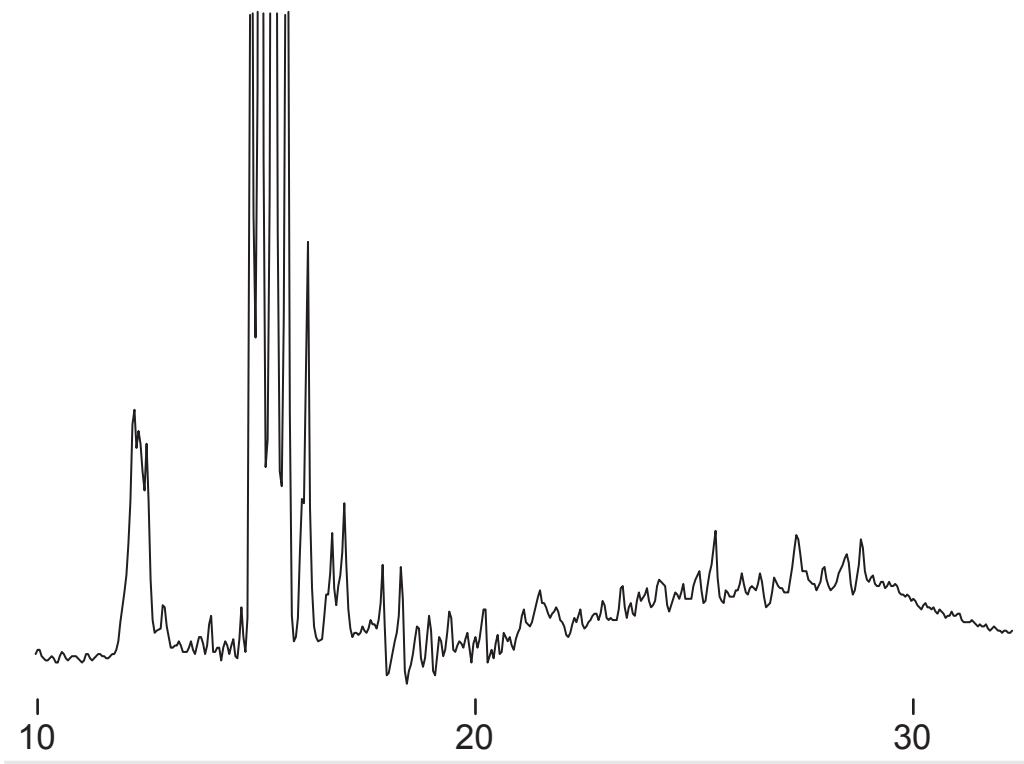
Intrada WP-RP

250 x 4.6 mm

Application

Bovin Serum

ウシ血清



Intrada WP- RP, 250 x 4.6 mm
A: water /TFA = 100 /0.1
B: acetonitrile /TFA = 100 /0.07
25-50%B (0-40min)
1.0 mL/min (16 MPa)
37 deg.C, 220 nm, 0.4 uL

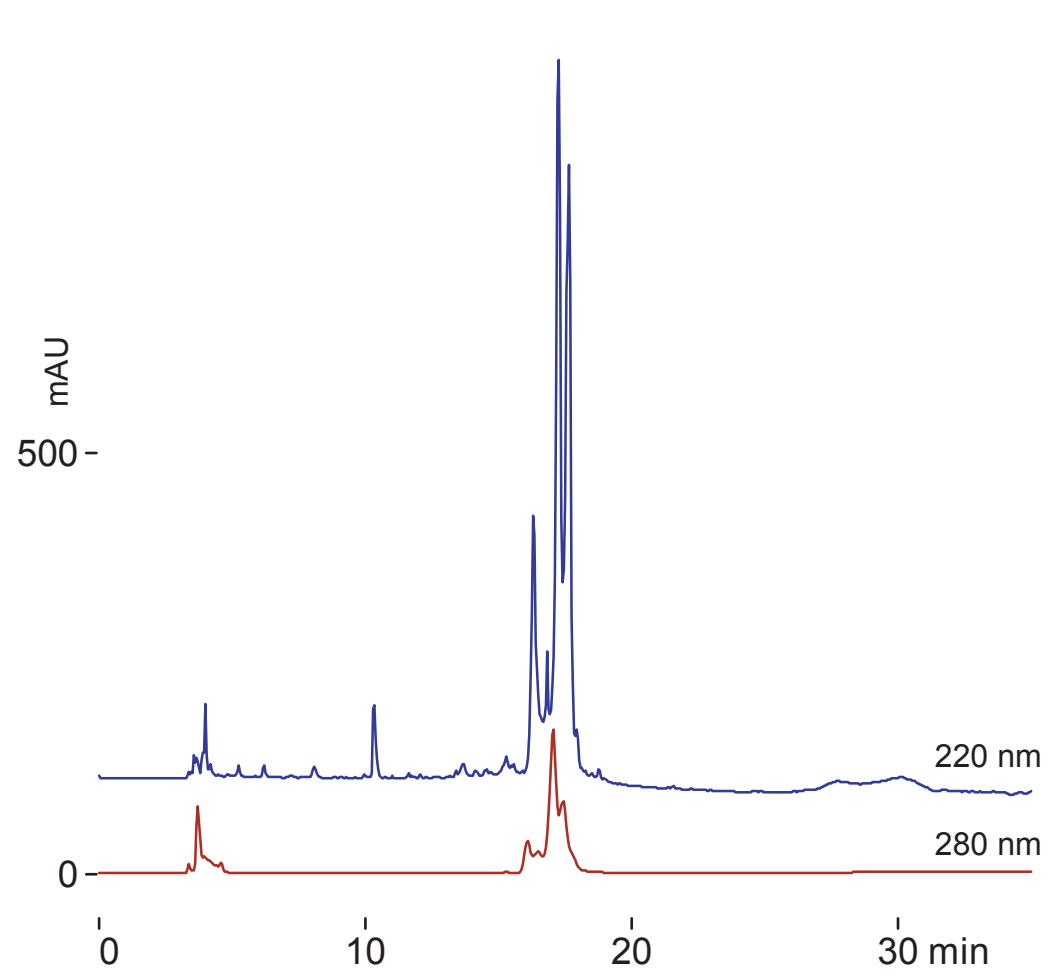
Intrada WP-RP

250 x 3 mm

Application

Bovine Milk

牛乳



Intrada WP-RP, 250 x 3 mm

A: water /trifluoroacetic acid = 100 /0.1,

B: acetonitrile /trifluoroacetic acid =100 /0.05

0-100%B (0-25min), 100%B(25-30min)

0.4 mL/min (12MPa), 37 deg.C, 5uL

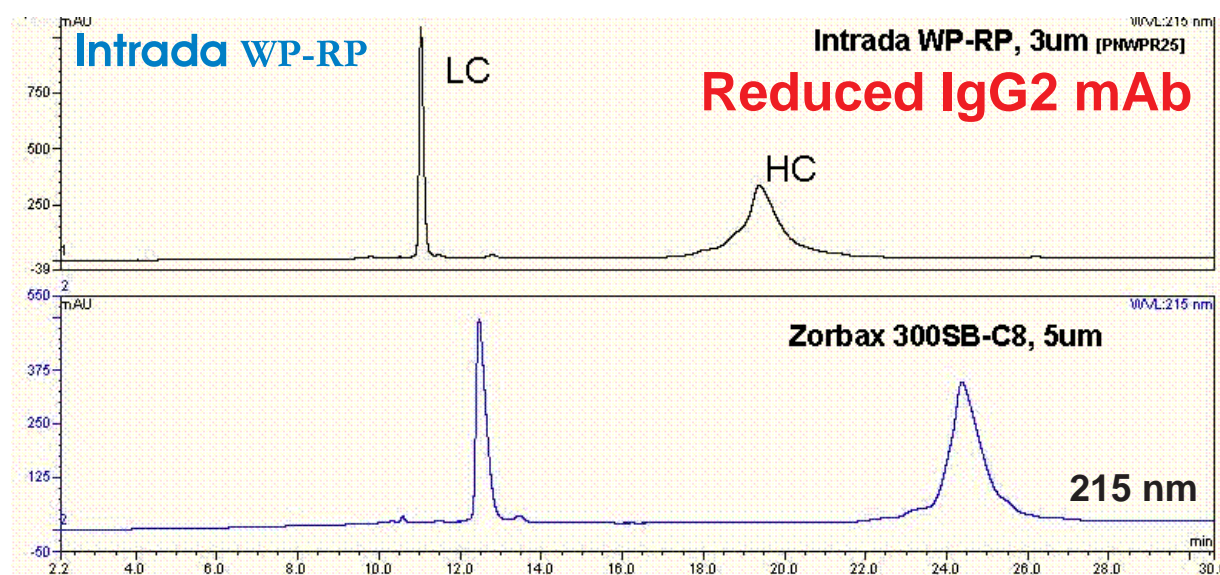
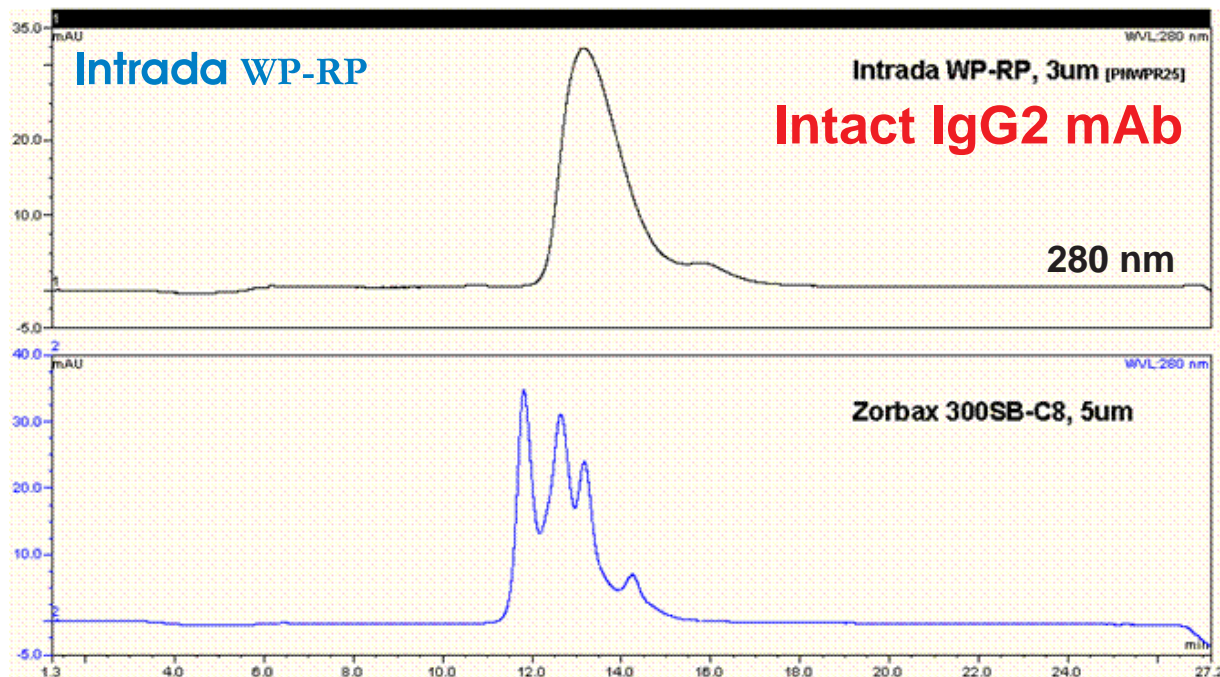
Intrada WP-RP

150 x 2 mm

Application

IgG2 mAb by reversed-phase analysis

IgG mAb の逆相分析



Ref.) T. M. Dillon ., P.V. Bondarenko, D.S. Rehder, G.D. Pipes, G. R. Kleemann, M.S. Ricci
Journal of Chromatography A, 1120 (2006) 112-120

Intrada WP-RP, 150 x 2 mm

A: 0.1% TFA, B: IPA /ACN /water /TFA = 70 /20 /9.9 /0.1

10%B (0-2 min), 25%B (2-4 min), 25-32%B (4-25 min)

0.5 mL/min, 75 deg.C, 280 nm (upper) or 215nm (lower)

Courtesy of Dr.Thomas Dillon, AMGEN Inc., USA

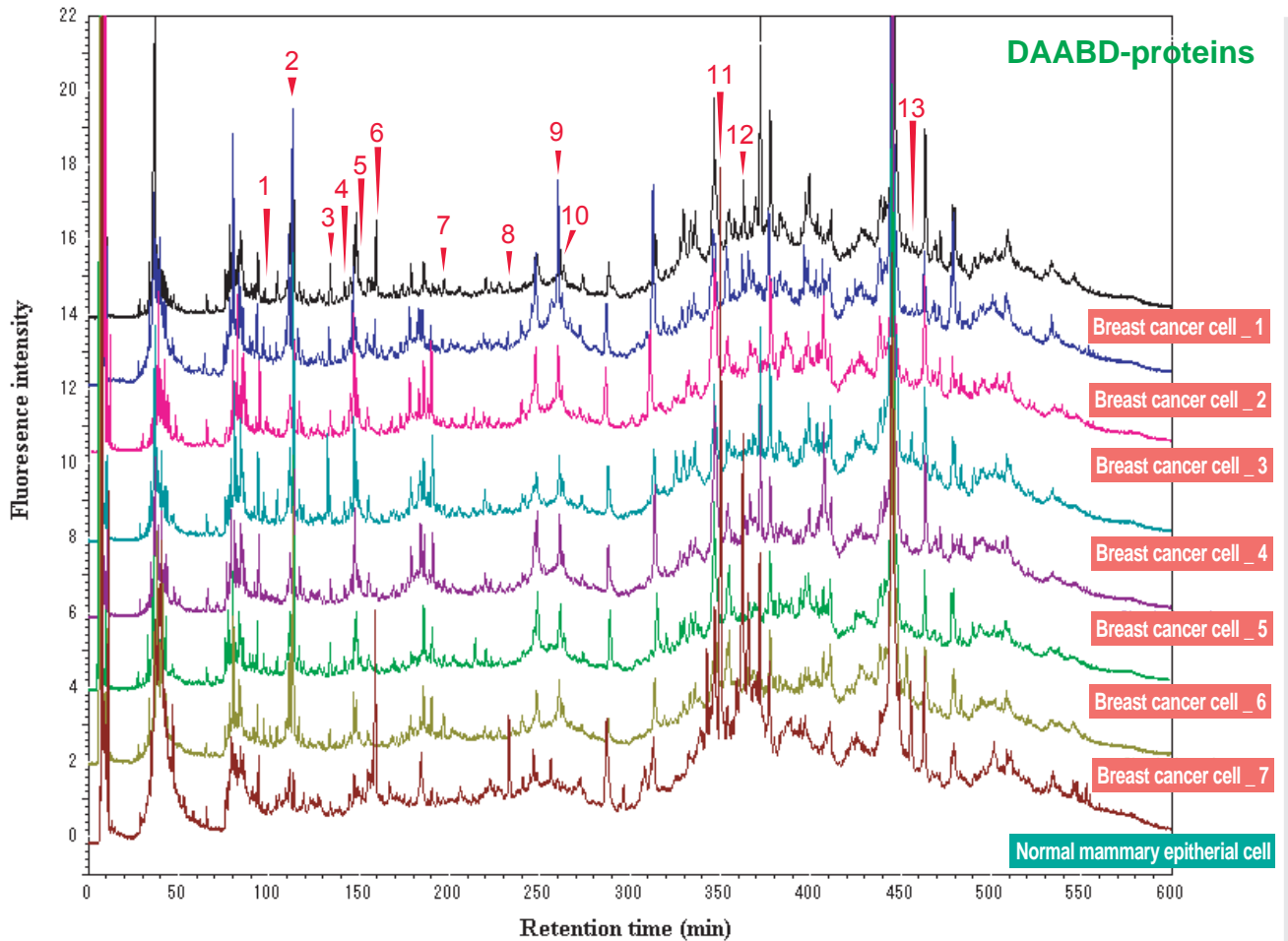
Intrada WP-RP

250 x 4.6 mm

Application

A proteomics study on human breast cancer cell lines by fluorogenic derivatization-liquid chromatography/tandem mass spectrometry

蛍光誘導体化 LC-MS/MS法による乳癌細胞のプロテオーム解析



Ref-1: *Biomedical Chromatography*, 2008, 22 (11), 1304-1314

Ref-2: *Journal of Proteome Research*, 2007, 6, 2841-2849

Intrada WP-RP, 250 x 4.6 mm

A: 0.15% TFA in (acetonitrile /isopropanol /water = 9 /1 /90)

B: 0.15% TFA in (acetonitrile /isopropanol /water = 69 /1 /30)

C: 0.20% TFA in (acetonitrile /isopropanol /water = 9 /1 /90)

5%B,1%C(0-5min), 5-30%B,1-35%C (5-30min), 30%B,35%C(30-65min)

30-35%B,35%C(65-70min), 35-38%B,35%C(70-130min)

38-44%B,35-55%C(130-250min), 44%B,55%C(250-300min)

44-47%B,55-53%B(300-330min), 47-60%B,53-40%C(330-480min)

60-70%B,40-30%C(480-520min), 70-90%B,30-10%C(520-570min)

0.55 mL/min, 60 deg.C, FLD(Ex.395nm, Em.505nm)

Courtesy of Kazuhiro Imai, Ph.D. Dhc., Professor & Dean, Musashino University, Japan

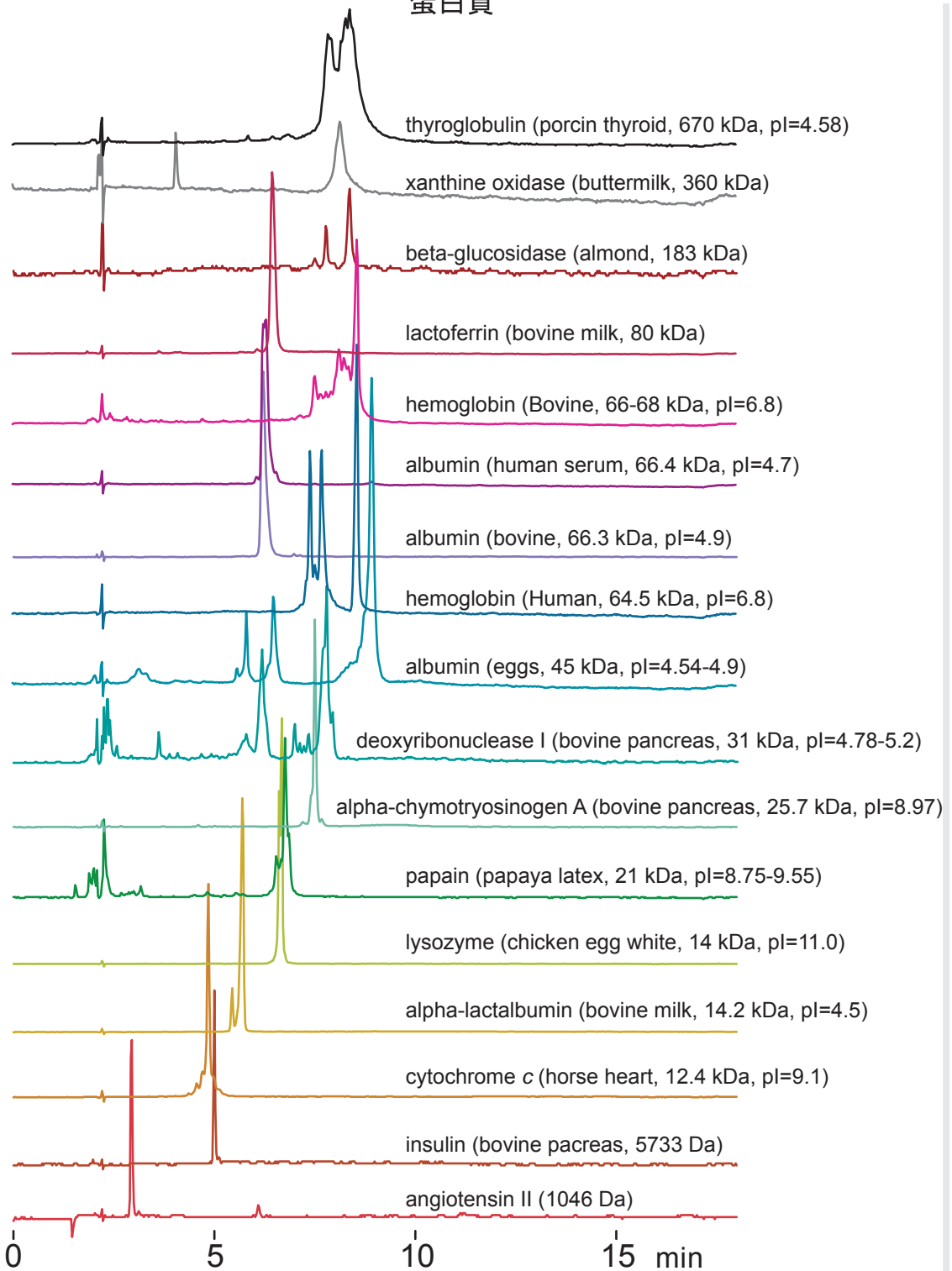
Intrada WP-RP

150 x 4.6 mm

Application

Proteins

蛋白質



Intrada WP-RP, 150 x 4.6 mm, 1 mL/min, 37 degC, 280 nm
 A: water /TFA=100 /0.1, B: ACN /TFA=100 /0.1, 20-70%B (0-15min)

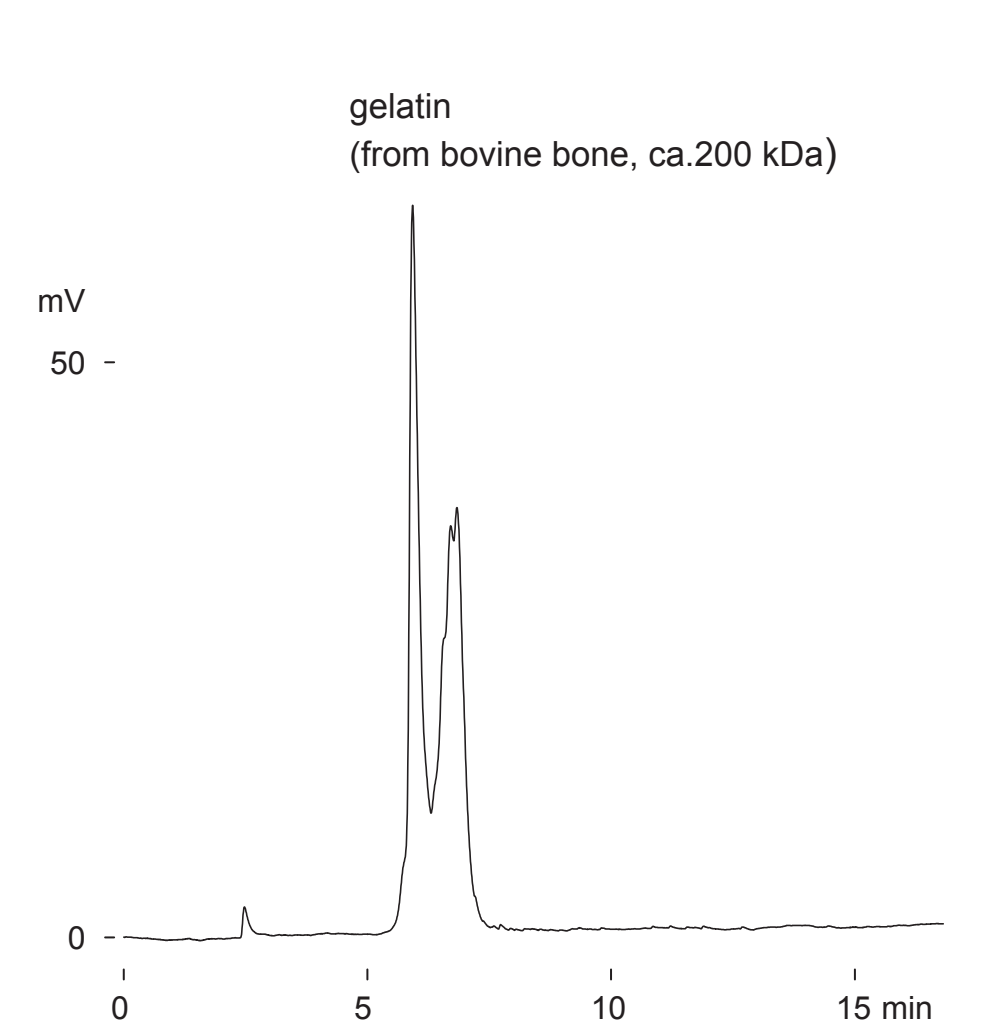
Presto FF-C18

150 x 4.6 mm

Application

Gelatin

ゼラチン(牛骨由来)



Presto FF-C18, 150 x 4.6mm

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

10-90 %B (0-15min), 0.4 mL/min (19MPa), 37 deg.C

ELSD (spray chamber 50deg.C, drift tube 100deg.C)

2 uL (10ug)

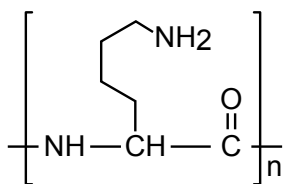
Presto FF-C18

250 x 4.6 mm

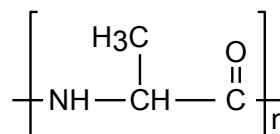
Application

Polyamino acids

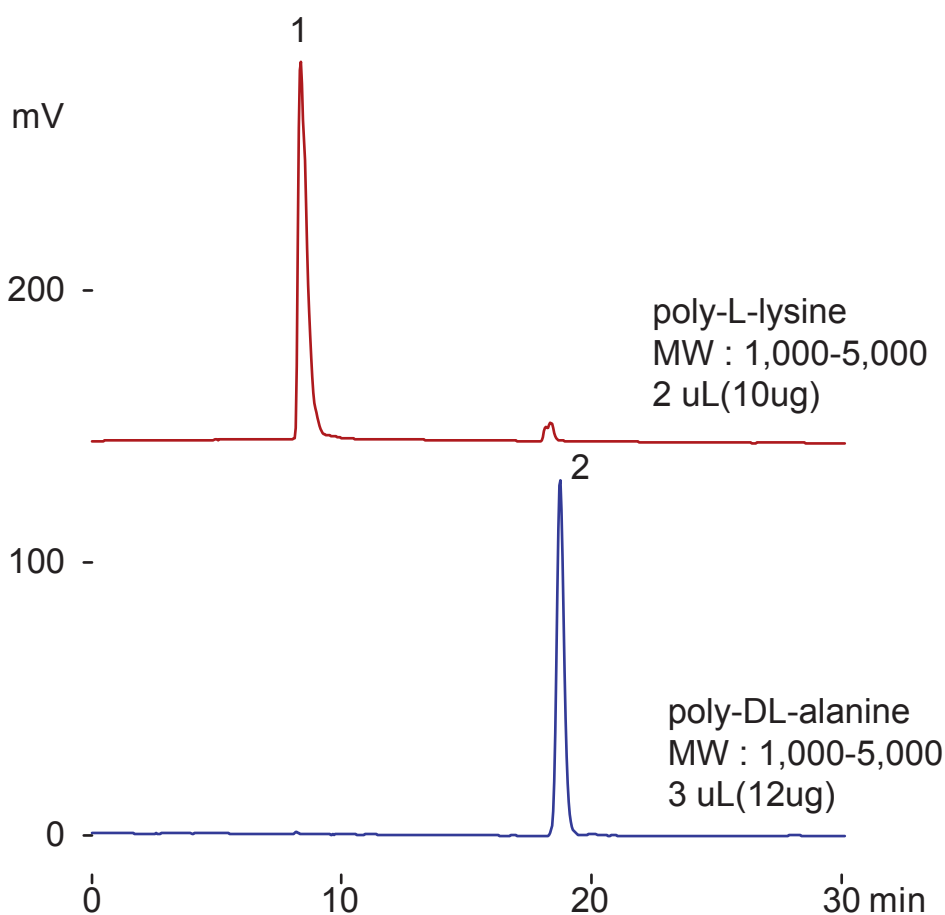
ポリアミノ酸



poly-L-lysine
MW : 1,000-5,000



poly-DL-alanine
MW : 1,000-5,000



Presto FF-C18, 250 x 4.6 mm

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

0-60 %B (0-20min)

0.2 mL/min (13MPa), 37 deg.C

ELSD (spray chamber 15 deg.C, drift tube 80 deg.C)

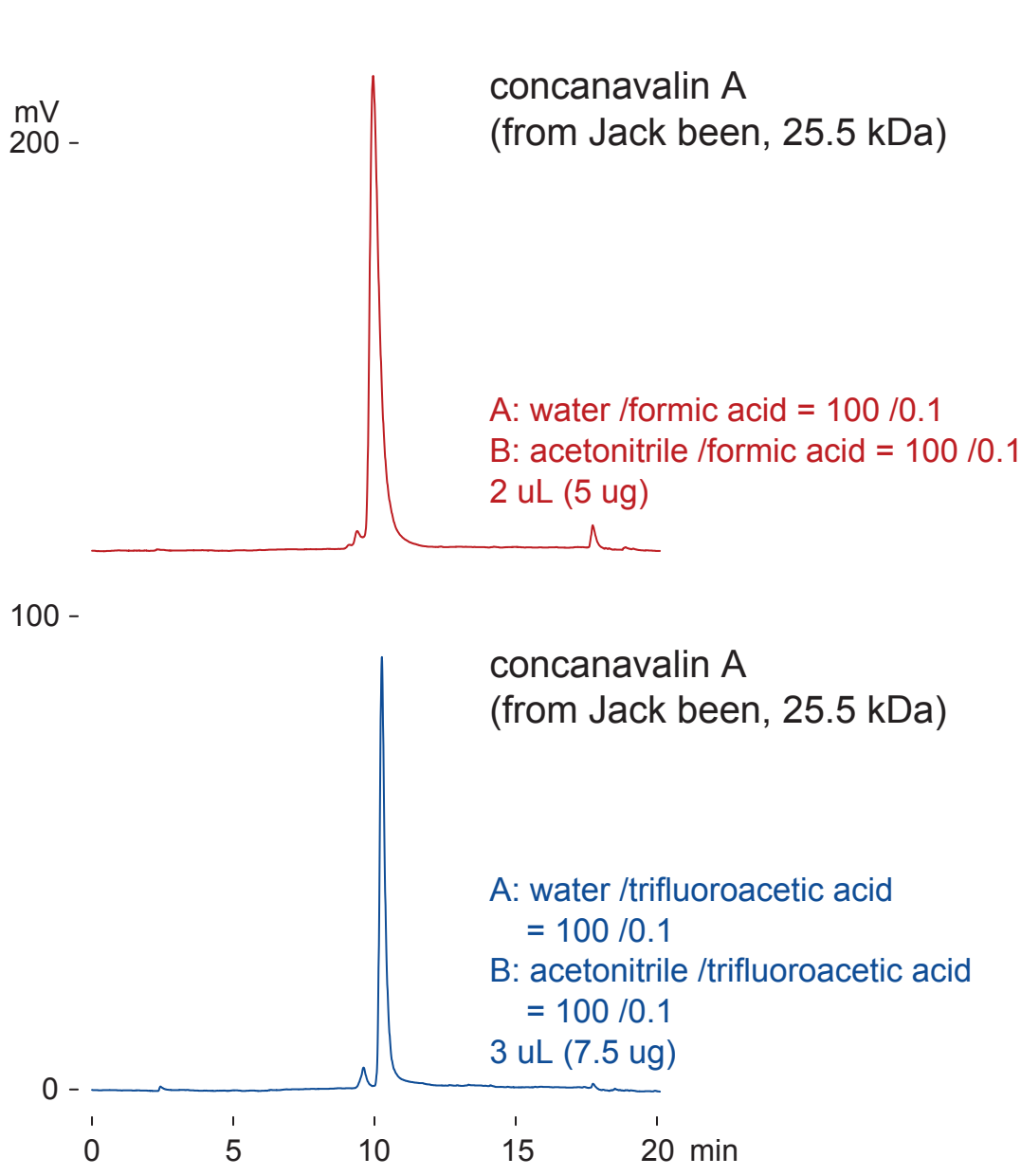
Presto FF-C18

150 x 4.6 mm

Application

Lectin (concanavalin A)

レクチン (コンカナバリン A)



Presto FF-C18, 150 x 4.6 mm

0-90 %B (0-15min)

0.4 mL/min (14 MPa), 50 deg.C

ELSD (spray chamber 50 deg.C, drift tube 100 deg.C)

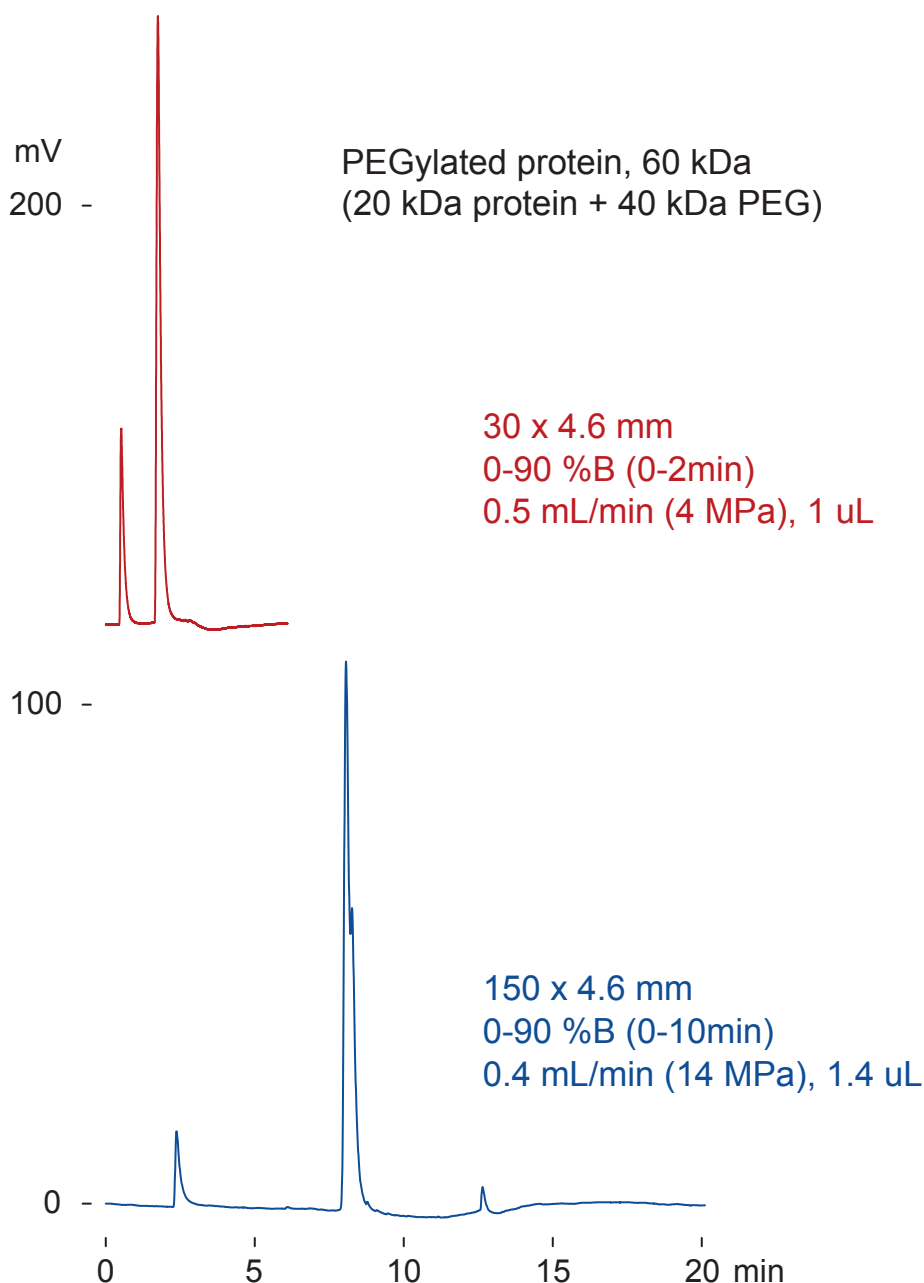
Presto FF-C18

30 x 4.6 mm
150 x 4.6 mm

Application

PEGylated protein

PEG化タンパク質



Presto FF-C18

A: water / formic acid = 100 / 0.1

B: acetonitrile / formic acid = 100 / 0.1

50 deg.C, ELSD (spray chamber 50 deg.C, drift tube 100 deg.C)

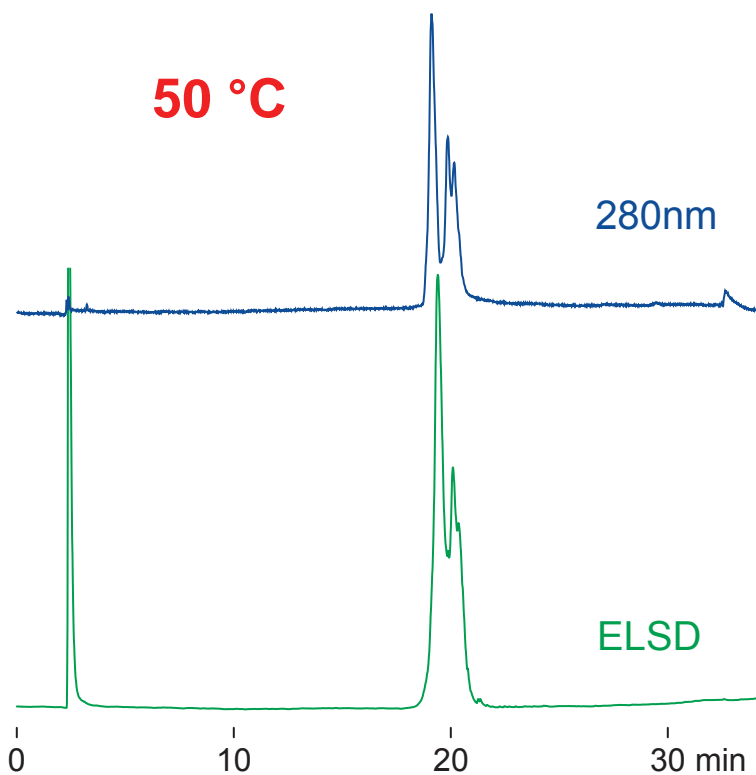
Presto FF-C18

150 x 4.6 mm

Application

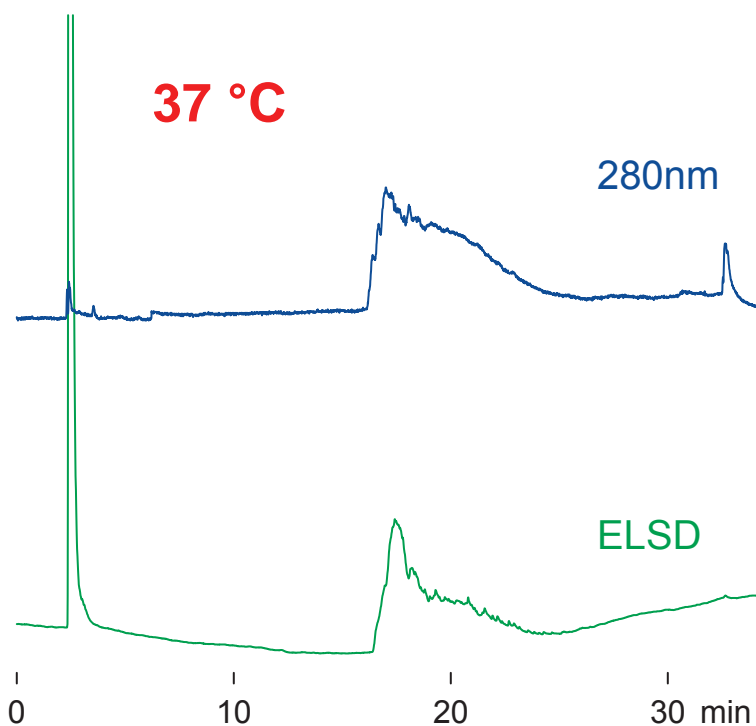
PEGylated protein (2)

PEG化タンパク質



PEGylated protein, 60 kDa
(20 kDa protein + 40 kDa PEG)

Presto FF-C18, 150 x 4.6 mm
A: water /trifluoroacetic acid
= 100 / 0.1
B: acetonitrile /trifluoroacetic acid
= 100 / 0.1
20-70 %B (0-30min)
0.4 mL/min (15 MPa)
1 μ L



PEGylated protein, 60 kDa
(20 kDa protein + 40 kDa PEG)

Presto FF-C18, 150 x 4.6 mm
A: water /trifluoroacetic acid
= 100 / 0.1
B: acetonitrile /trifluoroacetic acid
= 100 / 0.1
20-70 %B (0-30min)
0.4 mL/min (19 MPa)
1 μ L

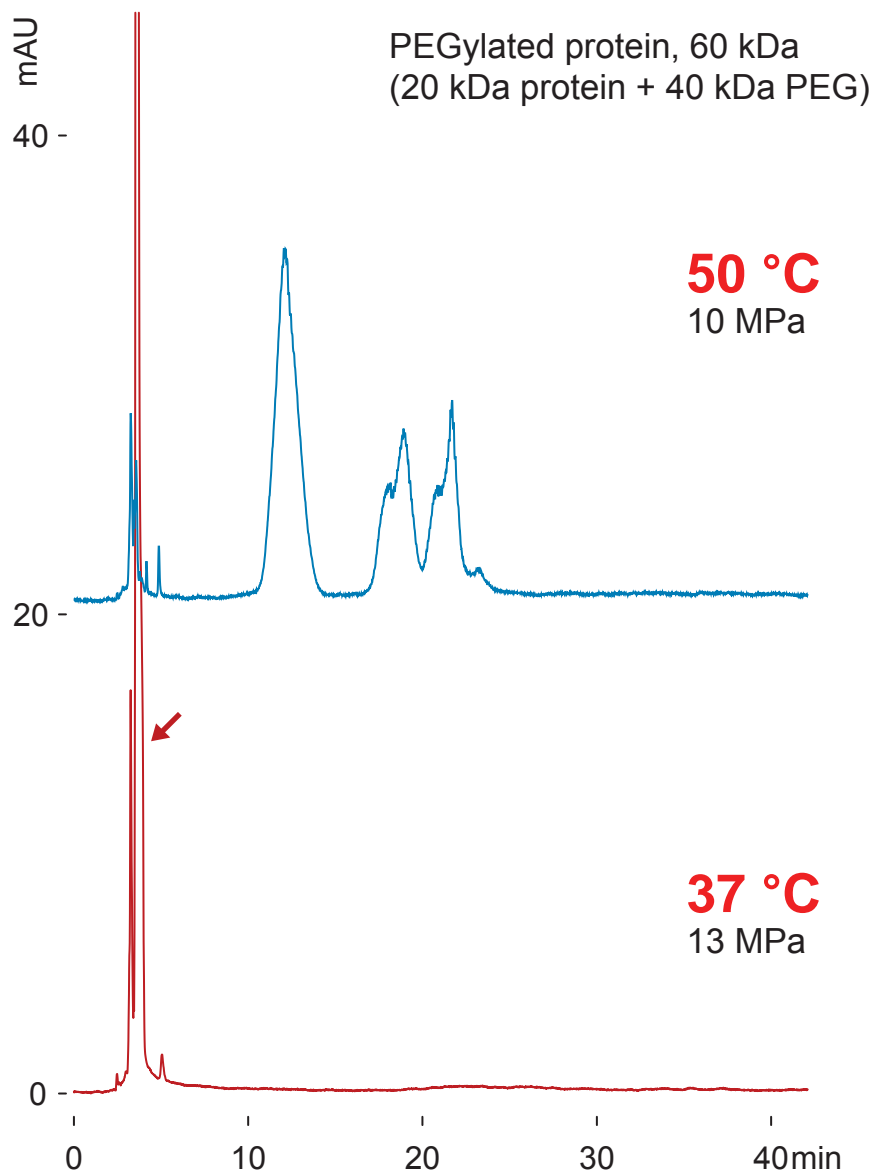
Cadenza CW-C18

250 x 3 mm

Application

PEGylated protein (3)

PEG化タンパク質



Cadenza CW-C18, 250 x 3 mm
A: water / trifluoroacetic acid = 100 / 0.1
B: acetonitrile / trifluoroacetic acid = 100 / 0.1
50-57 %B (0-40min)
0.4 mL/min, 280 nm, 5 uL

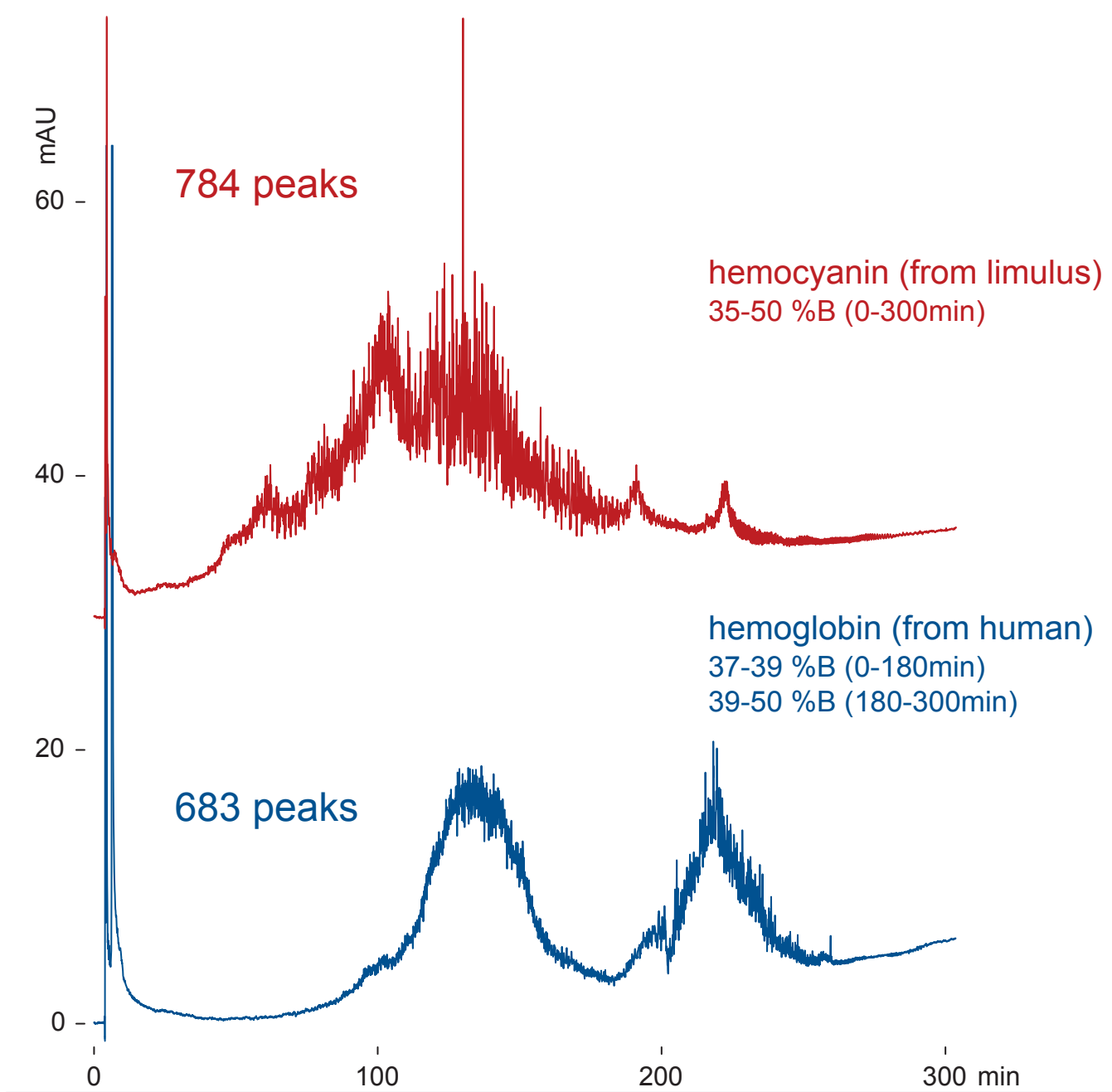
Presto FF-C18

250 x 4.6 mm

Application

Hemocyanin and hemoglobin

ヘモシアニンとヘモグロビン



Presto FF-C18, 250 x 4.6 mm

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

0.4 mL/min (22 MPa), 50 deg.C, 220 nm

20 uL (100 ug, water or 0.02%TFA)

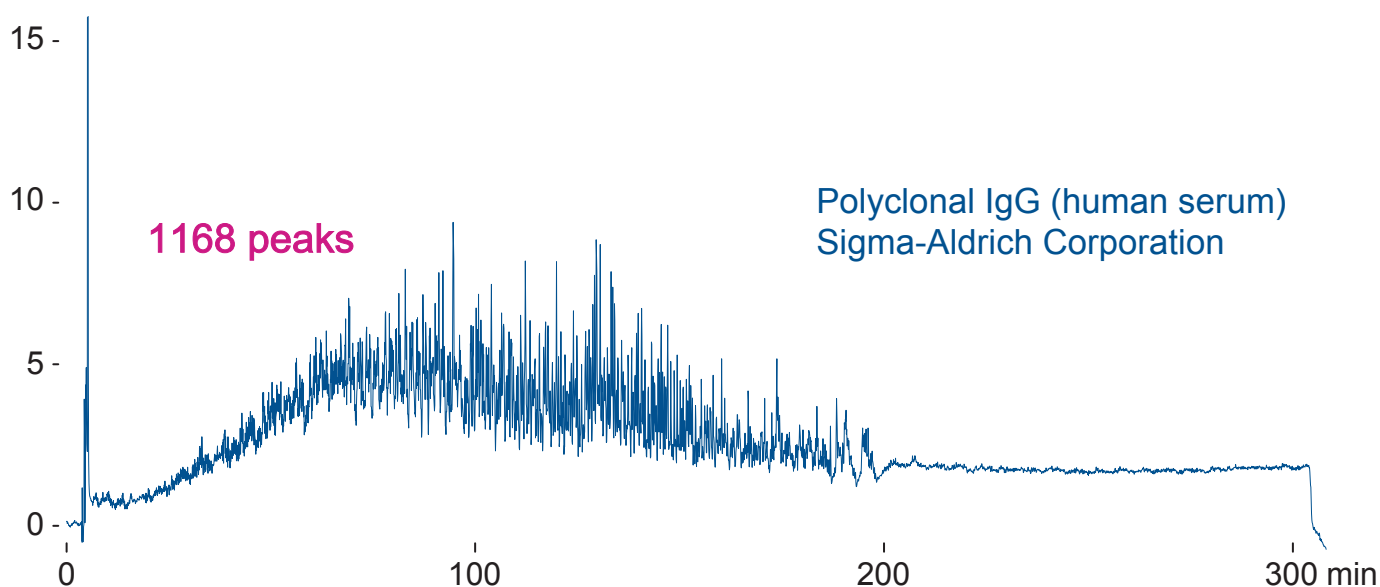
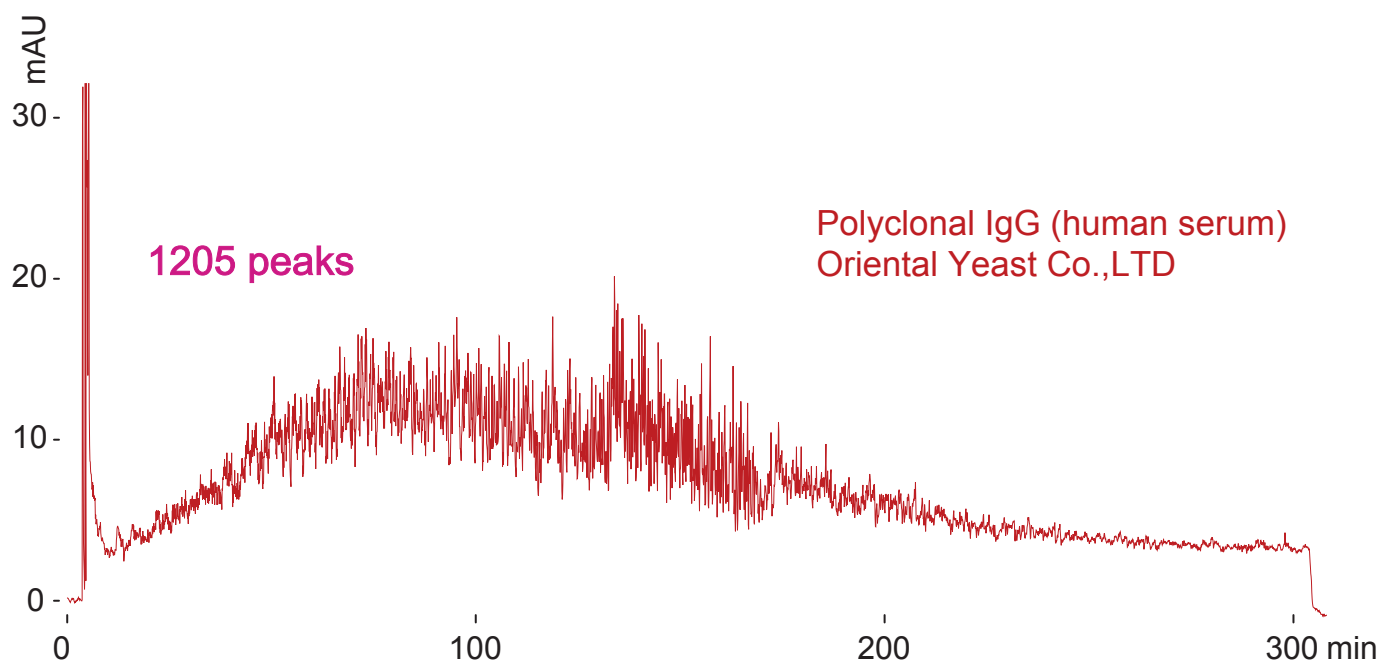
Presto FF-C18

250 x 4.6 mm

Application

Polyclonal IgG (from human serum)

ポリクローナル抗体 (ヒト血清)



Presto FF-C18, 250 x 4.6 mm
 A: water / trifluoroacetic acid = 100 / 0.1
 B: acetonitrile / trifluoroacetic acid = 100 / 0.1
 33-38 %B (0-300min)
 0.4 mL/min (15MPa), 80 deg.C, 220nm
 10 uL (30-100 ug)

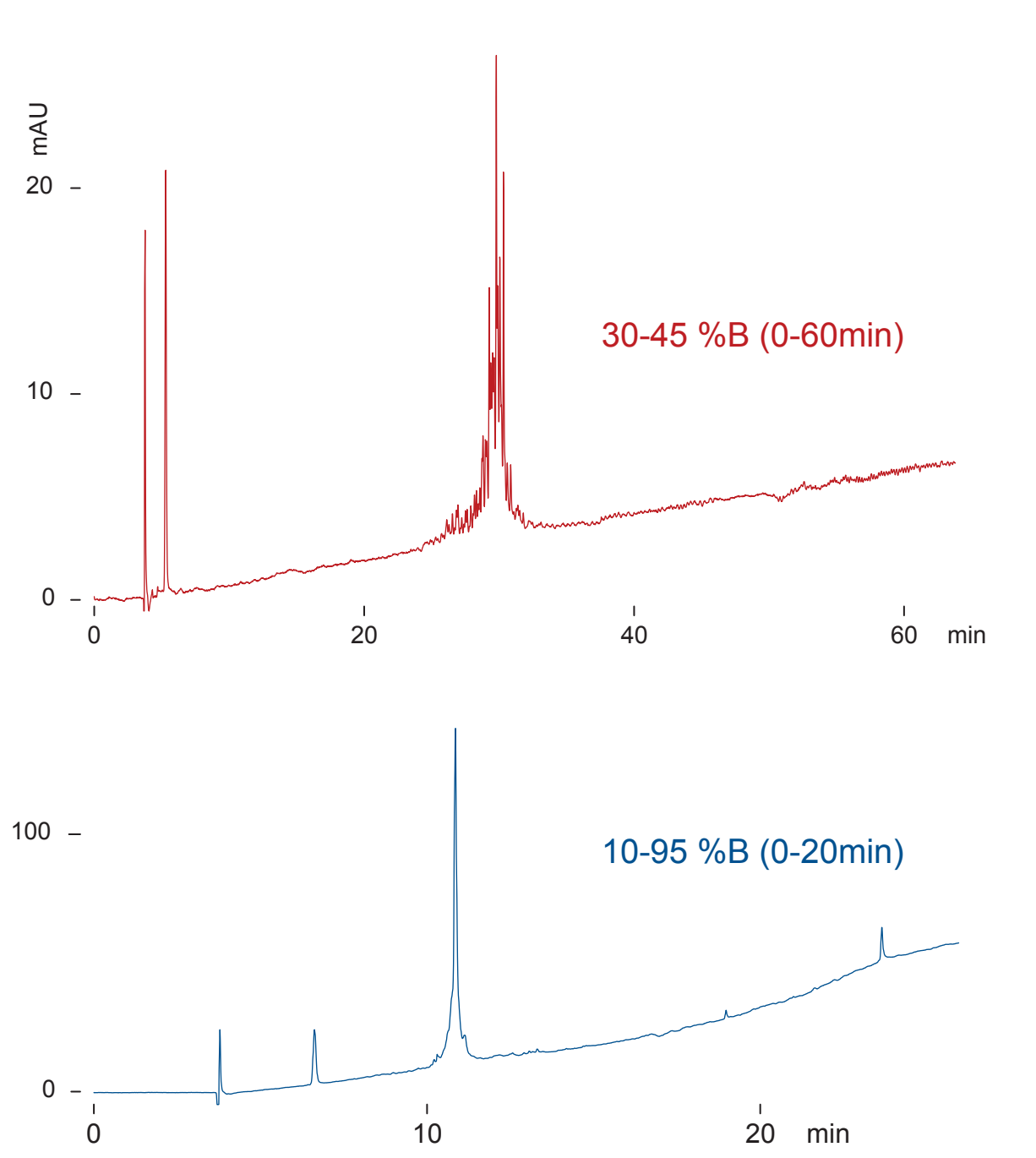
Presto FF-C18

250 x 4.6 mm

Application

Gradient slopes affecting mAb separation

モノクローナル抗体の分離に与えるグラジエント勾配の影響



Presto FF-C18, 250 x 4.6 mm

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

0.4 mL/min (15MPa), 80 deg.C, 220nm

2 uL (anti-AFP, 2 ug)

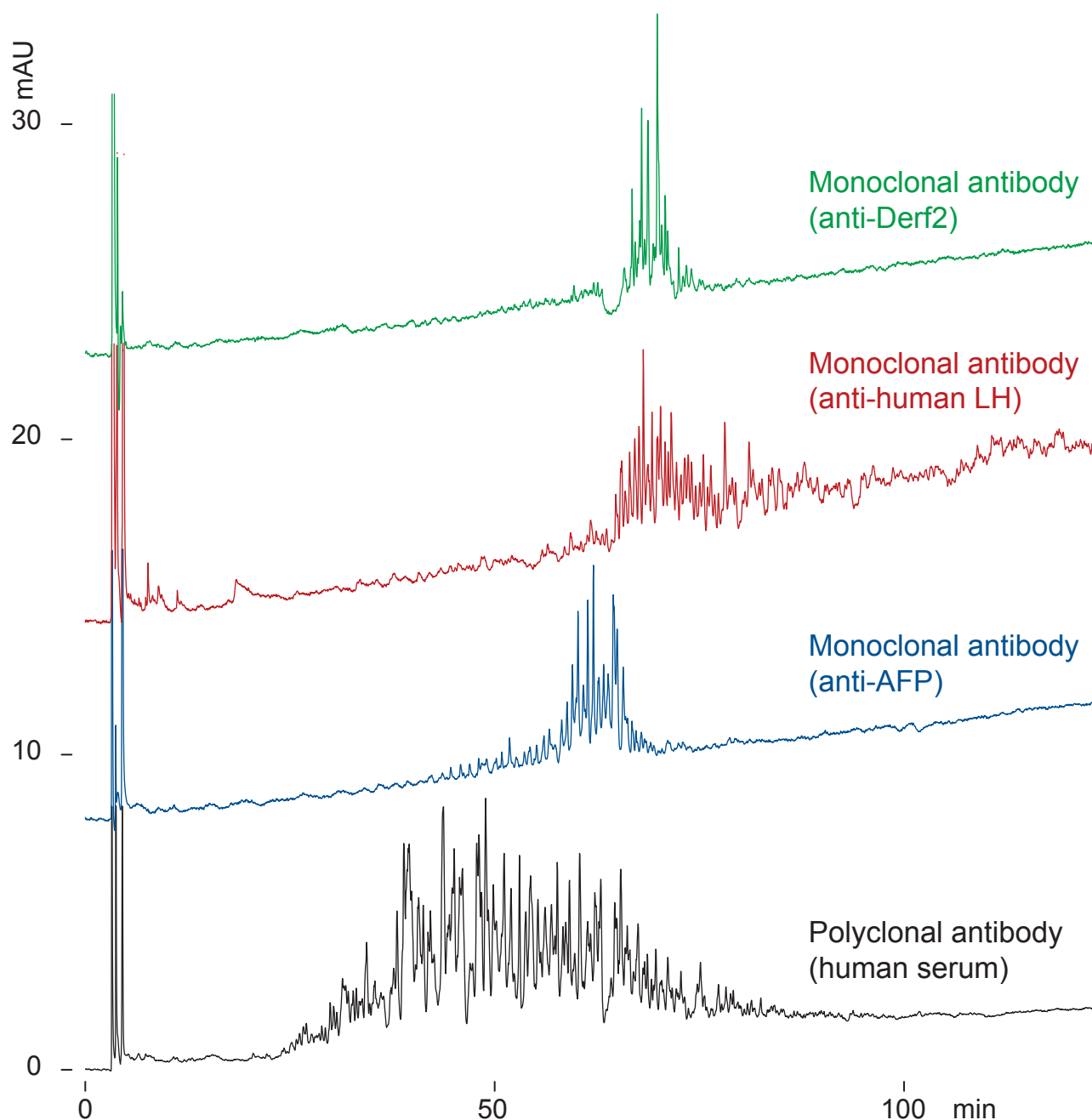
Presto FF-C18

250 x 3 mm

Application

Monoclonal and polyclonal antibodies

モノクローナル抗体とポリクローナル抗体



Presto FF-C18, 250 x 3 mm

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1
32-40 %B (0-120min)

0.2 mL/min (17MPa), 80 deg.C, 220nm

2-10 uL (2-10 ug)

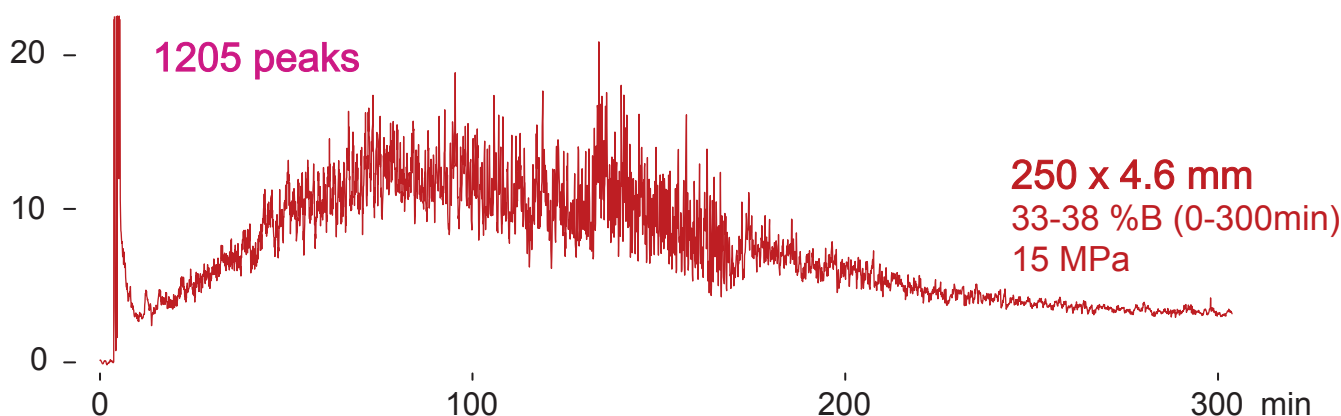
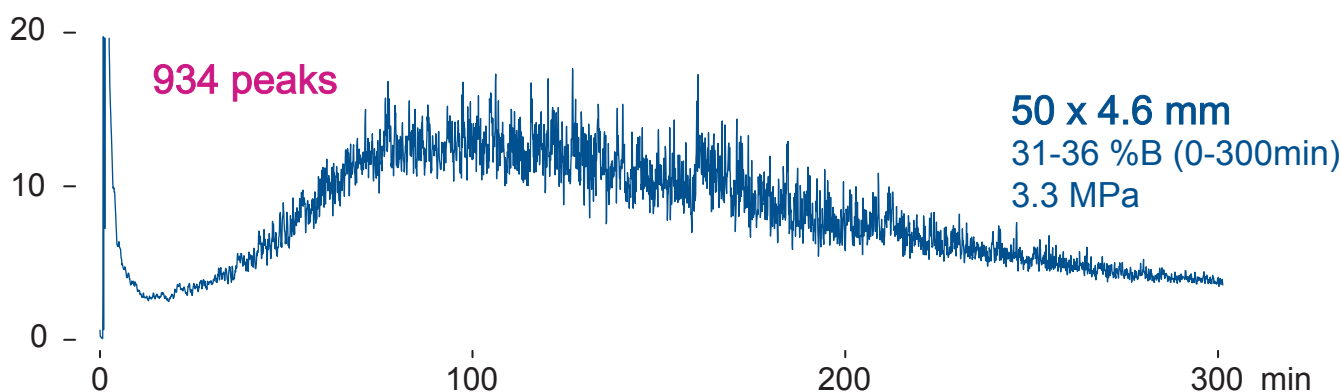
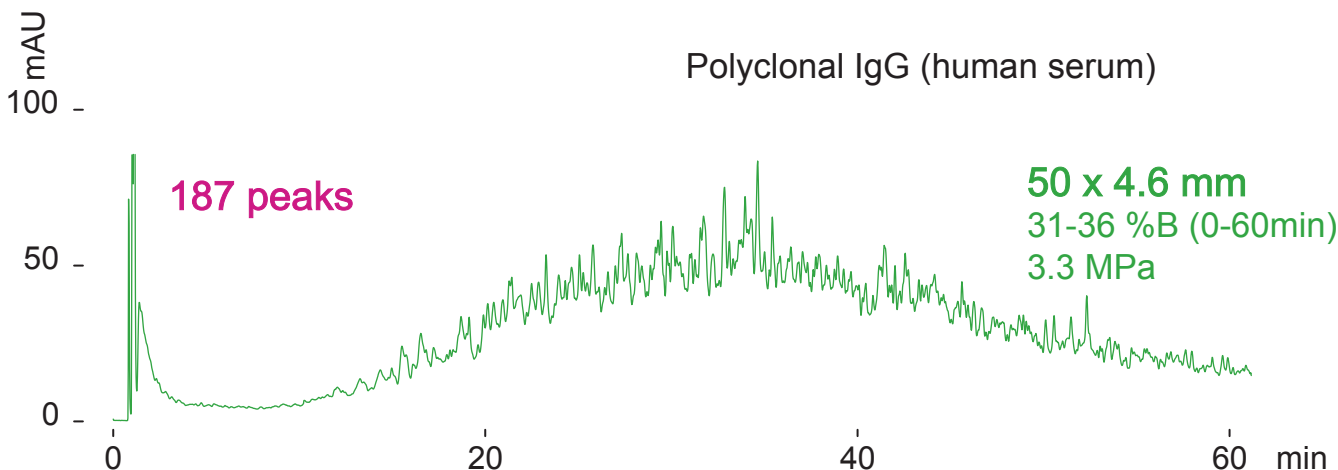
Presto FF-C18

250 x 4.6 mm
50 x 4.6 mm

Application

The effect of column length on resolution for polyclonal IgG

ポリクローナル抗体の分離性能に及ぼすカラム長の影響



Presto FF-C18

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

0.4 mL/min, 80 deg.C, 220nm, 10 uL (100 ug)

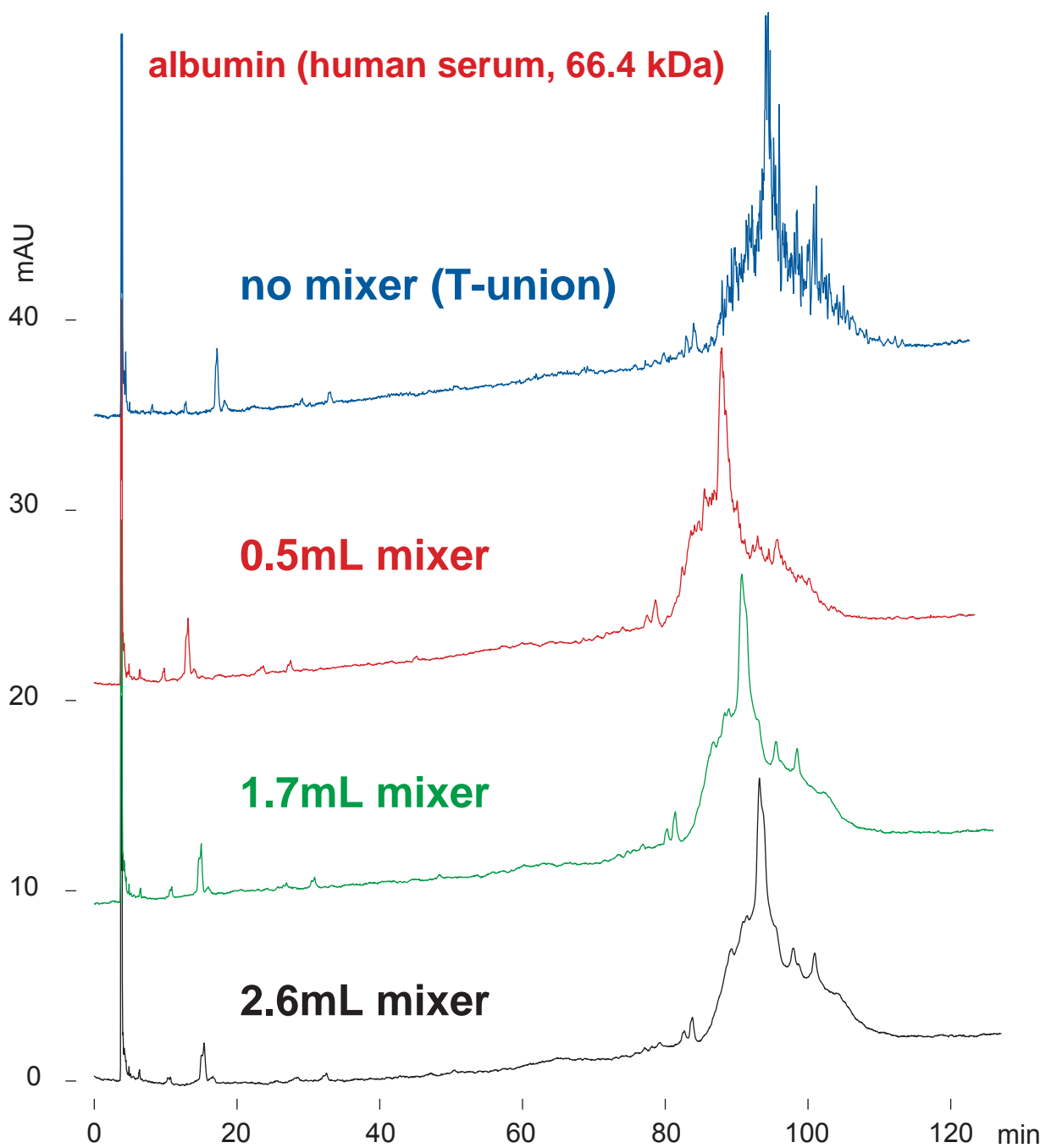
Presto FF-C18

250 x 4.6 mm

Application

Gragient mixer volume affecting HSA separation

ヒト血清アルブミンの分離に与えるグラジエントミキサー容量の影響



Presto FF-C18, 250 x 4.6 mm

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

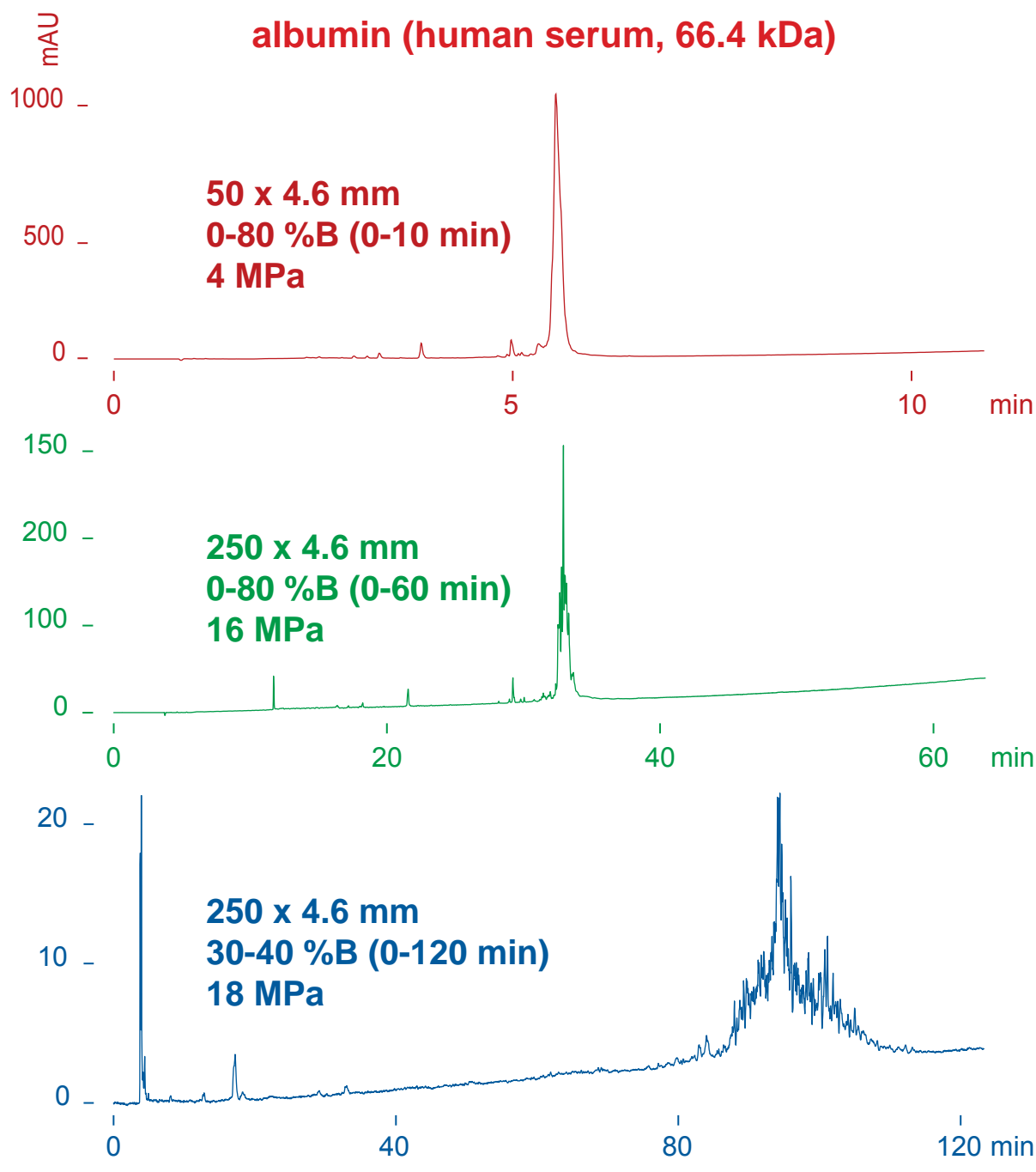
30-40 %B (0-120 min)

0.4 mL/min (18 MPa), 80 deg.C, 220 nm, 1.2 uL (12 ug)

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

The effect of gradient slope and column length for HSA separation

ヒト血清アルブミンの分離に与えるグラジエント勾配とカラム長さの影響



Presto FF-C18
A: water / trifluoroacetic acid = 100 / 0.1
B: acetonitrile / trifluoroacetic acid = 100 / 0.1
0.4 mL/min, 80 deg.C, 220 nm, 1.2 uL (12 ug)

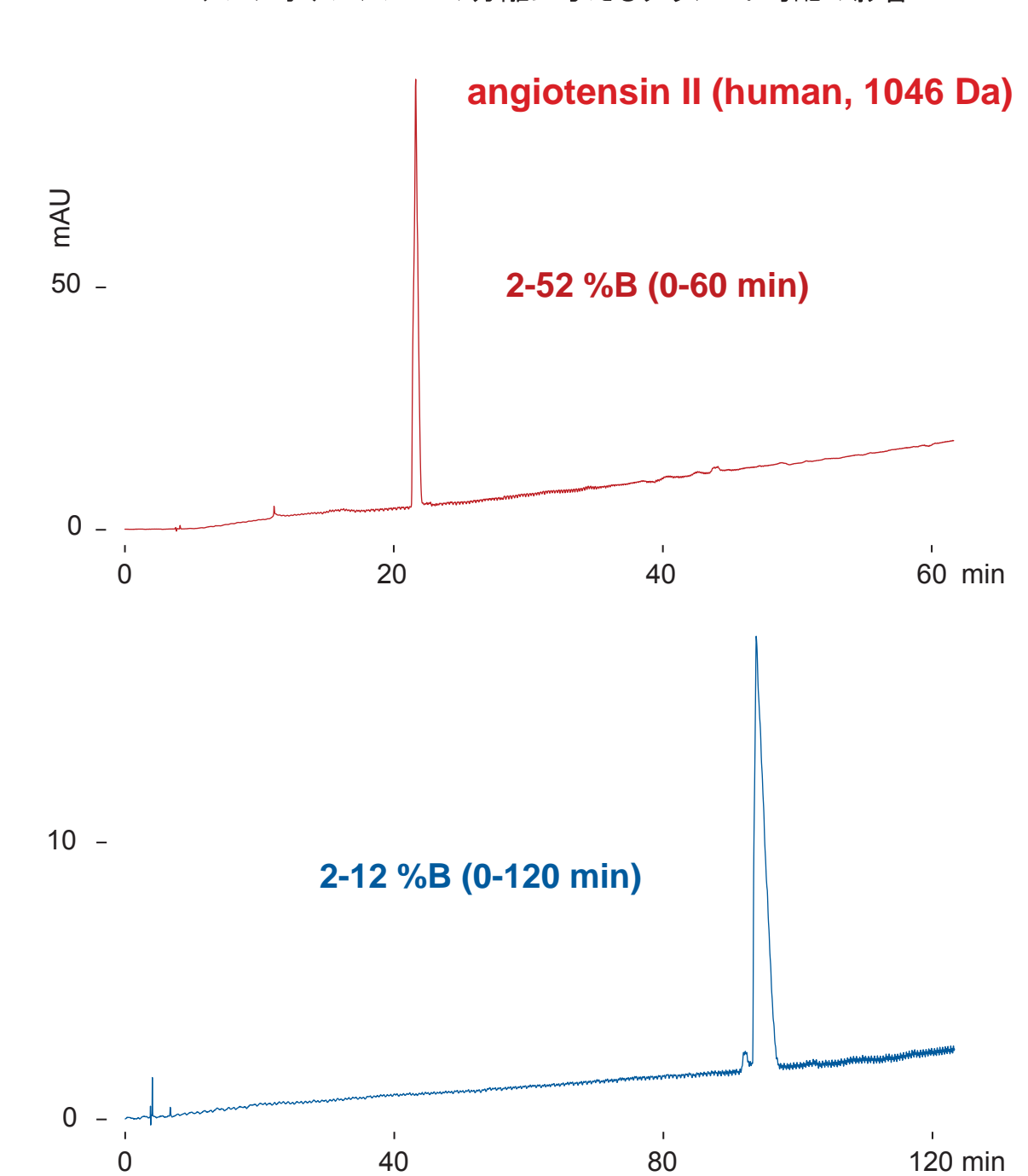
Presto FF-C18

250 x 4.6 mm

Application

The effect of gradient slope for angiotensin II separation

アンジオテンシン II の分離に与えるグラジエント勾配の影響



Presto FF-C18, 250 x 4.6 mm

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

0.4 mL/min (16 MPa), 80 deg.C, 220 nm, 1 μ L (1 μ g)

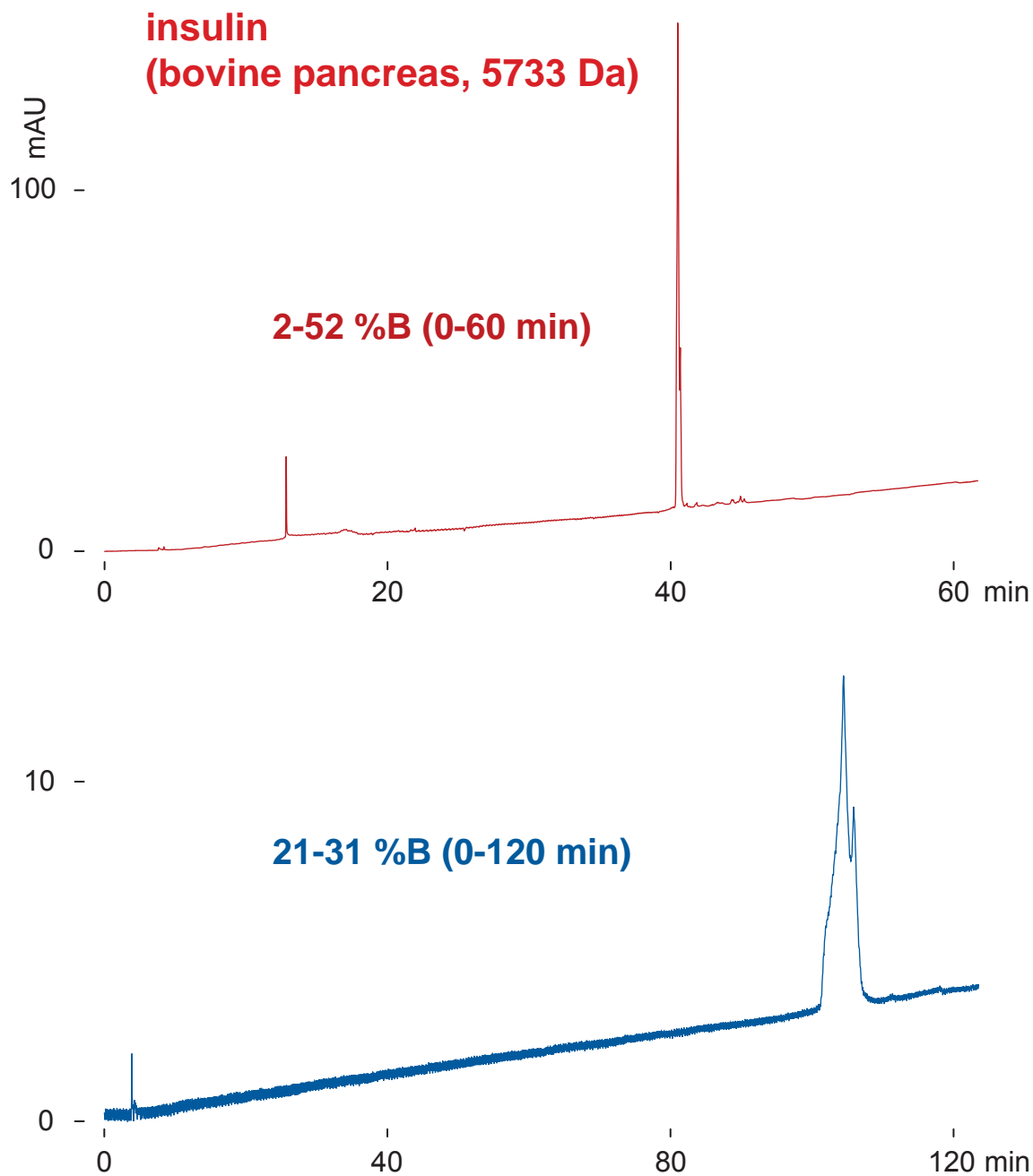
Presto FF-C18

250 x 4.6 mm

Application

The effect of gradient slope for insulin separation

インスリンの分離に与えるグラジエント勾配の影響



Presto FF-C18, 250 x 4.6 mm
 A: water / trifluoroacetic acid = 100 / 0.1
 B: acetonitrile / trifluoroacetic acid = 100 / 0.1
 0.4 mL/min (16 MPa), 80 deg.C, 220 nm, 1.6 uL (1.6 ug)

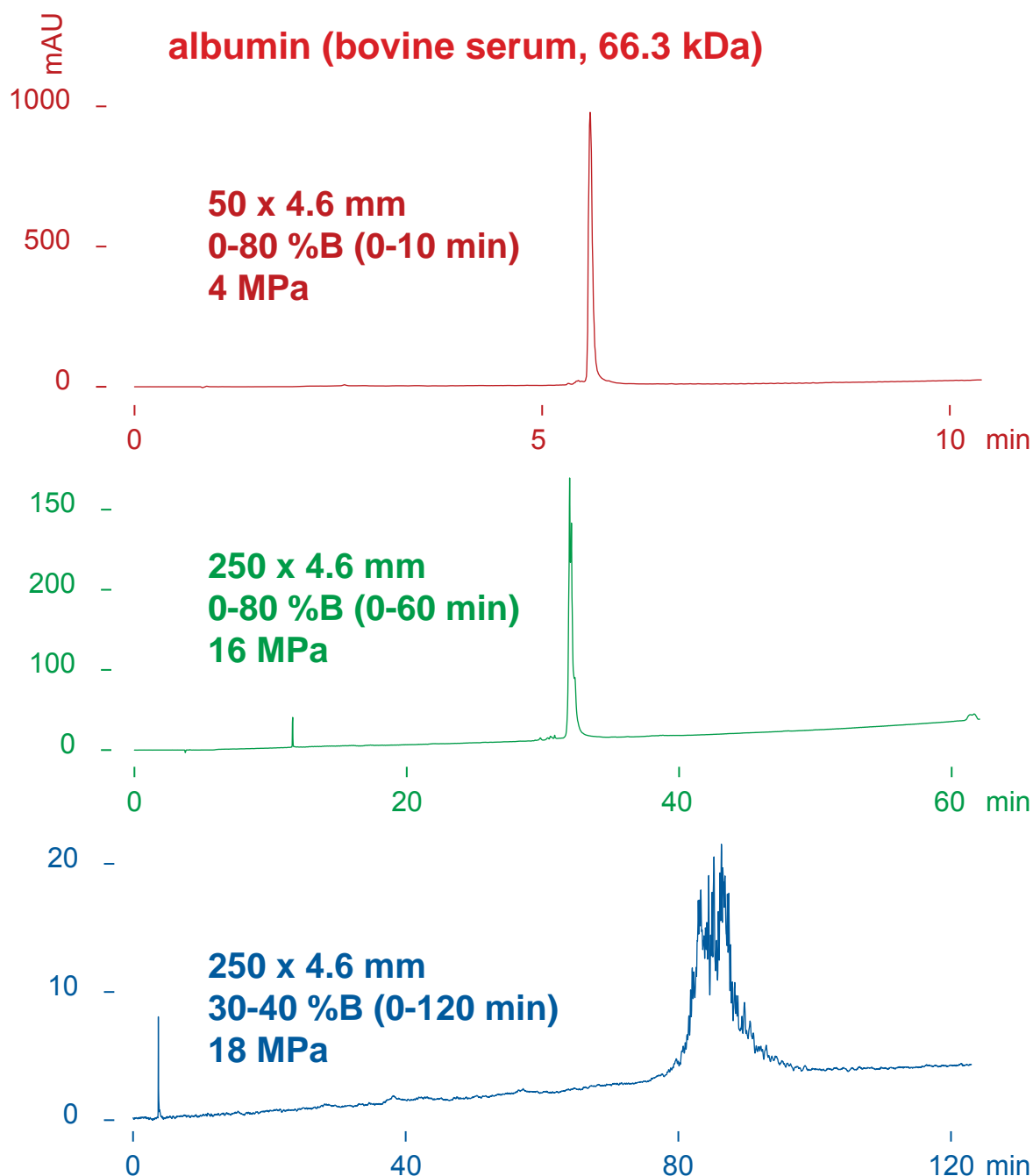
Presto FF-C18

50 x 4.6 mm
250 x 4.6 mm

Application

The effect of gradient slope and column length for BSA separation

ウシ血清アルブミンの分離に与えるグラジエント勾配とカラム長さの影響



Presto FF-C18

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

0.4 mL/min, 80 deg.C, 220 nm, 0.6-1 uL (06-10 ug)

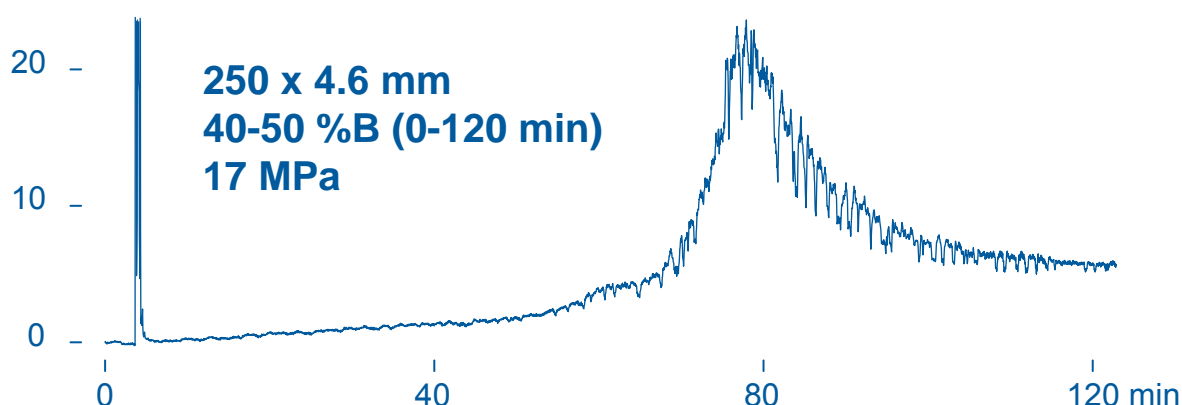
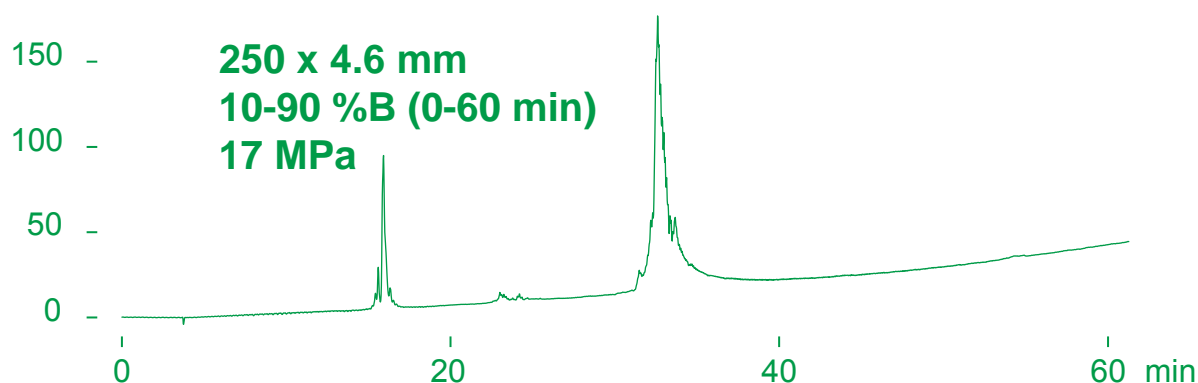
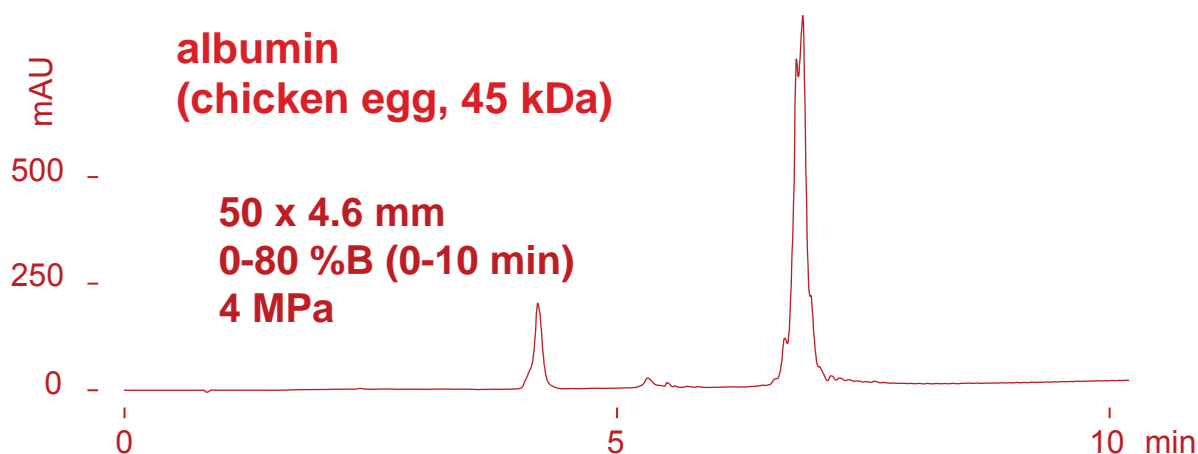
Presto FF-C18

50 x 4.6 mm
250 x 4.6 mm

Application

The effect of gradient slope and column length for ovalbumin separation

卵白アルブミンの分離に与えるグラジエント勾配とカラム長さの影響



Presto FF-C18

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

0.4 mL/min, 80 deg.C, 220 nm, 1.6-4 uL (16-40 ug)

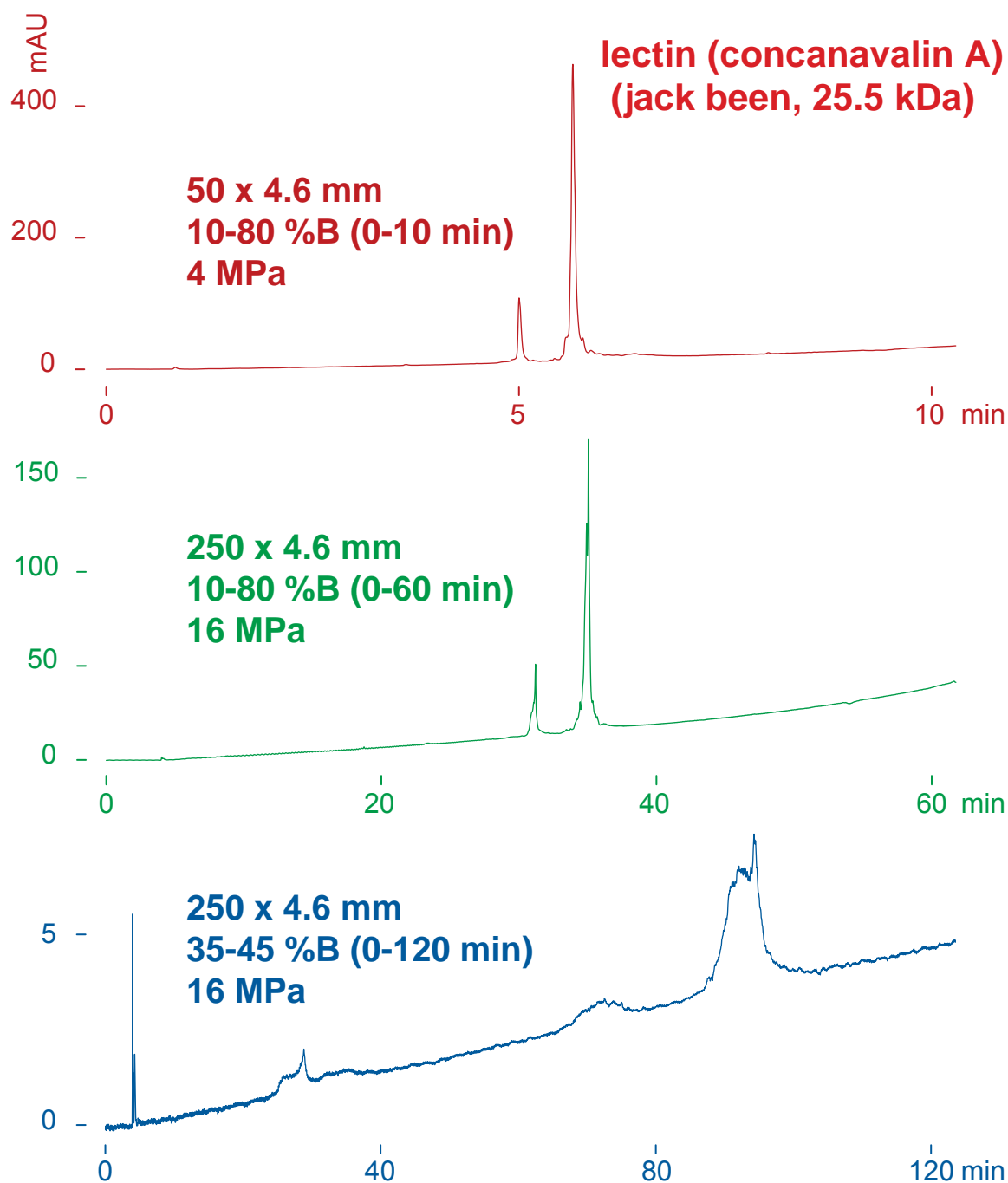
Presto FF-C18

50 x 4.6 mm
250 x 4.6 mm

Application

The effect of gradient slope and column length for lectin separation

レクチンの分離に与えるグラジエント勾配とカラム長さの影響



Presto FF-C18

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

0.4 mL/min, 80 deg.C, 220 nm, 2-5 uL (2-5 ug)

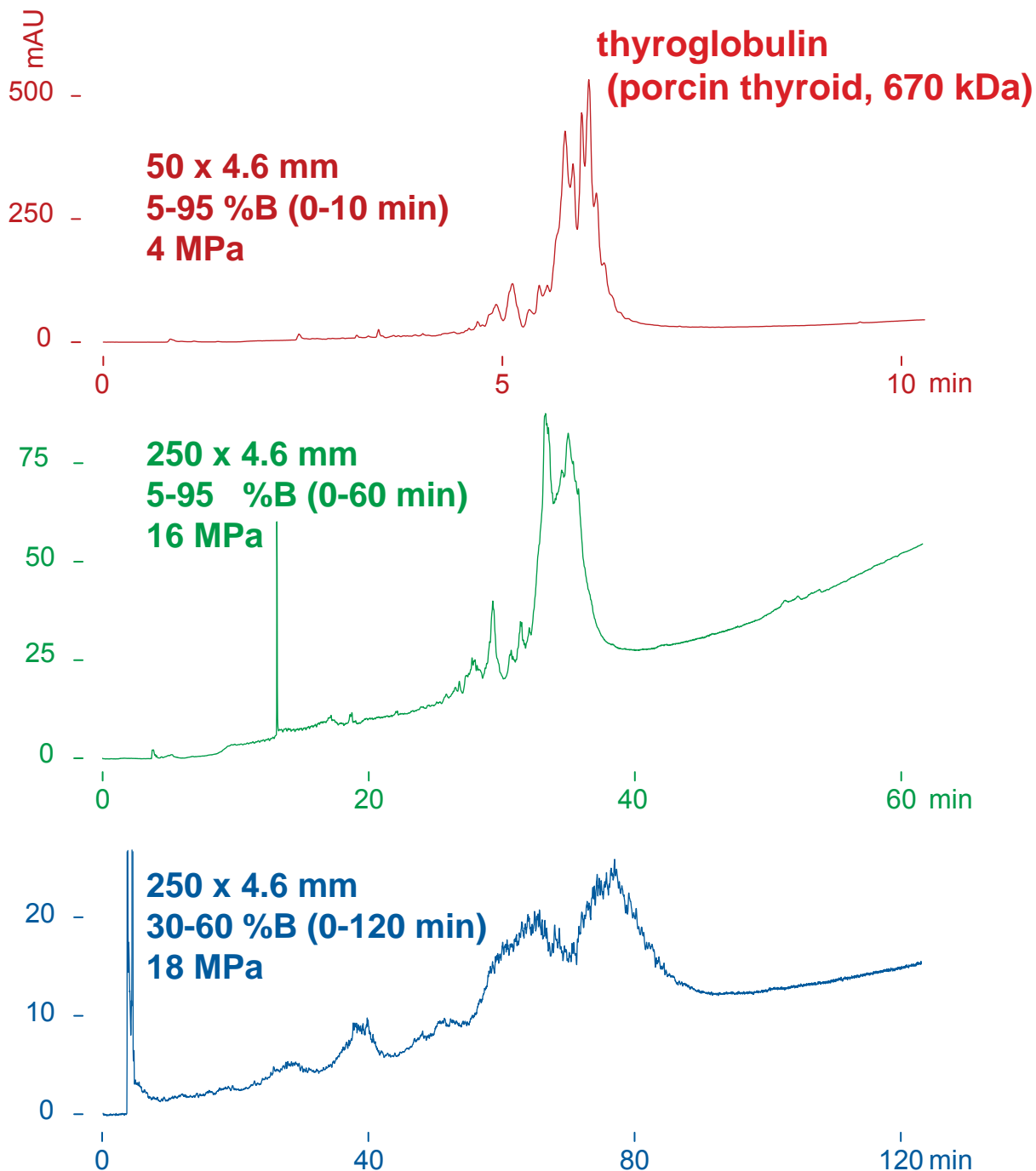
Presto FF-C18

50 x 4.6 mm
250 x 4.6 mm

Application

The effect of gradient slope and column length for thyroglobulin separation

サイログロブリンの分離に与えるグラジエント勾配とカラム長さの影響



Presto FF-C18

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

0.4 mL/min, 80 deg.C, 220 nm, 10-20 uL (25-50 ug)

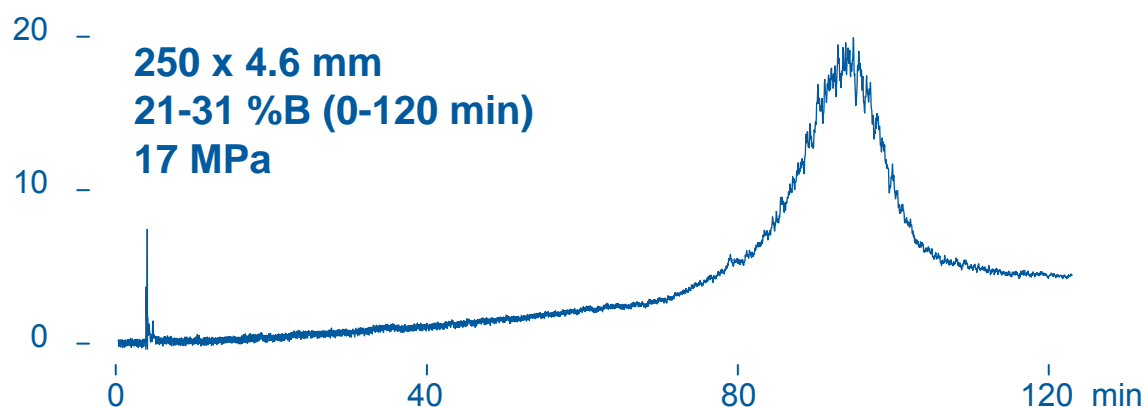
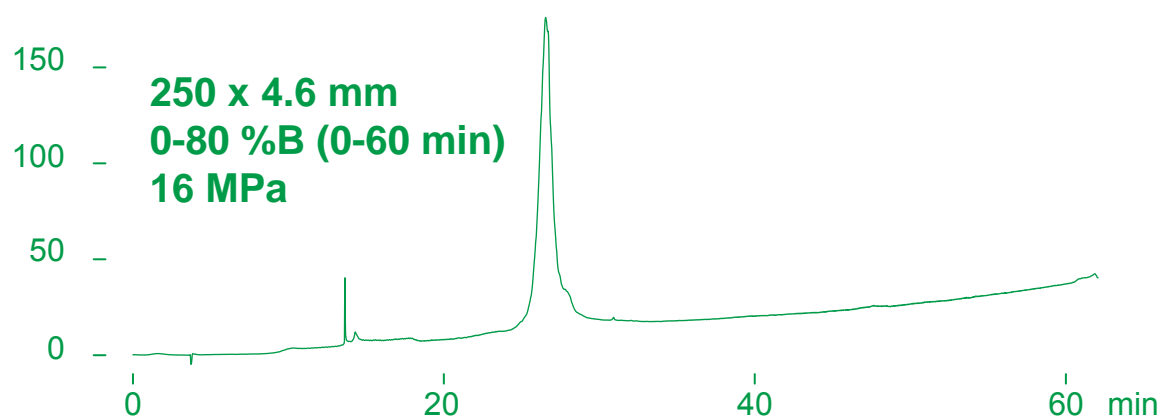
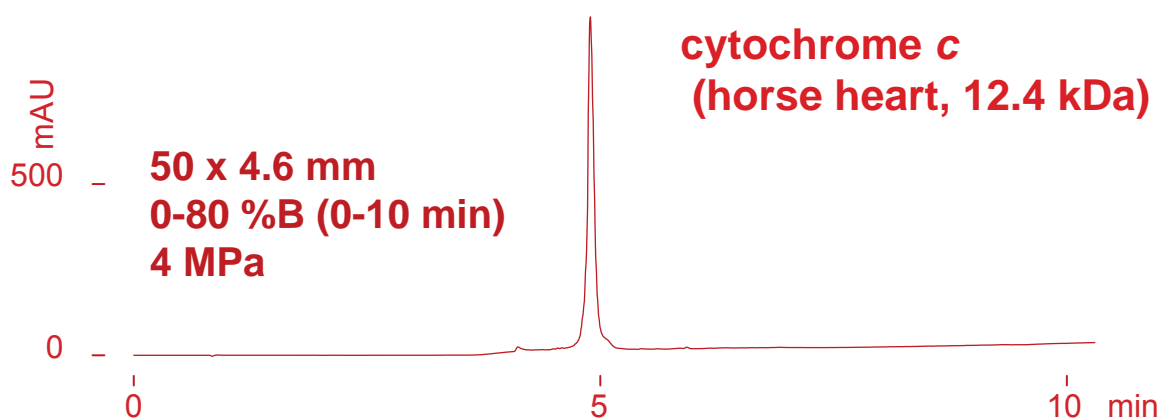
Presto FF-C18

50 x 4.6 mm
250 x 4.6 mm

Application

The effect of gradient slope and column length for cytochrome c separation

シトクロム c の分離に与えるグラジエント勾配とカラム長さの影響



Presto FF-C18

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

0.4 mL/min, 80 deg.C, 220 nm, 0.6-3 uL (6-30 ug)

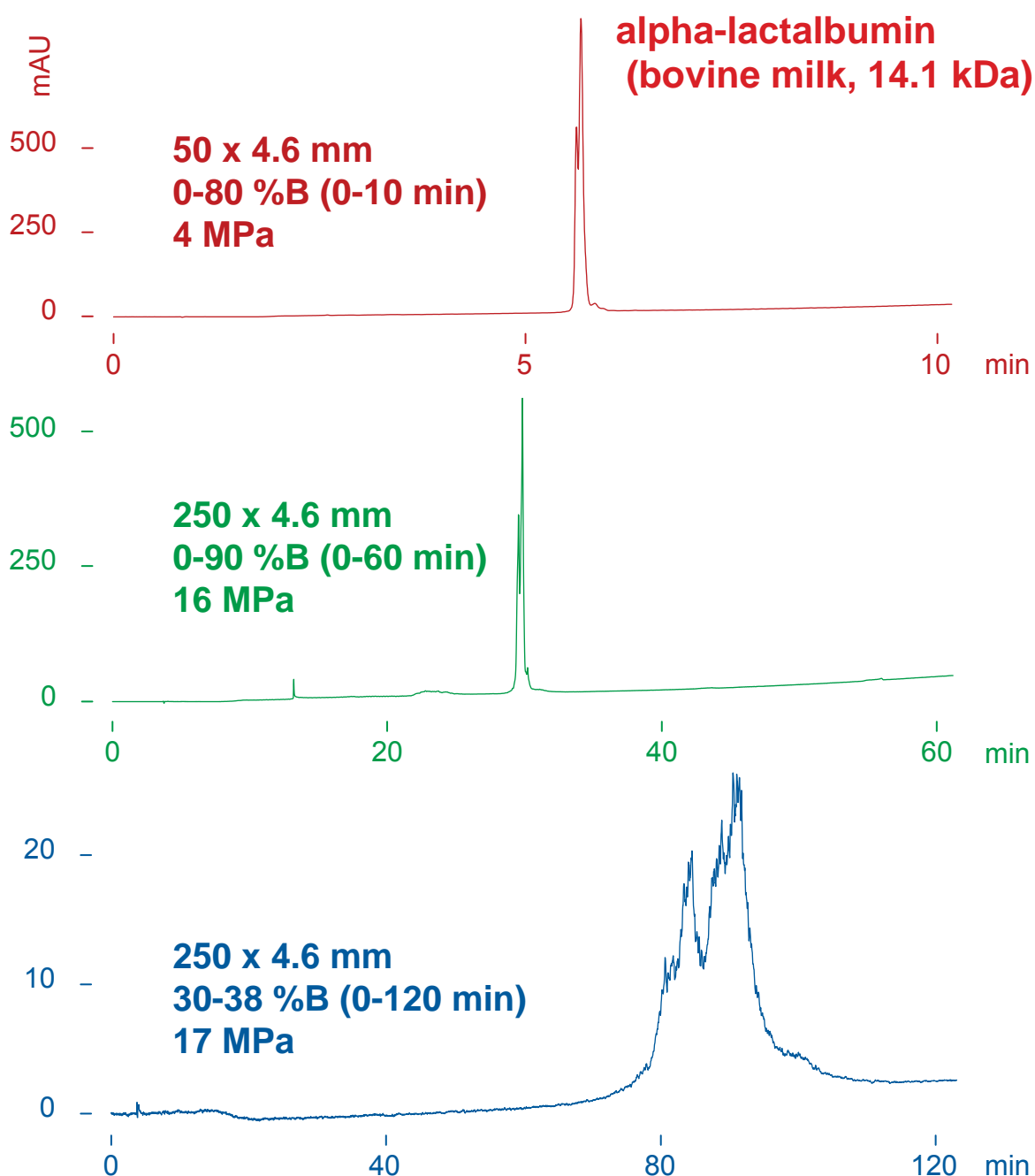
Presto FF-C18

50 x 4.6 mm
250 x 4.6 mm

Application

The effect of gradient slope and column length for alpha-lactalbumin separation

α -ラクトアルブミン の分離に与えるグラジエント勾配とカラム長さの影響



Presto FF-C18

A: water / trifluoroacetic acid = 100 / 0.1

B: acetonitrile / trifluoroacetic acid = 100 / 0.1

0.4 mL/min, 80 deg.C, 220 nm, 0.4-1.4 μ L (4-14 μ g)

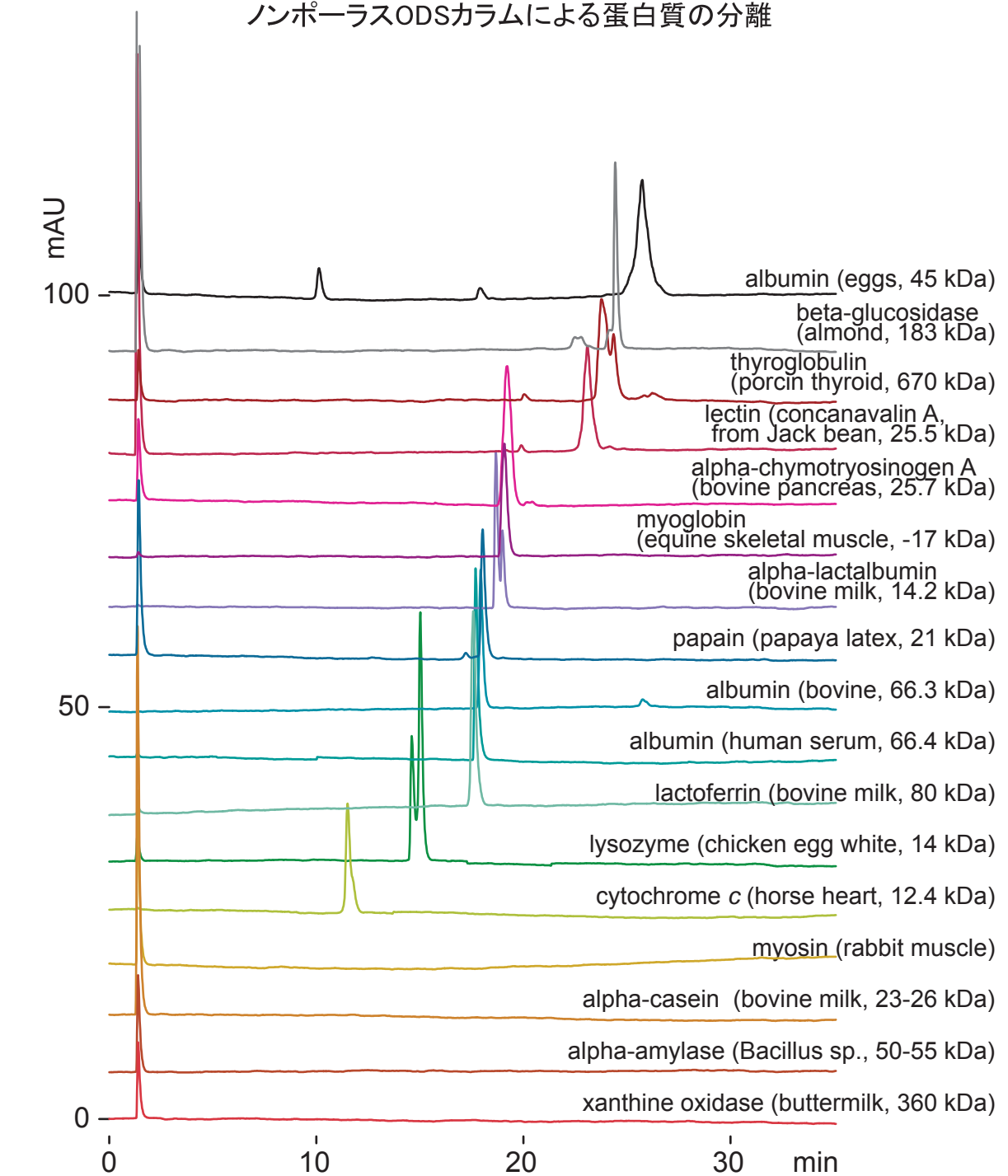
Presto FF-C18

75 x 4.6 mm

Application

Protein separation on non-porous ODS column (37°C, formic acid)

ノンポーラスODSカラムによる蛋白質の分離



Presto FF-C18, 75 x 4.6 mm □

A: water / formic acid = 100 / 0.5, B: acetonitrile / formic acid = 100 / 0.5
10-50 %B (0-30min), 0.4 mL/min(10MPa)

37 deg.C, ELSD(spray chamber 35, drift tube 80 deg.C), 0.4-14 uL(0.8-10ug)

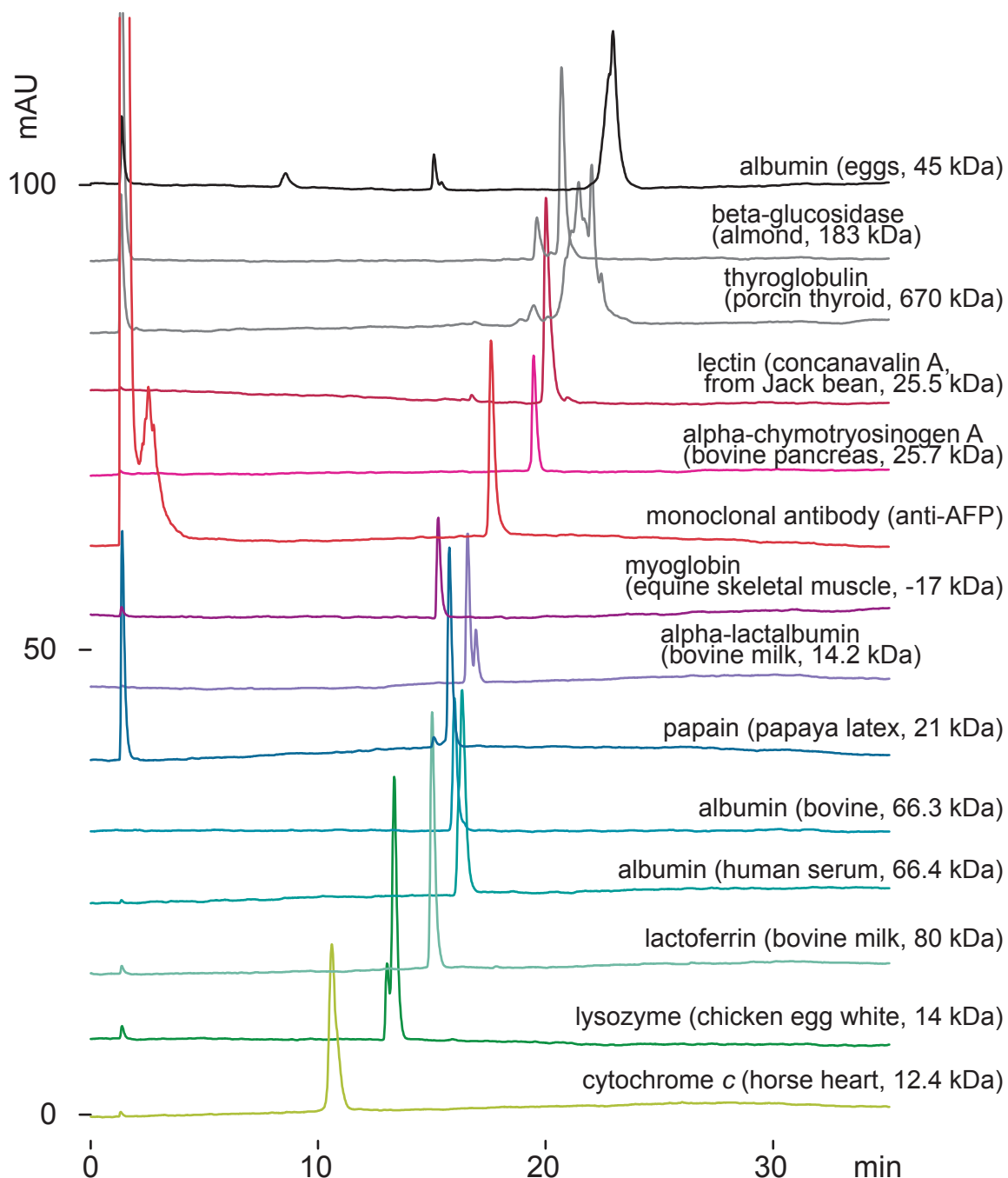
Presto FF-C18

75 x 4.6 mm

Application

Protein separation on non-porous ODS column (80°C, formic acid)

ノンポーラスODSカラムによる蛋白質の分離



Presto FF-C18, 75 x 4.6 mm □

A: water / formic acid = 100 / 0.5, B: acetonitrile / formic acid = 100 / 0.5
10-50 %B (0-30min), 0.4 mL/min(5MPa)

80 deg.C, ELSD(spray chamber 35, drift tube 80 deg.C), 1-14 uL(2-14ug)

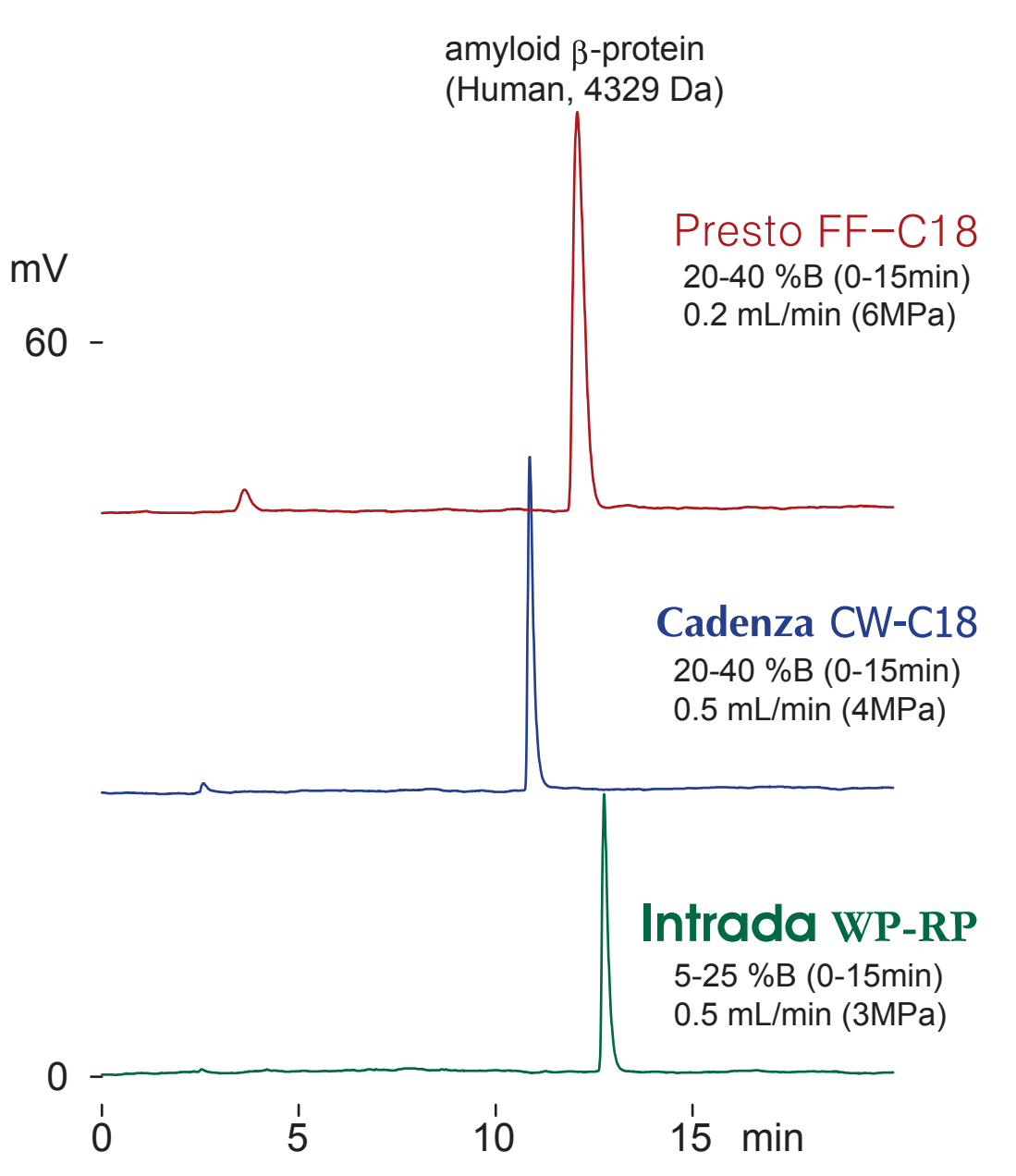
Presto FF-C18
Cadenza CW-C18
Intrada WP-RP

100 x 4.6 mm

Application

Amyloid beta-protein

アミロイド ベータ プロテイン



100 x 4.6 mm

A: water / formic acid = 100 / 0.5

B: acetonitrile / formic acid = 100 / 0.5

37 deg.C

ELSD (spray chamber 35 deg.C, drift tube 70 deg.C)

1.4 μ L (1.4 μ g, DMSO)

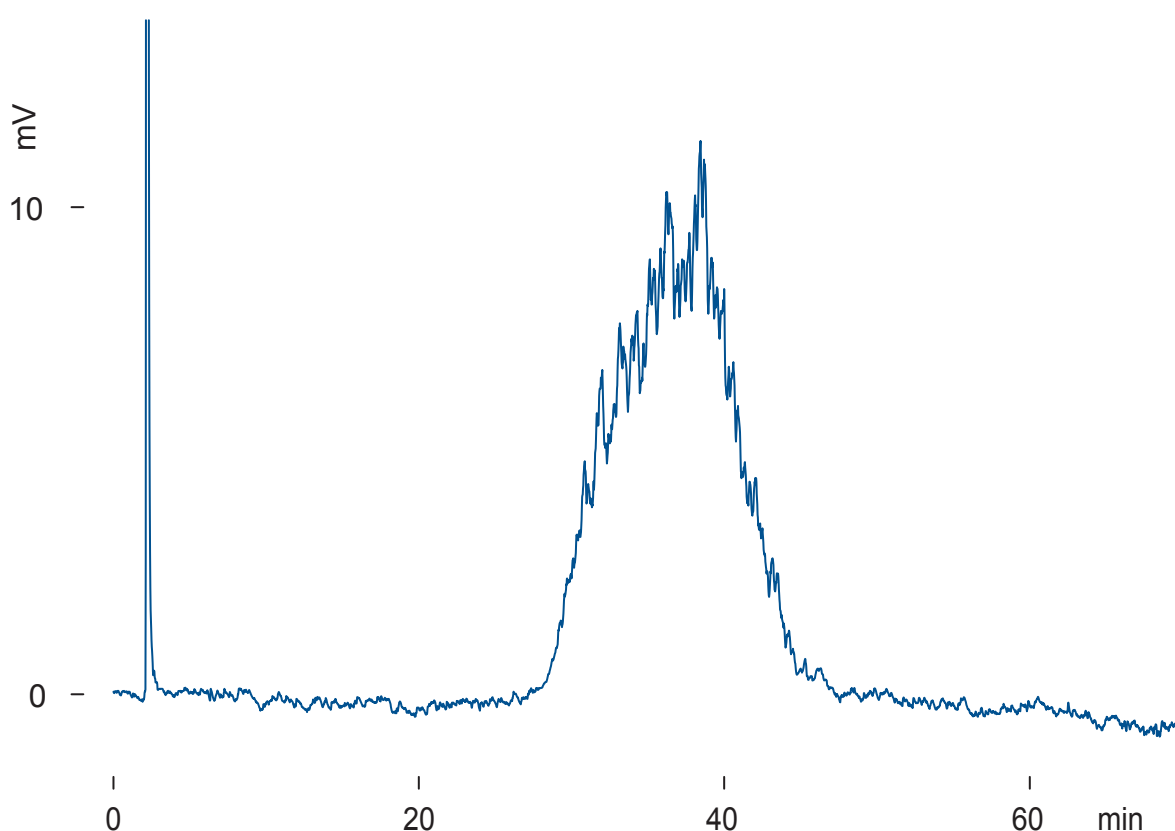
Presto FF-C18

150 x 3 mm

Application

Cytochrome c (50°C, formic acid)

ギ酸移動相によるシトクロム c

**cytochrome c
(horse heart, 12.4 kDa)**

Presto FF-C18, 150 x 3 mm

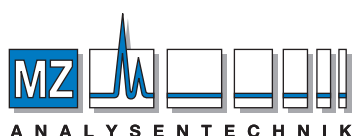
A: water / formic acid = 100 / 0.5

B: acetonitrile / formic acid = 100 / 0.5

20-30 %B (0-60 min)

0.2 mL/min (17 MPa), 50 deg.C, ELSD (spray chamber 50 deg.C, drift tube 100 deg.C)

5 uL (50 ug)

**AUTHORIZED DISTRIBUTOR**

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