GL Sciences

Bioseparation Solution

Bio LC Column

ProteoSil / MonoSelect

Peptide Mapping
Nucleic acids / oligonucleotides
Monoclonal Antibodies

Introduction

GL Sciences Bio LC Columns are HPLC solutions specifically designed for bio molecules proteomics such as protein, peptide and nucleic acid specifies.

All columns are available with bio-inert PEEK and stainless steel hardware.

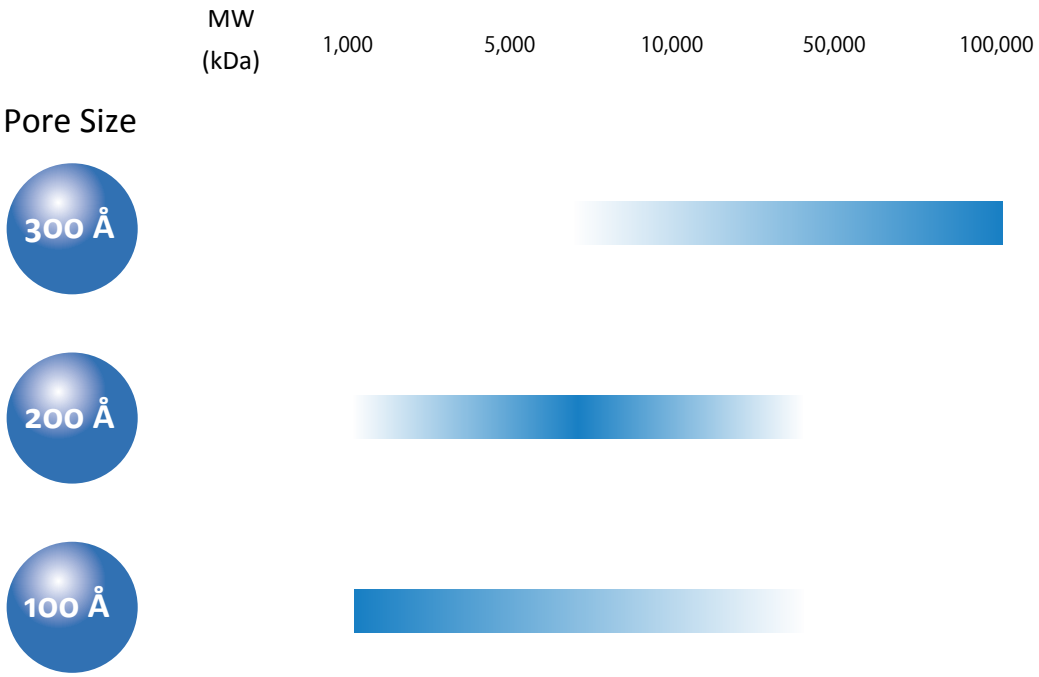
Packing materials are made of high-purity silica with pore sizes of 100A, 200A, and 300A, and are available in reversed phase, HILIC, and size exclusion columns. Low lot-to-lot variation and consistent quality also make it ideal for LC/MS applications.

	Target	MW	Column	Phase	Particle size (um)	Pore size (Å)
Reversed Phase	Proteins / Peptides Oligonucleotides / Nucleic Acids	>20,000	ProteoSil 300-C18	C18	5	300
			ProteoSil 300-C8	C8	5	300
		5,000-20,000	ProteoSil 200-C18	C18	1.9, 3, 5	200
		<5,000	ProteoSil 100-C18	C18	1.9, 3, 5	100
	Proteins / Peptides Monoclonal Antibodies Oligonucleotides / Nucleic Acids	>20,000	ProteoSil 300-C4	C4	5	300
	Proteins, Monoclonal Antibodies Antibody-Drug Conjugate(ADC) Sub unit	>100,000	MonoSelect RP-mAb	Phenyl	Monolith	600
HILIC	Proteins / Peptides Monoclonal Antibodies	—	ProteoSil HILIC	Amide	1.9, 3, 5	100
SEC	Proteins / Peptides Monoclonal Antibodies Oligonucleotides / Nucleic Acids	5,000-600,000	ProteoSil 300-SEC	DIOL	5	300
		<5,000	ProteoSil 100-SEC	DIOL	5	100
SEC + RP	LNP, Exosome	—	MonoSelect nPEC	Hydrophilic Polymer	Monolith	110

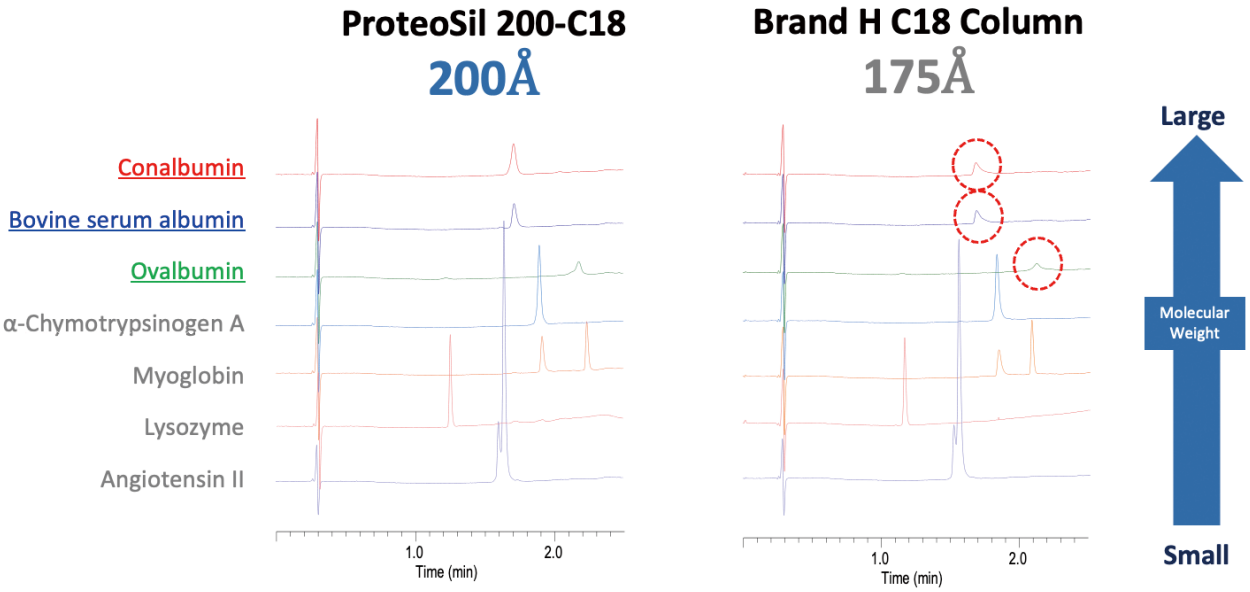
ProteoSil Pore Size Range

ProteoSil HPLC columns feature precisely controlled pore sizes in their packing material, making them ideal for the analysis of biopharmaceuticals. Specifically, the 200Å pore size is optimized for the analysis of compounds with molecular weights ranging from a few kDa to several tens of kDa, delivering optimal performance for the analysis of peptides and oligonucleotides.

Packing material pore size and analyte molecular weight range



Comparison of 200Å and 175Å columns for oligonucleotide analysis



Column Hardware

The column hardware can be selected from stainless steel and Bio-Inert PEEK. Innovative PEEK-lined stainless steel has increased the maximum operating pressure.

Steel-Coated-PEEK
(UHPLC PEEK)

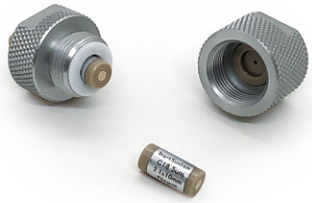
Bioinert PEEK

Stainless Steel

Guard Column

The guard column is installed between injector and analysis column, it is mainly used to protect the analysis column. There are 3 types guard column

Cartridge Guard Column E



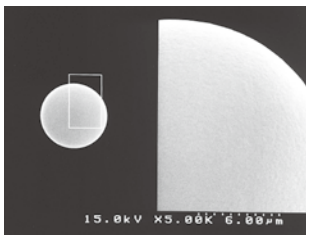
Cartridge Guard Column Ei
(Non-metal Type)

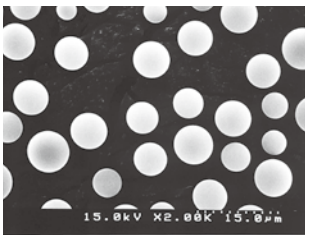
Guard Columns for UHPLC

Quality

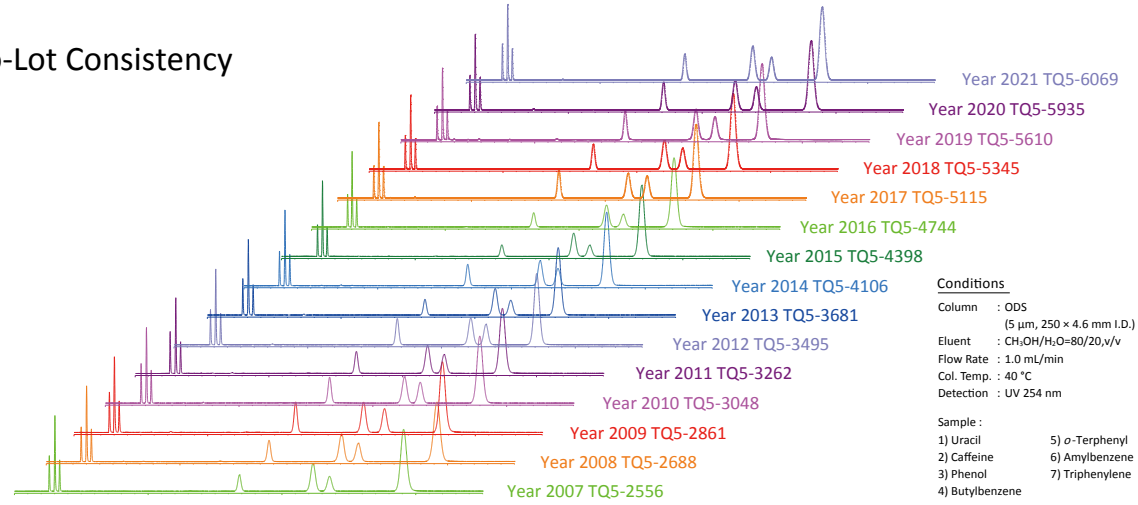
To ensure that our HPLC columns consistently maintain the same high quality and are reliably supplied worldwide, our production facility holds ISO 9001 and ISO 14001 certifications. We carry out all processes, including matrix synthesis, chemical treatment, column packing, and column quality inspections in-house. We continuously evolve based on our accumulated expertise, enabling us to offer superior HPLC columns.

In addition to the chemical modification of functional groups and end-cap processing, we also synthesize silica gel, a critical component for column performance.





Reliable Lot-to-Lot Consistency



Product Line

ProteoSil 300-C18

The ProteoSil 300-C18 wide-pore column is specifically designed for advanced protein analysis. It's the ideal choice when enhanced retention is required beyond the capabilities of C4 or C8 columns, or when an increased sample load is necessary for optimal performance.

ProteoSil 300-C8

A reverse-phase column for proteins and peptides, with intermediate hydrophobicity between ProteoSil 300-C18 and 300-C4. The difference in hydrophobicity provides unique selectivity compared to other stationary phases.
ProteoSil 300-C4 The short-chain C4 phase is used for protein and hydrophobic peptide separations.

ProteoSil 200-C18

This reverse-phase column is optimized for the analysis of mid-sized molecules like peptides and oligonucleotides. It excels in separating larger molecules compared to 100Å pore columns. With a smaller surface area, it's also easy to clean from impurities, making it suitable for faster analysis.

ProteoSil 200-C8

An ideal reverse-phase column for the analysis of mid-sized molecules such as peptides and oligonucleotides. It excels in separating larger analytes compared to 100Å pore size columns, making it suitable for analytes that are strongly retained by C18 columns.

ProteSil 100-C18

An excellent reverse-phase analysis column with high inertness and durability. Ideal for analyzing low-molecular-weight peptides. It can handle substantial sample loads, provides excellent peak shapes, and enhances sensitivity in LC-MS analysis.

ProteoSil 100-C8

A reverse-phase analysis column with high inertness and durability. Suitable for analyzing low-molecular-weight peptides. It exhibits lower retention compared to C18 columns.

ProteoSil 300-C4

Suitable for the analysis of proteins and peptides, especially hydrophobic peptides. Functional groups like C18 or C8 can have excessive retention for proteins, potentially leading to long retention times or strong adsorption to the column (packing material). C4 addresses this with weaker retention forces.

ProteoSil HILIC

A column modified with amide groups for hydrophilic interaction chromatography (HILIC). It excels in separating highly hydrophilic compounds, peptides, glycans, and oligonucleotides, which can be challenging with C18 columns.

ProteoSil 300-SEC

Dihydroxypropyl groups bonded to silica gel. The large pore size (300 Å) enables the analysis of large molecules. It can be used for both aqueous and organic SEC, and as a diol column.

ProteoSil 100-SEC

ProteoSil 100-SEC is chemically bonded dihydroxypropyl groups to silica gel, can be used for aqueous size-exclusion chromatography. The maximum operating pressure is 20 MPa (200 bar), higher than in most polymer base columns and enabling analysis with several columns in series.

MonoSelect RP-mAb

This column, featuring a silica monolith structure with phenyl group modifications, can separate proteins like antibodies with a molecular weight of around 150,000 under high-temperature conditions. It delivers excellent peak shapes for intact MS analysis and is effective for high-sensitivity LC/MS analysis.

MonoSelect nPEC

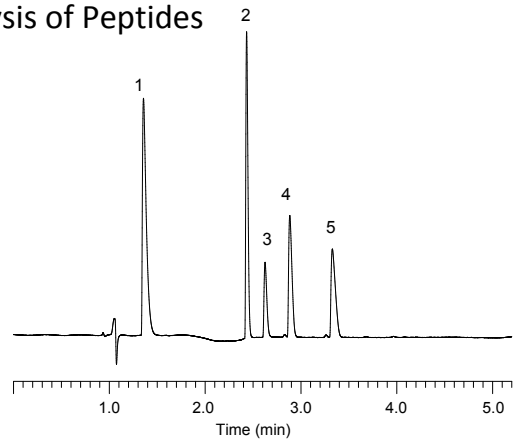
A column with a silica monolith structure modified with hydrophilic polymer. It allows rapid separation of nanoparticles and free low-molecular-weight compounds. It's a specialized column for assessing drug encapsulation rates in quality control of liposome formulations.

Applications

Reversed Phase

C18 Columns are a recommended for peptide and protein analysis.
It uses a packing material with a pore size of 200Å, making it ideal in the determination of low to high molecular weight compounds (up to several 10kDa).The use of extremely non-specific binding to packing materials and metal-free column hardware enables analyte sharp peaks even for adsorbable analytes.

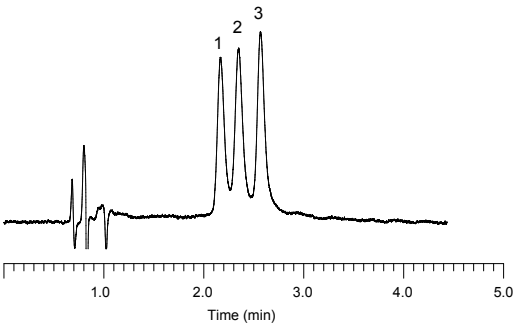
Analysis of Peptides



Conditions

Column	:	ProteoSil 200-C18 UHPLC PEEK (1.9 µm, 100 × 2.1 mm I.D)
Eluent	:	A) 0.1% HCOOH in H_2O B) 0.1% HCOOH in CH_3CN A/B = 95/5 - 0.5 min - 70/30 - 2.5 min - 60/40 - 0.5 min - 60/40 - 0.01/min - 95/5 - 6.49 min - 95/5, v/v
Flow Rate	:	0.3 mL/min
Col. Temp.	:	40˚C
Detection	:	UV 280 nm
Injection Vol.	:	5 µL

Sample :
1. Gly-Tyr
2. Val-Tyr-Val
3. Angiotensin II
4. Methionine encephalin
5. Leucine encephalin
(50 mg/mL each)



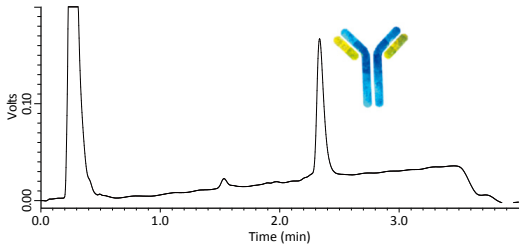
Conditions

Column	:	ProteoSil 200-C18 UHPLC PEEK (1.9 µm, 100 × 2.1 mm I.D)
Eluent	:	A) 0.1 % Triethylamine in H_2O (pH 6.3, CH_3COOH) B) Eluent A/CH_3CN = 50/50, v/v A/B = 83/17 - 4 min - 80/20 - 0.1 min - 83/17 - 5.9 min - 83/17, v/v
Flow Rate	:	0.4 mL/min
Col. Temp.	:	40˚C
Detection	:	UV 260 nm
Injection Vol.	:	10 µL
Sample	:	1. 5' - GTT ACA GAA TCT GAC AAG CCT AAT ACG - 3' (27 mer) 2. 5' - GTT ACA GAA TCT GCC AAG CCT AAT ACG - 3' (27 mer) 3. 5' - GTT ACA GAA TCT GTC AAG CCT AAT ACG - 3' (27 mer) (300 pmol/L each)

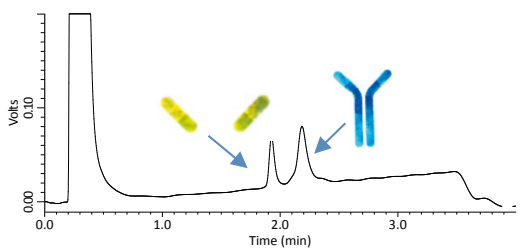
Analysis of Monoclonal Antibodies (mAbs)

MonoSlect RP-mAb is a HPLC column Specialized for Monoclonal Antibody Analysis. Monolithic silica consists of co-continuous through- pores and skeletons which have mesopores. The large surface area and high permeability of this structure enables "strong retentivity and low pressure". Broad peaks are obtained with conventional HPLC columns when the analytes are huge proteins larger than 10 nm such as antibodies. "Sharp peaks of mAb" can be obtained with MonoSelect RP-mAb because the mesopores are designed to be 60 nm, which is suitable for mAb analysis. The analytical time is so rapidly.

Before Reduction



After Reduction



Reduction process

Conditions

Column	:	MonoSelect RP-mAb
Eluent	:	A) 0.075 % HCOOH + 0.025 % TFA in H_2O B) 0.075 % HCOOH + 0.025 % TFA in CH_3CN A/B = 80/20-(5min)-40/60,v/v
Flow Rate	:	0.3 mL/min
Column Temp.	:	80 °C
Detection	:	214 nm
Injection Vol.	:	10 µL

Papain digestion process

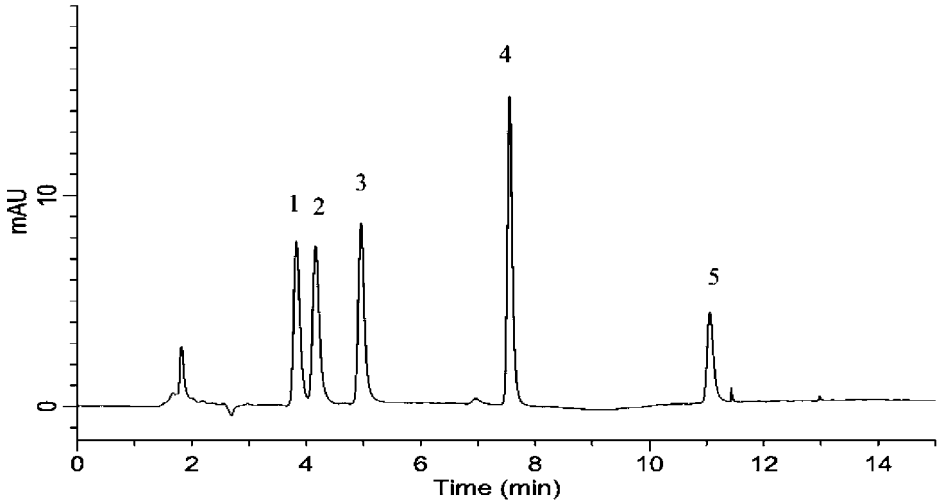
Conditions

Column	:	MonoSelect RP-mAb
Eluent	:	A) 0.075 % HCOOH + 0.025 % TFA in H_2O B) 0.075 % HCOOH + 0.025 % TFA in CH_3CN A/B =85/15-(5min)-60/40,v/v
Flow Rate	:	0.3 mL/min
Column Temp.	:	80 °C
Detection	:	214 nm
Injection Vol.	:	10 µL

HILIC (Hydrophilic Interaction Liquid Chromatography) Columns

HILIC (Hydrophilic Interaction Liquid Chromatography) mode is used in the analysis of biomolecules. It has a hydrophilic stationary phase and water-based solvent as the mobile phase, making it ideal for separating and analyzing hydrophilic compounds, such as polar biomolecules and glycans. HILIC mode offers high sensitivity analysis when combined with mass spectrometry, making it suitable for detecting trace amounts of biomolecules and specific analyses. It is particularly useful for glycan analysis and can serve as an alternative to ion exchange chromatography in some cases.

Analysis of Peptides



Conditions

Column : ProteoSil HILIC
(1.9 µm, 150 × 2.1 mm I.D.)
Eluent : A) CH_3CN
B) 10 mM $HCOONH_4$ + 0.1% HCOOH in H_2O

Time (min)	A (vol%)	B (vol%)
0	80	20
15	50	50

Flow Rate : 0.2 mL/min
Col. Temp. : 40 °C
Detection : UV 254 nm
Injection Vol. : 1 µL
Sample : Reference Standard

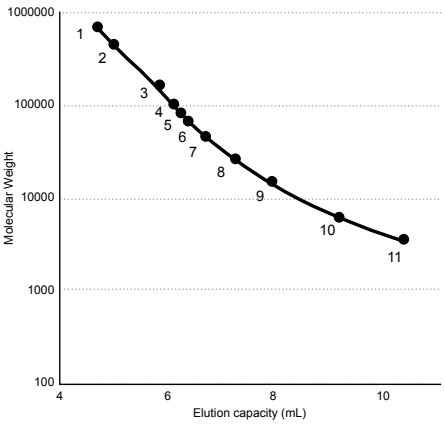
Analyte :

1. Leucine-Enkephalin 500 mg/L
(Tyr-Gly-Gly-Phe-Leu)
2. Methionine-Enkephalin 500 mg/L
(Tyr-Gly-Gly-Phe-Met)
3. Angiotensin II (Human) 500 mg/L
(Asp-Arg-Val-Tyr-Ile-His-Pro-Phe)
4. Val-Tyr-Val 500 mg/L
5. Gly-Tyr 500 mg/L

Size Exclusion Chromatography (SEC) Columns

The ProteoSil SEC column is equipped with a dihydroxypropyl group bonded to silica gel, making it suitable for the analysis of large biomolecules. In SEC, larger analytes such as proteins elute from the column first, while the smallest molecules that can access the pores elute later from the column. This column is available in variations with pore sizes of 300Å and 100Å.

Calibration Curve and Analysis of Proteins

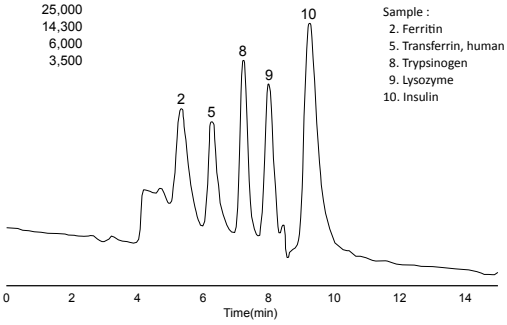


Calibration curve

MW	
1. Thyroglobulin	660,000
2. Ferritin	444,000
3. γ-Globulins	160,000
4. Phosphorylase	97,400
5. Transferrin, human	80,000
6. BSA	66,000
7. Ovalbumin	45,000
8. Trypsinogen	25,000
9. Lysozyme	14,300
10. Insulin	6,000
11. Insulin chain B	3,500

Conditions

Column	: ProteoSil 300-SEC (5 µm, 250 × 7.6 mm I.D.)
Eluent	: 0.2 M NaCl, 0.1 M NaH_2PO_4 (pH 6.7, Na_2HPO_4)
Flow Rate	: 1.0 mL/min
Col. Temp.	: 35 °C
Detection	: UV 280 nm
Injection. Vol.	: 10 µL

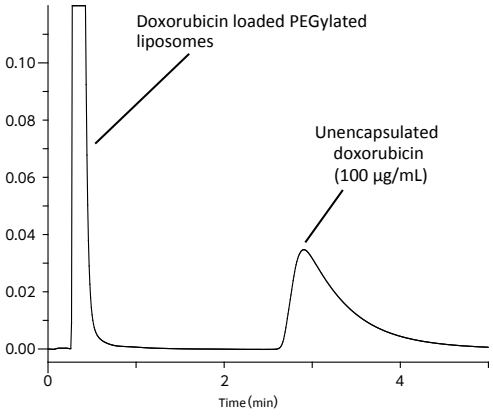


Sample :

2. Ferritin	(40 µg/mL)
5. Transferrin, human	(260 µg/mL)
8. Trypsinogen	(160 µg/mL)
9. Lysozyme	(80 µg/mL)
10. Insulin	(460 µg/mL)

Analysis of proteins

Analysis of doxorubicin



Conditions

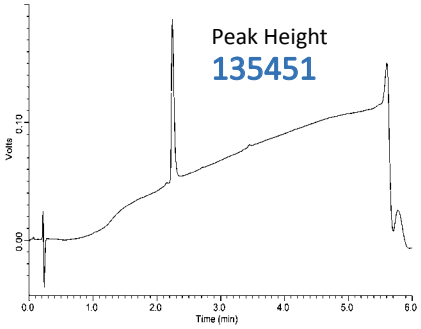
Column	: MonoSelect nPEC (50 × 3.0 mm I.D.)
Eluent	: A) 50 mM Na_2SO_4 in 20 mM Acetate Buffer (pH4.6) B) CH_3OH A/B = 95/5, v/v
Flow Rate	: 1.0 mL/min
Column Temp.	: 30 ℃
Detection	: 254 nm
Injection Vol	: 5 µL

*This product is developed in collaboration with Dr. Kato, School of Pharmacy, Showa University, and Eisai Co., Ltd.

Comparison Data -MonoSelect mAb-

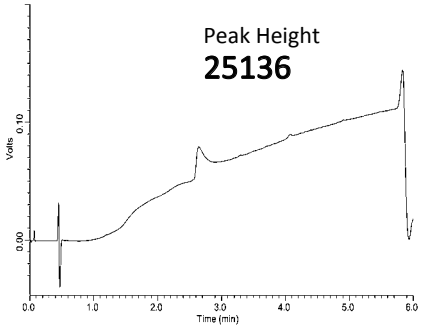
In protein analysis, especially in low-concentration analysis, the peak shape may deteriorate. In this case, the pore size of sorbent is the most important. The MonoSelect RP-mAb is used monolithic gel instead of particle silica gel. The mesopore of monolithic gel are designed to be optimal for retaining mAb at 60nm and are also treated with an optimal inert treatment to prevent non-specific adsorption on the surface. This design is to provide sharp peak shape even in low-concentration analysis.

MonoSelect RP-mAb Pore Size: 60 nm, 2.1 × 20 mm



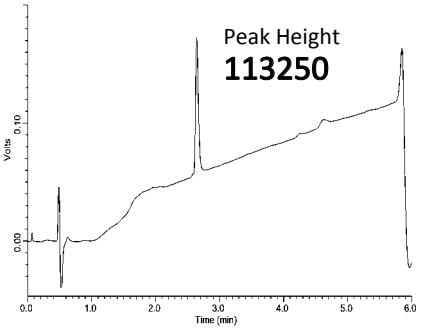
Initial Pressure: **1.7MPa**

Brand W Pore Size: 45 nm, 2.7 µm, 2.1 × 50 mm



4.5 MPa

Brand A Pore Size: 100 nm, 5 µm, 2.1 × 50 mm



10.5 MPa

Eluate	: A) 0.075 % HCOOH + 0.025 % CF_3COOH in H_2O B) 0.075 % HCOOH+ 0.025 % CF_3COOH in CH_3CN A/B = 95/5-(5min)-10/90
Injection Vol.	: 1uL
Oven Temp.	: 80 °C
Analyte	: 1.4 mg/mL mAb

Ordering Information -Reversed Phase-

Maximum Operating Pressure

ID (mm)	Particle Size (µm)	Maximum Operating Pressure
2.1 - 3.0	1.9	80 MPa (800 bar)
2.1 - 4.6	3 HP	50 MPa (500 bar)
1.0 - 4.6	3, 5	20 MPa (200 bar)

ProteoSil 100-C18

Hardware	Particle Size (µm)	Length (mm)	ID (mm)	
			2.1	4.6
SS	1.9	50	5020-42288	–
		75	5020-42292	–
		100	5020-42289	–
		150	5020-42290	–
	3 HP	50	5020-42278	5020-42283
		75	5020-42279	5020-42284
		100	5020-42280	5020-42285
		150	5020-42281	5020-42286
		250	5020-42282	5020-42287
	5	50	5020-42266	5020-42271
		75	5020-42267	5020-42272
		100	5020-42268	5020-42273
		150	5020-42269	5020-42274
		250	5020-42270	5020-42275
UHPLC PEEK	1.9	50	5020-42264	5020-42261
		100	5020-42265	5020-42262
		150	–	5020-42263
	3	50	5020-42257	5020-42253
		100	5020-42258	5020-42254
		150	5020-42259	5020-42255
		250	5020-42260	5020-42256
PEEK	5	50	5020-42249	5020-42245
		100	5020-42250	5020-42246
		150	5020-42251	5020-42247
		250	5020-42252	5020-42248

ProteoSil 200-C18

Hardware	Particle Size (µm)	Length (mm)	ID (mm)	
			2.1	4.6
SS	1.9	50	5020-42214	–
		75	5020-42215	–
		100	5020-42216	–
		150	5020-42217	–
	3 HP	50	5020-42204	5020-42209
		75	5020-42205	5020-42210
		100	5020-42206	5020-42211
		150	5020-42207	5020-42212
		250	5020-42208	5020-42213
	5	50	5020-42191	5020-42196
		75	5020-42192	5020-42197
		100	5020-42193	5020-42198
		150	5020-42194	5020-42199
		250	5020-42195	5020-42200
UHPLC PEEK	1.9	50	5020-42178	5020-42180
		100	5020-42179	5020-42181
		150	–	5020-42182
PEEK	5	50	5020-42183	5020-42187
		100	5020-42184	5020-42188
		150	5020-42185	5020-42189
		250	5020-42186	5020-42190

ProteoSil 300-C18

Hardware	Particle Size (µm)	Length (mm)	ID (mm)	
			2.1	4.6
SS	5	75	5020-42111	5020-42116
		50	5020-42110	5020-42115
		100	5020-42112	5020-42117
		150	5020-42113	5020-42118
		250	5020-42114	5020-42119

Ordering Information -Reversed Phase-

ProteoSil 200-C8

Hardware	Particle Size (µm)	Length (mm)	ID (mm)	
			2.1	4.6
SS	3	75	5020-42301	5020-42302
	3 HP	50	5020-42303	5020-42307
		75	5020-42312	5020-42313
		100	5020-42304	5020-42308
		150	5020-42305	5020-42309
		250	5020-42306	5020-42310
UHPLC PEEK	3	50	5020-42293	5020-42297
		100	5020-42294	5020-42298
		150	5020-42295	5020-42299
		250	5020-42296	5020-42300

ProteoSil 300-C8

Hardware	Particle Size (µm)	Length (mm)	ID (mm)	
			2.1	4.6
SS	5	50	5020-42100	5020-42105
		75	5020-42101	5020-42106
		100	5020-42102	5020-42107
		150	5020-42103	5020-42108
		250	5020-42104	5020-42109

ProteoSil 300-C4

Hardware	Particle Size (µm)	Length (mm)	ID (mm)	
			2.1	4.6
SS	5	50	5020-42120	5020-42125
		75	5020-42121	5020-42126
		100	5020-42122	5020-42127
		150	5020-42123	5020-42128
		250	5020-42124	5020-42129

MonoSelect PR-mAb set (Holder+Cartridge)

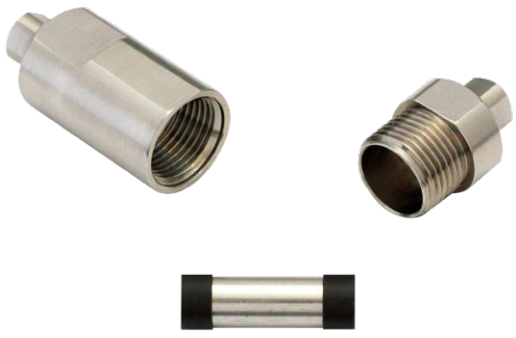
Item	ID (mm)	Length (mm)	Cat.No.
MonoSelect RP-mAb Holder Set	2.1	20	5020-10818

MonoSelect PR-mAb Cartridge

Item	ID (mm)	Length (mm)	Cat.No.
MonoSelect RP-mAb Cartridge	2.1	20	5020-10819

Cartridge

Item	Length of the Cartridge Applicable	Cat.No.
MonoSelect Cartridge Holder	20 mm	5020-10815



MonoSelect RP-mAb

Ordering Information -Size Extraction Chromatography (SEC)-

ProteoSil 100-SEC

Hardware	Particle Size (µm)	Length (mm)	ID (mm)		
			4.6	6	7.6
SS	5	50	5020-42315	5020-42320	5020-42325
		75	5020-42316	–	–
		100	5020-42317	5020-42321	5020-42326
		150	5020-42318	5020-42322	5020-42327
		250	5020-42319	5020-42323	5020-42328

ProteoSil 300-SEC

Hardware	Particle Size (µm)	Length (mm)	ID (mm)			
			2.1	4.6	6	7.6
SS	5	50	–	5020-42134	5020-42139	5020-42144
		75	5020-42130	5020-42135	–	–
		100	5020-42131	5020-42136	5020-42140	5020-42145
		150	5020-42132	5020-42137	5020-42141	5020-42146
		250	5020-42133	5020-42138	5020-42142	5020-42147
PEEK	5	150	–	5020-42168	–	–
		250	–	5020-42169	–	–

MonoSelect nPEC set (Holder+Cartridge)

Item	ID (mm)	Length (mm)	Cat.No.
MonoSelect nPRC Sets	3.0	50	5020-10816

DMA-npec

MonoSelect nPEC Cartridge

Item	ID (mm)	Length (mm)	Cat.No.
MonoSelect nPRC Cartridge	3.0	50	5020-10817

DMA-npec cartridge

Cartridge

Item	Qty.	Cat.No.
MonoSelect nPRC Packing	6 pcs	5020-10880

DMA-npec paking

Ordering Information - HILIC -

ProteoSil HILIC

Hardware	Particle Size (µm)	Length (mm)	ID (mm)	
			2.1	4.6
SS	1.9	75	5020-42238	–
		100	5020-42239	–
		150	5020-42240	–
	3	50	5020-42233	–
		75	5020-42234	–
		100	5020-42235	–
		150	5020-42236	–
		250	5020-42237	–
	5	50	5020-42220	5020-42225
		75	5020-42221	5020-42226
		100	5020-42222	5020-42227
		150	5020-42223	5020-42228
		250	5020-42224	5020-42229

Hardware	Particle Size (µm)	Length (mm)	ID (mm)	
			2.1	4.6
PEEK	5	50	5020-42170	5020-42174
		100	5020-42171	5020-42175
		150	5020-42172	5020-42176
		250	5020-42173	5020-42177
UHPLC PEEK	1.9	50	5020-42242	–
		100	5020-42243	–
		150	5020-42244	–
	3	50	5020-42160	5020-42164
		250	5020-42163	–
		100	5020-42161	5020-42165
		150	5020-42162	5020-42166
		250	5020-42163	5020-42167

Ordering Information -Guard Column-

Replacement Guard Cartridge for UHPLC

Hardware	Particle Size (µm)	Length (mm)	Phase	ID (mm)
				2.1
SS	1.9	10	100-C18	5020-42291
			200-C18	5020-42219
			HILIC	5020-42241

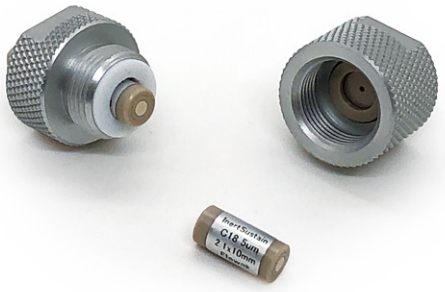
Guard Columns for UHPLC

Cartridge Holder for UHPLC

Discriptions	Cat.No.
UHPLC Guard Column Holder	5020-08630

Replacement Cartridge Ei

Hardware	Particle Size (µm)	Length (mm)	Phase	ID (mm)	
				2.1	3
PEEK	5	10	100-C18	5020-42277	5020-42276
			100-SEC	5020-42330	–
			200-C18	5020-42203	5020-42202
			300-C18	5020-42156	5020-42152
			300-C4	5020-42158	5020-42154
			300-C8	5020-42157	5020-42153
			300-SEC	5020-42159	5020-42155
			HILIC	5020-42232	5020-42231



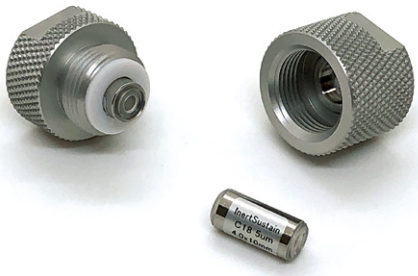
Cartridge Guard Column Ei
(Non-metal Type)

Cartridge Ei Holder

Discriptions	Cat.No.
Ei Holder for Ei Guard Cartridge	5020-08650

Replacement Guard Cartridge E

Hardware	Particle Size(µm)	Length (mm)	Phase	ID (mm)		
				2.1	3	4
SS	3	10	200-C18	5020-42218	–	–
SS			200-C8	5020-42311	–	–
SS	5	10	100-SEC	–	5020-42331	–
SS			200-C18	–	–	5020-42201
SS			300-C18	–	–	5020-42148
SS			300-C4	–	–	5020-42150
SS			300-C8	–	–	5020-42149
SS			300-SEC	–	–	5020-42151
SS			HILIC	–	–	5020-42230



Cartridge Guard Column E

Cartridge E Holder

Discriptions	Cat.No.
E Holder for 10mm Guard Cartridge	5020-08500

Packed Guard Column

Hardware	Particle Size(µm)	Length (mm)	Phase	ID (mm)		
				4.6	6	7.6
SS	5	50	300-SEC	–	5020-42143	–
			100-SEC	5020-42314	5020-42324	–
			100-SEC	–	–	5020-42329

Packed Guard Column

Pre-Column Coupler

Pre-column couplers are joints that are used to connect various guard columns to analytical columns. PCTFE can be used with acids, alkalis, and general organic solvents. In addition, stainless steel can be used under high pressures.
The UHPLC-compatible pre-column coupler is hand-tightened to 50 MPa pressure resistance by means of a special ferrule that is composed of two different materials (i.e., PEEK and metal).
The ferrals are removable and can be used repeatedly, reducing the effect of dead volume when connecting to LC columns with different joint formats.

Pre-column Coupler (PCTFE)

Pre-column Coupler SUS

Column Coupler for UHPLC

Specification

Max. operating pressure : 14.7 Mpa (Pre-column Coupler UP, Pre-column Coupler W)
50 Mpa (Column Coupler for UHPLC)
80 Mpa (Pre-column Coupler SUS)
Tube O.D. : 1/16 inch

Item	ID (mm)	Length (mm)	Material	Conection	Cat.No.
Pre-column Coupler UP	0.18	29.2	PCTFE	Paker type (UP type)	6010-49200
	0.25				6010-49201
	0.50				6010-49202
Pre-column Coupler W	0.25	32	PCTFE	Waters type	6010-49251
	0.50				6010-49211
Pre-column Coupler SUS	0.10	40	SUS	–	6010-49210
	0.25				6010-49250
Column Coupler for UHPLC	0.25	75	PEEK, SUS	–	6010-49255
		150		–	6010-49256
	0.1	75		–	6010-49257
		150		–	6010-49258

* Product Pre-column Coupler SUS doe not fixed with Ferrules, therefore columns with 10-32UNF specification all can be used.

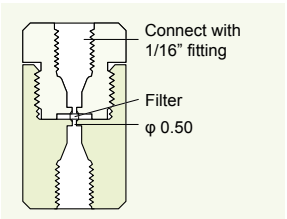
Pre-Column Filter

Specification

Fit in tube O.D. : 1/16 inch
Screw specification : 10-32UNF
Filter pore size : 2 µm
Max. operating pressure : SUS : 41.4 MPa (414 bar), PEEK : 34.5 MPa (345 bar)

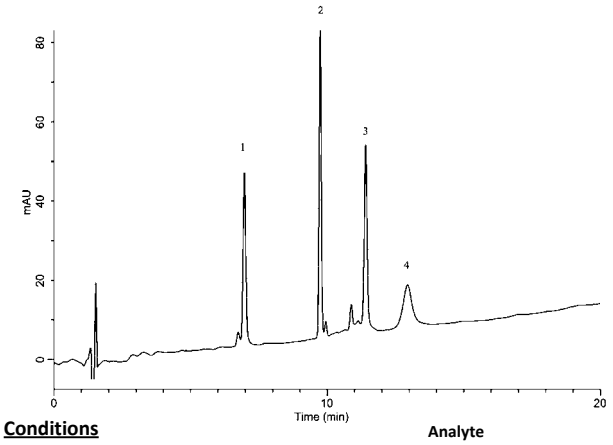
Pre-column filter

Item	Jacket Material	P/N	Qty. (pc)	Cat.No.
Pre-column filter 2 µm	Stainless	A-315	1	6010-55100
Replacement pre-column filter 2 µm	–	A-101	1	6010-55110
PEEK pre-column filter 2 µm	PEEK	A-355	1	6010-55300
Replacement PEEK pre-column filter 2 µm	–	A-700	1	6010-55310



Applications

Analysis of Peptides and Proteins



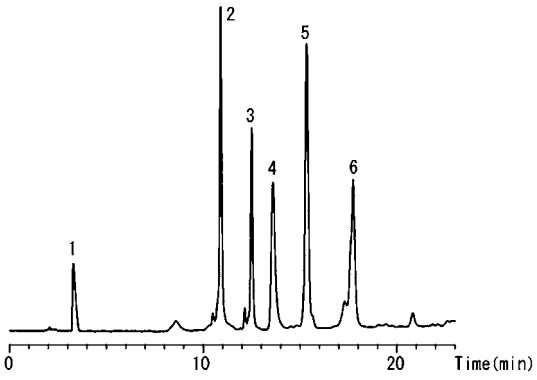
Conditions

Column	:	ProteoSil 200-C8 (5 µm, 150 x 4.6 mm I.D.)
Eluent	:	A) 0.1% TFA in CH_3CN
		B) 0.1% TFA in H_2O
		A/B = 20/80 – 20 min – 55/s45, v/v
Flow Rate	:	1.5 mL/min
Col. Temp.	:	40 °C
Detection	:	UV 220 nm
Injection Vol.	:	5 µL

Analyte

1. Ribonuclease A (0.2 mg/mL)
2. Insulin (0.2 mg/mL)
3. Lysozyme (0.2 mg/mL)
4. BSA (0.2 mg/mL)

Analysis of Protein (ProteoSil 300-C8)



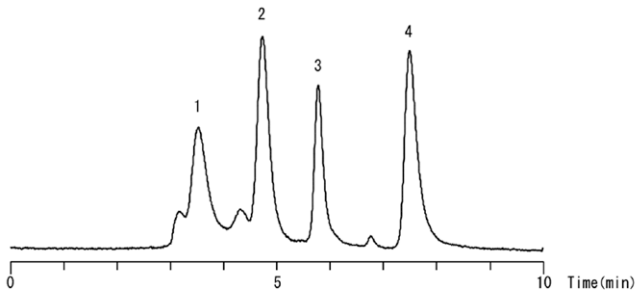
Conditions

Column	:	ProteoSil 300-C8 (5 µm, 150 x 4.6 mm I.D.)
Eluent	:	A) CH_3CN/0.05 % TFA in H_2O = 80/20, v/v
		B) CH_3CN/0.05 % TFA in H_2O = 10/90, v/v
		A/B = 0/100 – 30 min – 100/0, v/v
Flow Rate	:	1.0 mL/min
Col. Temp.	:	30 °C
Detection	:	UV 280 nm
Injection Vol.	:	20 µL

Analyte

1. DL-Phenylalanine (1.01 mg/mL)
2. Cytochrome C (0.11 mg/mL)
3. Lysozyme (0.07 mg/mL)
4. BSA (0.21 mg/mL)
5. α-Chymotrypsinogen A (0.08 mg/mL)
6. Ovalbumin (0.30 mg/mL)

Analysis of Protein (ProteoSil 300-SEC)



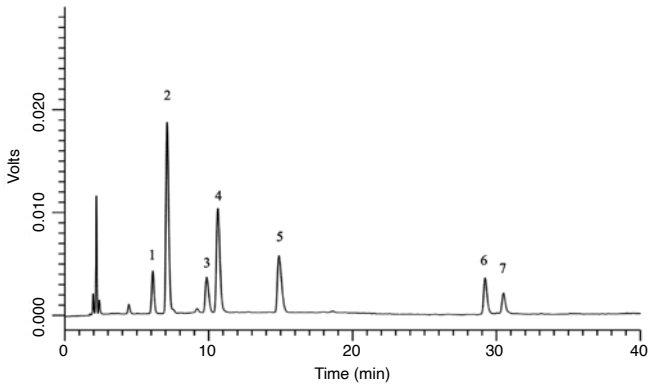
Conditions

Column	:	ProteoSil 300-SEC (5 µm, 250 x 4.6 mm I.D.)
Eluent	:	0.1 M Na_2HPO_4 (pH 6.9, NaH_2PO_4)
Flow Rate	:	0.5 mL/min
Col. Temp.	:	30 °C
Detection	:	UV 220 nm
Injection Vol.	:	20 µL

Analyte

1. Thyrogloblin (0.25 mg/mL)
2. BSA (0.25 mg/mL)
3. Insulin Chain A (0.25 mg/mL)
4. Oxytocin (0.21 mg/mL)

Analysis of Peptides and Proteins (ProteoSil 300-C18)



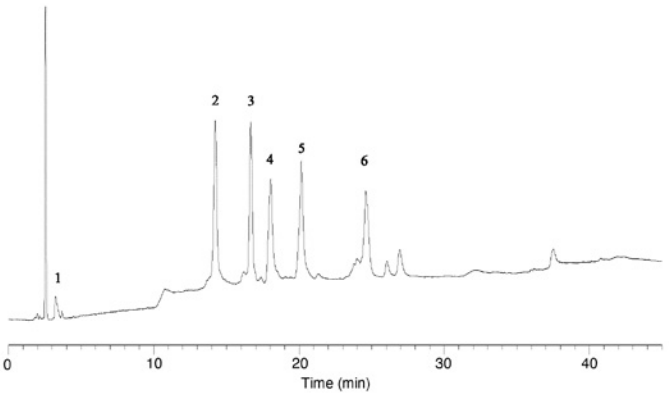
Conditions

Column	:	ProteoSil 300-C18 (5 µm, 150 x 4.6 mm I.D.)
Eluent	:	A) 0.05% TFA in (CH_3CN/H_2O = 90/10, v/v)
		B) 0.05 % H_2O
		A/B = 20/80 – 40 min – 40/60, v/v
Flow Rate	:	1.0 mL/min
Col. Temp.	:	30 °C
Detection	:	UV 280 nm
Injection Vol.	:	20 µL

Analyte

1. Oxytocin (0.05 mg/mL)
2. Methionine Enkephalin (0.11 mg/mL)
3. Leucine Enkephalin (0.11 mg/mL)
4. Angiotensin II (0.05 mg/mL)
5. Angiotensin I (0.16 mg/mL)
6. Insulin (0.05 mg/mL)
7. Insulin Chain B (0.10 mg/mL)

Analysis of Peptides and proteins (ProteoSil 300-C18)



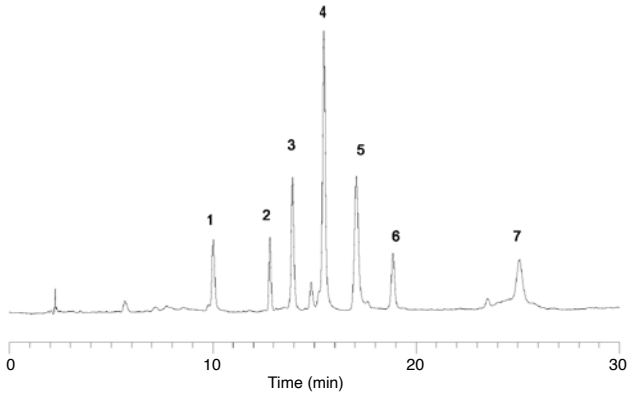
Conditions

Column	:	ProteoSil 300-C18 (5 µm, 150 x 4.6 mm I.D.)
Eluent	:	A) CH_3CN/0.05 % TFA = 80/20, v/v
		B) CH_3CN/0.05 % TFA = 10/90, v/v
		A/B = 0/100 - 30 min - 100/0 - 10 min -100/0, v/v
Flow Rate	:	1.0 mL/min
Col. Temp.	:	30 °C
Detection	:	UV 280 nm

Analyte

1. DL-Phenylalanine (FW 165)
2. Cytochrome C (FW 13,000)
3. Lysozyme (FW 14,000)
4. BSA (FW 66,000)
5. α-Chymotrypsinogen A (FW 25,600)
6. Ovalbumin (FW 45,000)

Analysis of Peptides and proteins (ProteoSil 300-C8)



Conditions

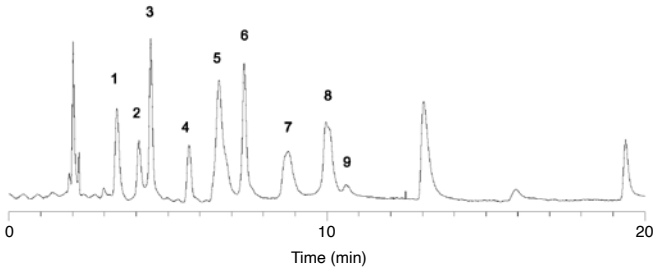
Column	:	ProteoSil 300-C8 (5 µm, 150 x 4.6 mm I.D.)
Eluent	:	A) 0.1 % TFA in (CH_3CN/0.1 % TFA = 90/10, v/v)
		B) 0.1 % TFA
		A/B = 20/80 - 25 min - 60/40 - 5 min - 60/40, v/v
Flow Rate	:	1.0 mL/min
Col. Temp.	:	30 °C
Detection	:	UV 280 nm

Analyte

1. Ribonuclease A (FW 13,700)
2. Insulin (FW 6,000)
3. Cytochrome C (FW 13,000)
4. Lysozyme (FW 14,000)
5. BSA (FW 66,000)
6. STI (FW 21,000)
7. Ovalbumin (FW 45,000)

Applications

Analysis of Peptides and proteins (ProteoSil 300-C4)



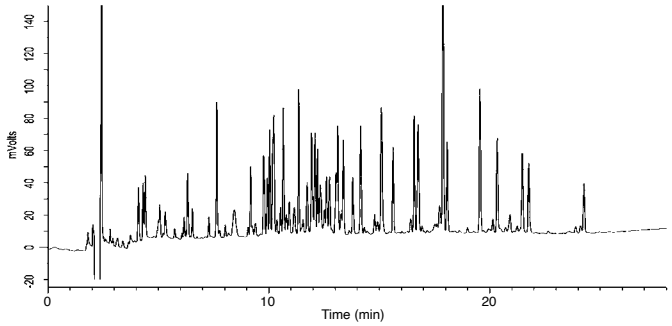
Conditions

Column : ProteoSil 300-C4 (5µm, 150 x 4.6 mm I.D.)
Eluent : A) 0.2 % HCOOH in (CH_3CN/H_2O = 90/10, v/v)
B) 0.2 % HCOOH
A/B = 20/80 – 20 min – 80/20, v/v
Flow Rate : 1.0 mL/min
Col. Temp. : 30 °C
Detection : UV 280 nm

Analyte

1. Neurotensin (FW 1673)
2. Leucin Enkephalin (FW 556)
3. Cytochrome C (FW 12,000)
4. Insulin (FW 6,000)
5. BSA (FW 66,000)
6. Myoglobin (FW 17,000)
7. Creatine amidinohydrolase (FW 43,000)
8. Ovalbumin (FW 45,000)
9. Creatinine amidohydrolase (FW 170,000)

Analysis of BSA Digests



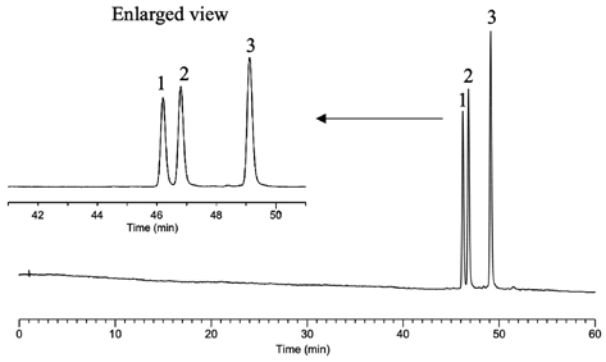
Conditions

Column : ProteoSil 200-C18
(1.9 µm, 150 x 2.1 mm I.D.)
Eluent : A) 0.1% TFA in CH_3CN
B) 0.1% TFA in H_2O
A/B = 10/90 - 30 min - 50/50 - 0.1 min - 90/10
- 5 min - 90/10 - 0.1 min - 10/90 - 15 min
Flow Rate : 0.2 mL/min
Col. Temp. : 40 °C
Detection : UV 210 nm
Injection Vol. : 10 µL

Analyte

Tryptic Digest of BSA (0.5 mg/mL)

Analysis of Oligonucleotides



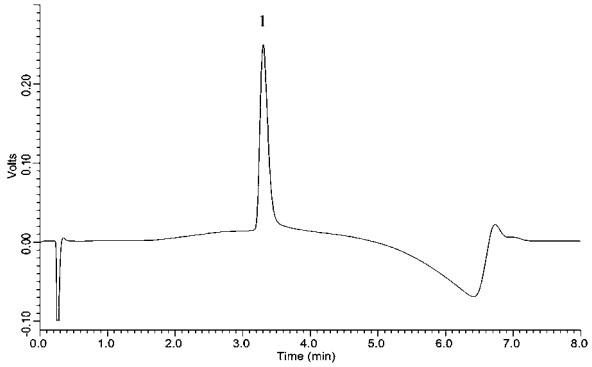
Conditions

Column : ProteoSil 200-C18
(3 µm, 100 x 3.0 mm I.D.)
Eluent : A) 5 mM TEAA in H_2O (pH 6.5)/CH_3CN
= 80/20, v/v
B) 5 mM TEAA in H_2O (pH 6.5)
A/B = 5/95 – (60 min) – 50/50, v/v
Flow Rate : 0.8 mL/min
Col. Temp. : 40 °C
Detection : UV 260 nm
Injection Vol. : 1 µL
Sample : Standard

Analyte

1. CATGACGTTCCTGATGCT
(18 mer, M.W. 5465.61)
2. CCATGACGTTCCTGATGCT
(19 mer, M.W. 5754.79)
3. TCCATGACGTTCCTGATGCT
(20 mer, M.W. 6058.99)

Analysis of IgG



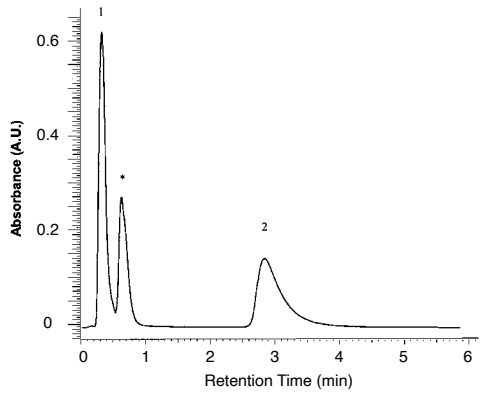
Conditions

Column Cat. No. : 5020-10818
Column : MonoSelect RP-mAb (20 x 2.1 mm I.D.)
A) 0.1%TFA in CH_3CN
Eluent : B) 0.1%TFA in H_2O
A/B = 5/95 – 5 min – 90/10 – 0.1 min – 5/95 – 3
Flow Rate : 0.3 mL/min
Col. Temp. : 80 °C
Detection : UV 210 nm
Injection Vol. : 5 µL
Sample : Standard

Analyte

1. IgG 0.1 mg/mL

Analysis of Abraxane



Conditions

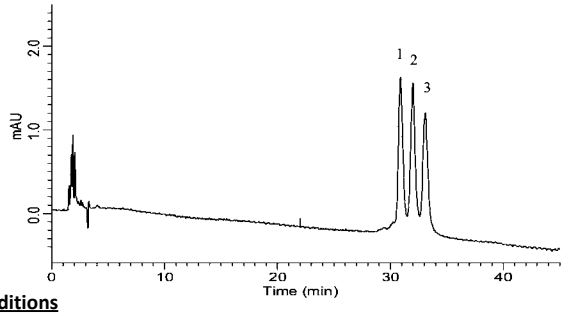
Column : MonoSelect nPEC (50 x 3.0 mm I.D.)
Column Cat. No. : 5020-10816
Eluent : A) CH_3OH
B) 50 mM Na_2SO_4 in 20 mM Acetate buffer (pH 4.6)
A/B = 30/70, v/v
Flow Rate : 1.0 mL/min
Col. Temp. : Room temperature (approx. 25 °C)
Detection : UV 260 nm
Injection Vol. : 10 µL

Analyte

1. Abraxane
(Nanoparticle albumin–bound paclitaxel)
2. Paclitaxel

* Unknown peak

Analysis of Oligonucleotides



Conditions

Column : ProteoSil HILIC
(1.9 µm, 150 x 2.1 mm I.D., Metal-free hardware)
Eluent : A) CH_3CN
B) 200 mM $HCOONH_4$ in H_2O

Time (min)	A (vol%)	B (vol%)
0	70	30
45	45	55

Flow Rate : 0.2 mL/min
Col. Temp. : 40 °C
Detection : UV 260 nm
Injection Vol. : 1 µL
Sample : Standard solution of Single-stranded DNA

Analyte

1. TATGACGTTCCTGATGCT
(18 mer)
20 nmol/mL
2. CTATGACGTTCCTGATGCT
(19 mer)
20 nmol/mL
3. GCTATGACGTTCCTGATGCT
(20 mer)
20 nmol/mL

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