



MonoSpin

Solid Phase Extraction Spin Column

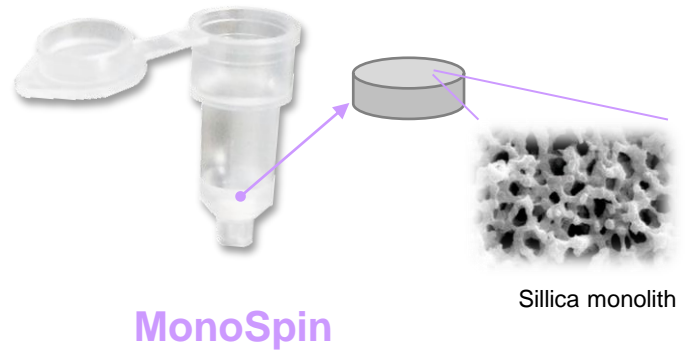


MonoSpin

MonoSpin is a solid-phase extraction spin column that uses silica monoliths with uniform continuum pores. It effectively and rapidly extracts, isolates, purifies, and concentrates samples by centrifugation.

【Features】

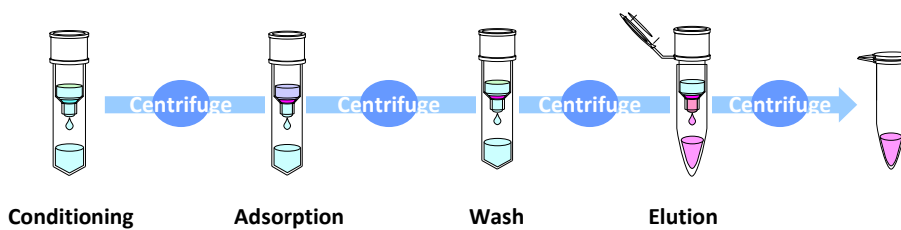
- Easy operation by centrifuge
- Speedy sample treatment with a superb through the pore
- Excellent reproducibility (S-type) even at 100 μL or fewer elution volumes.



Operation method

Short time centrifugation is used to pass the liquid in solid-phase extraction.

The whole sample treatment process can be done within 10 min.



Centrifuge Operation

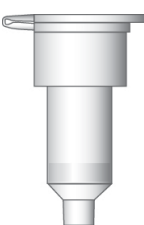
Shape

MonoSpin series cartridges of different types are available:

Type S: Excellent for pretreating the sample for 50–800 μL


Type L: Appropriate for sample 0.5–8 mL.

For the details of the varied functional group, please see the next page.



S Type

- Disk size : 4.2 × 1.5 mm
- Sample volume : up to 800 μL
- Elution volume : 50 to 800 μL
- Centrifugation speed : 2,000 to 10,000 $\times g$

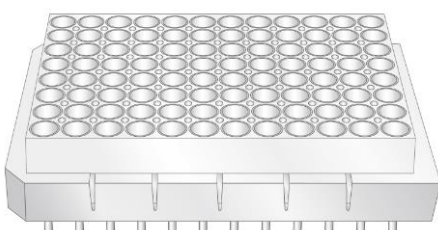


L Type

- Disk size : 9 × 3 mm
- Sample volume : up to 8 mL
- Elution volume : 0.5 to 8 mL
- Centrifugation speed : 1,000 $\times g$

NOTE) MonoSpin ProA and MonoSpin ProG have different shapes. Please see page 16 for details.

96 Well plate type

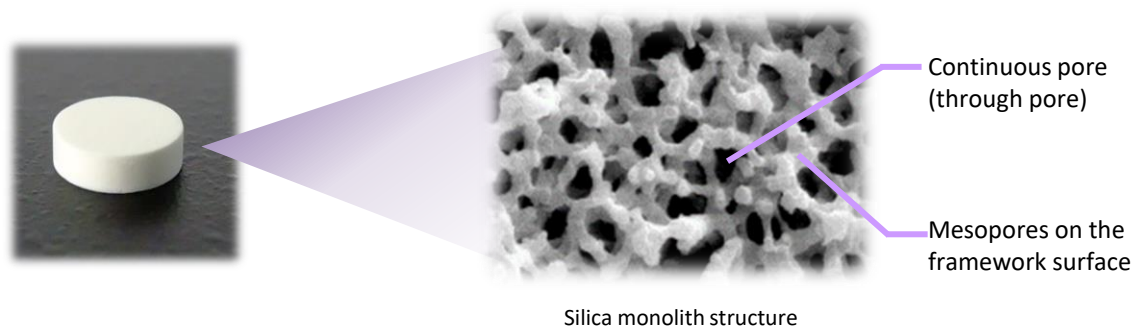


- Sample volume : up to 800 μL
- Elution volume : 50 to 800 μL
- Centrifugation speed : 1,000 to 5,000 $\times g$ (can be used in vacuum aspiration)

NOTE) MonoSpin C18 FF, MonoSpin ProA and MonoSpin ProG have different specifications. Please see page 14 and 15 for details.

Silica monolith ~ New separation media that are neither particulate nor membrane ~

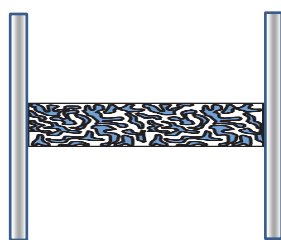
Silica monoliths are integral silica gels with uniform continuous pores and produced from ethyl silicate. Unlike the particle media, the silica monolith is shaped like a disk. Silica monoliths have high liquid permeability and large surface area as they have through-pores and mesopores on their framework surface. Thus, this state-of-the-art medium is becoming popular worldwide for its properties: high recovery, high performance of adsorption, and desorption.



Advantages of Monolithic SPE materials over particle packed SPE materials

- ❖ Disk-shaped silica monoliths do not use frits to hold particle media in traditional solid-phase extraction cartridges.
- ❖ Monolithic material has a massive surface area, making it possible to reduce the sample volume. Silica monoliths makes it possible to retain samples in the cartridge and completely elute small samples during processing.
- ❖ Despite its high liquid permeability, it is also suitable for fast elution without losing its high recovery as it achieves rapid sample diffusion and separation.

Silica monolith



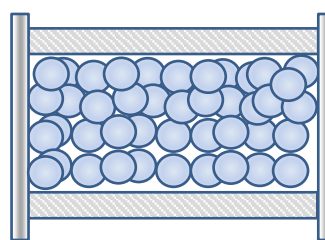
- No filter required
- Minimized separation media

Bed volume for separation media : **small**

Sample diffusion in the column : **fast**

Separation speed : **fast**

Particle-filled Form



- Need for filters
→ liquid may be remained in the filter

Bed volume for separation media : **large**

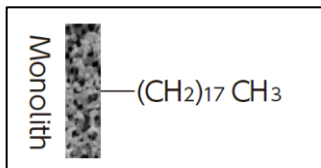
Sample diffusion in the column : **slow**

Separation speed : **slow**

MonoSpin series lineup

MonoSpin C18/C18 FF

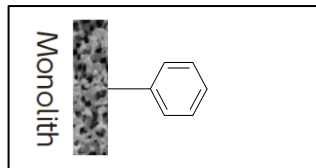
S L 96



Octadecyl functional group. Optimal for drug extraction in biological samples and desalting and enrichment of peptide samples. High-flow (FF) designs are also available.

MonoSpin Ph

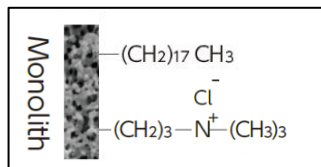
S



The phenyl group is chemically bonded, which makes it feasible to use weaker hydrophobicity than C18. Therefore, it is suitable for the recovery of hydrophobic drugs from biological samples under reversed phase mode.

MonoSpin C18-AX

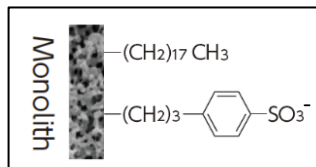
S 96



It is a mix mode type in which both octadecyl and quaternary ammonium groups are chemically bonded. It can reliably retain bio-samples at high salt concentrations and is particularly suitable for the recovery of acidic drugs.

MonoSpin C18-CX

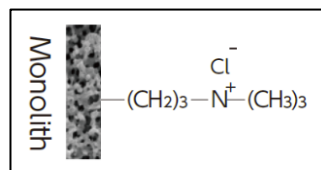
S 96



Its octadecyl and benzenesulfonic acid groups are bonded. Thus, purifying dissociated basic drugs in serum and urine is appropriate. Compared with MonoSpin C18 and SCX alone, SCX has higher cleanup efficacy as it works as hydrophobic and ion-exchange interactions.

MonoSpin SAX

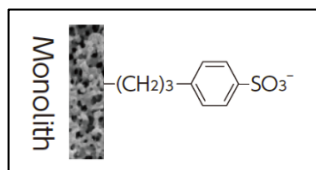
S L 96



Bond with Trimethyl aminopropyl, combining strong anion exchange and weak hydrophobic interaction. It is best for extracting acidic drugs.

MonoSpin SCX

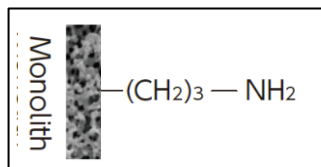
S L 96



It is bonded with propyl benzene sulfonic acid, combining strong cation exchange and hydrophobic interaction. Therefore, MonoSpin SCX is excellent for extracting basic drugs.

MonoSpin NH2

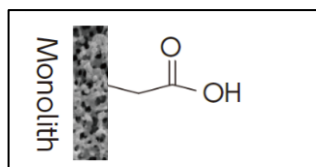
S L 96



It is bonded with aminopropyl and is beneficial for enriching the sugar chain or hydrophilic compounds by HILIC mode.

MonoSpin CBA

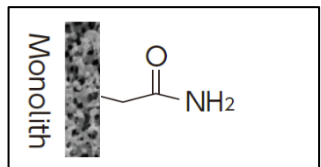
S L 96



It is bonded with propyl benzene sulfonic acid, combining strong cation exchange and hydrophobic interaction. It is excellent for extracting basic drugs.

MonoSpin Amide

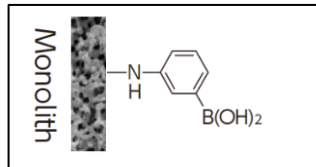
S 96



It is bonded with an amide group. MonoSpin amide is best for extracting sugar chains and various acidic and basic hydrophilic compounds by HILIC mode.

MonoSpin PBA

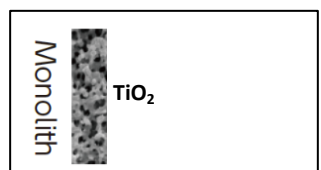
S 96



It is bonded with phenyl boric acid, which gives you higher selectivity. Hence, MonoSpin PBA is excellent for extracting cis diol compounds, such as catechol amines.

MonoSpin TiO

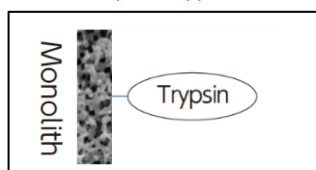
S



It is characterized by a monolith skeleton coated with dioxide titanium. It is excellent for enriching phosphopeptides.

MonoSpin Trypsin

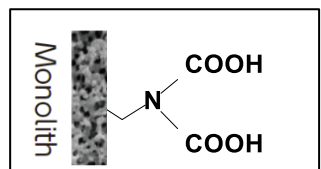
S



The columns are immobilized with trypsin, a digestive protein enzyme. It enables the rapid digestion of proteins.

MonoSpin ME

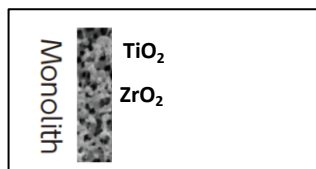
S L



It is bonded with iminodiacetic acid groups. Therefore, it is optimal for the recovery of trace metals in samples.

MonoSpin Phospholipid

S L

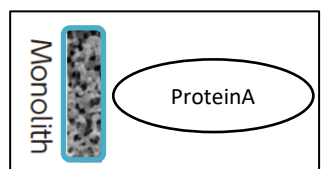


It has a phospholipid removal column coated with titanium dioxide and zirconium dioxide on a silica monolith. It adsorbed phospholipids in samples with an easy pretreatment.

... see the page 13

MonoSpin ProA

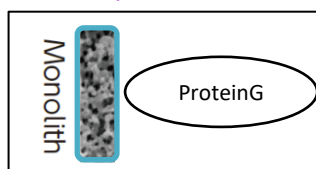
S L 96 ... See page 16



It contains protein A, which is immobilized on the monolith. Therefore, it enables the efficient purification of antibodies.

MonoSpin ProG

S L 96 ... see the page 16



The protein G is immobilized on the monolith. Therefore, it enables the efficient purification of antibodies.

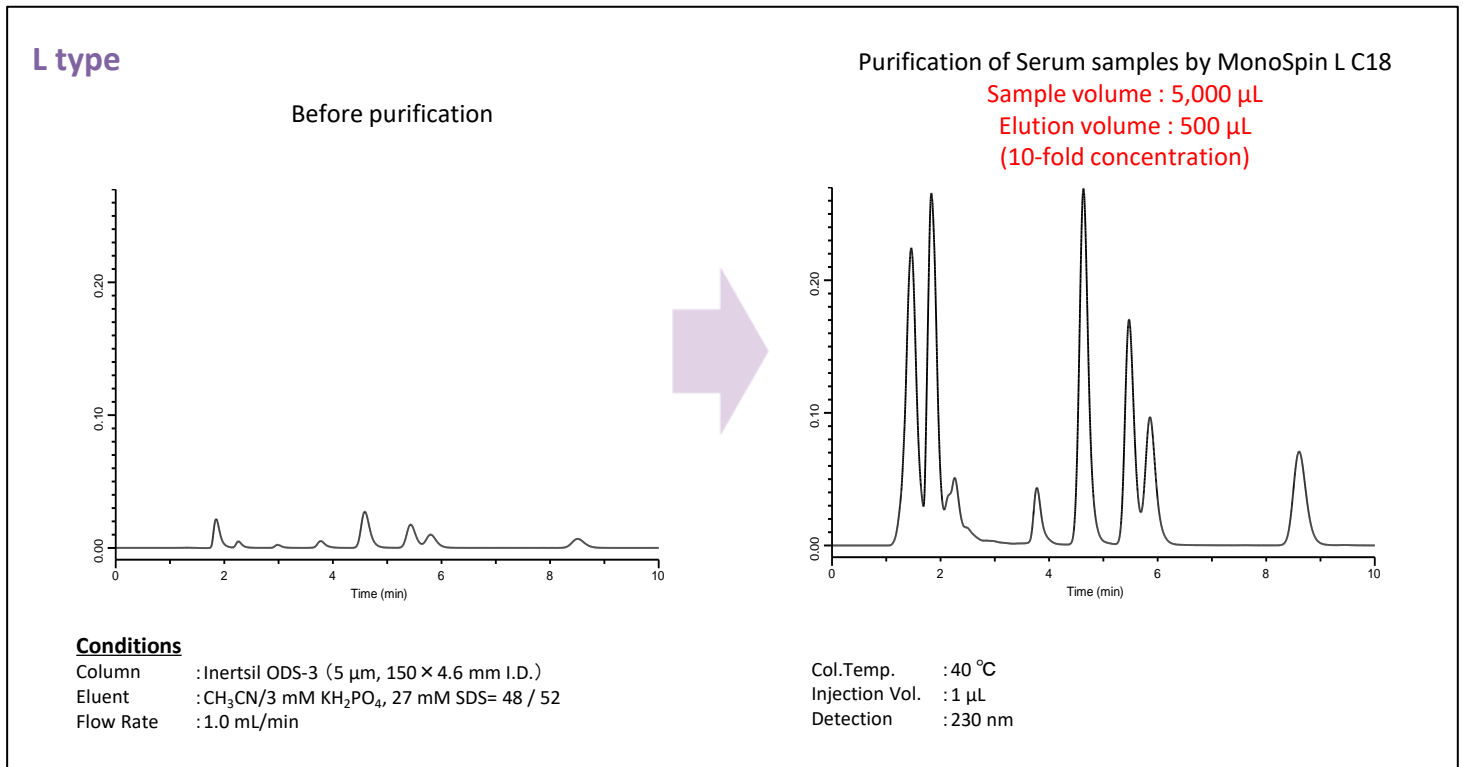
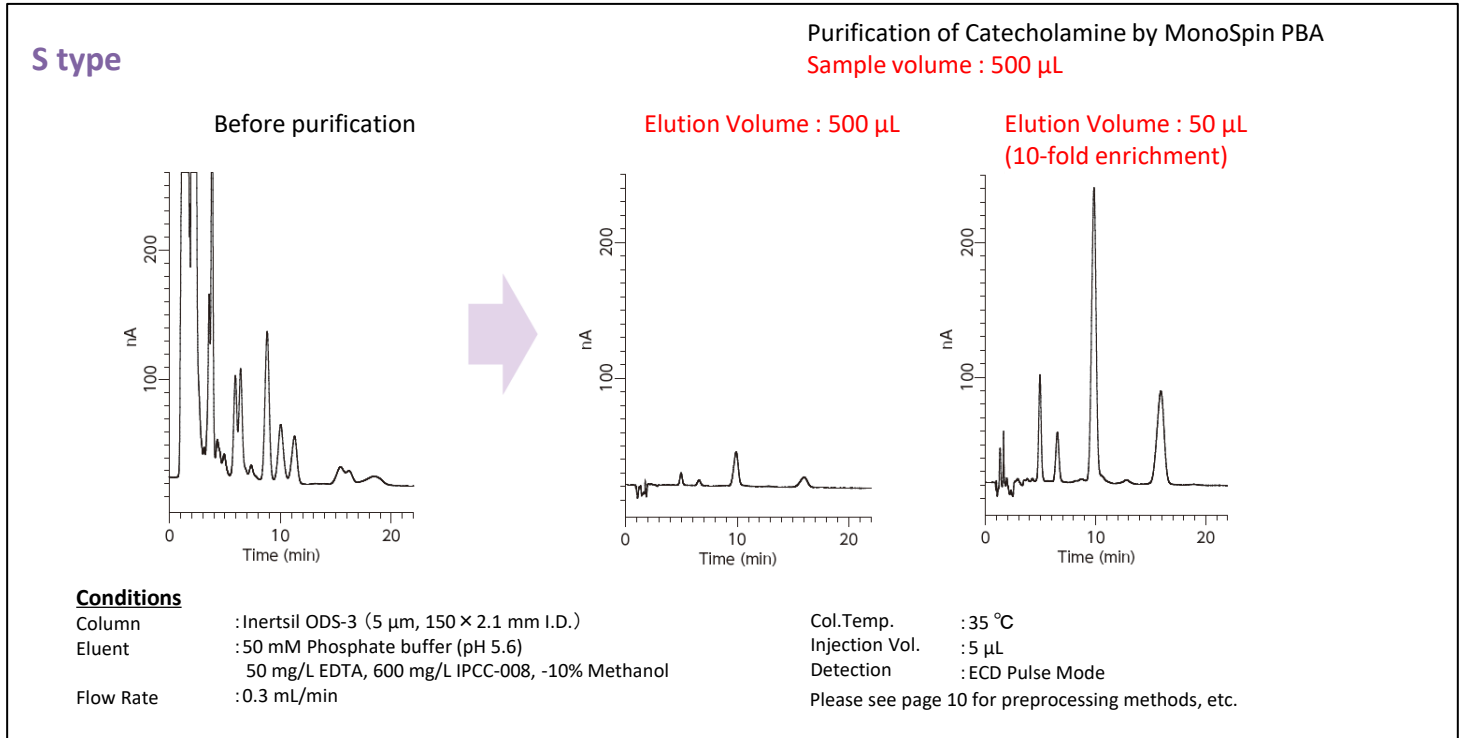
S : S-type column products L : L-type column products 96 : 96-well plate-type product

Characteristics of MonoSpin Series

Purification and Enrichment of Trace Analytes

Due to its high permeability, the MonoSpin series enables quicker and more efficient purification and enrichment with centrifugation.

It is also recommended to elute small volume samples, and trace analytes can be collected without dilution.



Physical properties of MonoSpin series

| Product name | Functional Group | S Type / 96 well | | L Type | | Surface Area (m ² /g) | Bed Capacity (For type S) |
|---------------------------|---|-------------------|---------------|-------------------|---------------|----------------------------------|-------------------------------|
| | | Through pore (μm) | Mesopore (nm) | Through pore (μm) | Mesopore (nm) | | |
| MonoSpin C18 | Octadecyl group | 5 | 10 | 10 | 10 | 350 | 100 μg Amitriptyline |
| MonoSpin C18 FF | Octadecyl group | 20 | 15 | 10 | 10 | 300 | 50 μg Amitriptyline |
| MonoSpin Ph | Phenyl group | 5 | 10 | - | - | 350 | 100 μg Amitriptyline |
| MonoSpin C18-AX | Octadecyl group, Quaternary ammonium | 5 | 10 | - | - | 350 | 100 μg Ibuprofen |
| MonoSpin C18-CX | Octadecyl group, Benzenesulfonic acid group | 5 | 10 | - | - | 350 | 100 μg Amitriptyline |
| MonoSpin SAX | Trimethylaminopropyl group | 5 | 10 | 10 | 10 | 350 | 100 μg Ibuprofen |
| MonoSpin SCX | Propylbenzenesulfonic acid group | 5 | 10 | 10 | 10 | 350 | 100 μg Amitriptyline |
| MonoSpin NH ₂ | Aminopropyl-group | 5 | 10 | 10 | 10 | 350 | 100 μg Maltopentaose |
| MonoSpin CBA | Carboxyl group | 5 | 10 | 10 | 10 | 350 | 100 μg Amitriptyline |
| MonoSpin Amide | Amide group | 5 | 10 | - | - | 350 | 100 μg Angiotensin II |
| MonoSpin PBA | Phenylboronic acids | 5 | 10 | - | - | 350 | 100 μg Dopamine |
| MonoSpin TiO ₂ | Titanium dioxide | 20 | 15 | - | - | 200 | 40 μg Adenosine monophosphate |
| MonoSpin Trypsin | Trypsin | 5 | 10 | - | - | 100 | - - |
| MonoSpin ME | Iminodiacetic acid group | 5 | 10 | 10 | 10 | 350 | 25 μg Cu ions |
| MonoSpin Phospholipid | Titanium dioxide Zirconium dioxide | 5 | 10 | 10 | 10 | 350 | 10 μL Human serum |
| MonoSpin ProA | Protein A | 2 | 60 | 2 | 60 | - | 400 μg Human IgG |
| MonoSpin ProG | Protein G | 2 | 60 | 2 | 60 | - | 300 μg Human IgG |

Specifications for Shape and Type

| Type | MonoSpin S type* ¹ | MonoSpin FF* ² | MonoSpin L type | MonoSpin 96 well type |
|-------------------|-------------------------------|---------------------------|-----------------|-----------------------|
| Disk size | 4.2 × 1.5 mm | 4.2 × 1.5 mm | 9 × 3 mm | 4.2 × 1.5 mm |
| Sample Volume | Up to 800 μL | Up to 800 μL | Up to 8 mL | Up to 800 μL |
| Elution Volume | 50 to 800 μL | 50 to 800 μL | 0.5 to 8 mL | 100 to 800 μL |
| Centrifugal force | 2,000 to 10,000 × g | 1,000 × g | 1,000 × g | 1,000 to 5,000 × g |

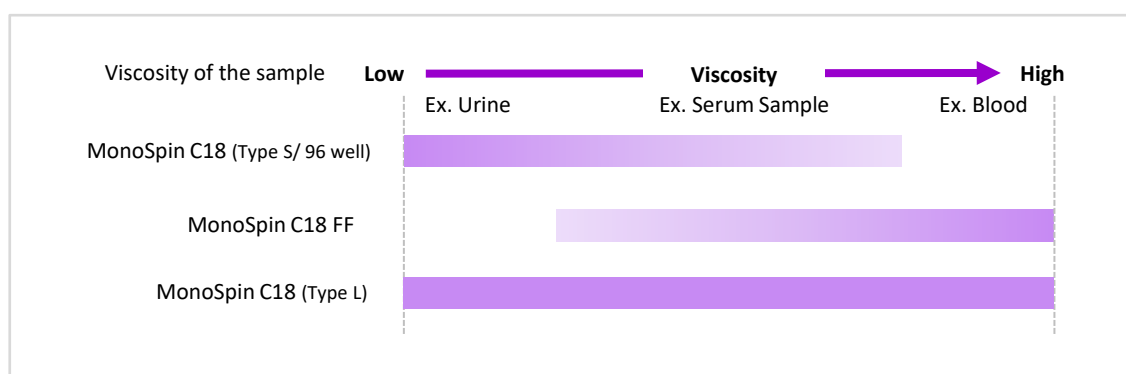
* 1: MonoSpin ProA and MonoSpin ProG are different in specifications. Please refer to page 15 for the details.

* 2: FF type is available for MonoSpin C18 FF only.

The Viscosity of the Sample

The MonoSpin series is optimized as a spin column for pretreatment of biological samples. If you are working on very viscous samples such as blood, MonoSpin C18 FF is the best choice.

Please refer to the following chart for choosing the suitable MonoSpin.



Application

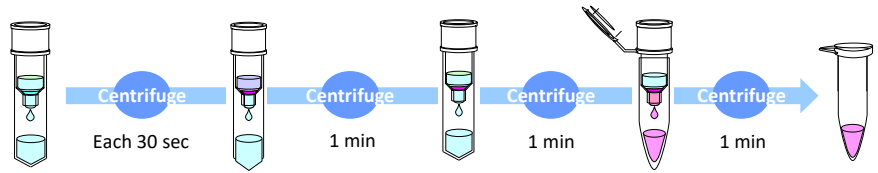
Purification of Amphetamines in urine using MonoSpin C18

Sample Volume 800 μ L

Urine : 400 μ L

Buffer solution (pH 13) : 400 μ L

*Sample was mixed for 1 min at 10,000 x g. Transferred and used the supernatant as sample.



1. Conditioning

- ① Methanol 300 μ L
- ② Buffer (pH 13) 300 μ L
- (①→Centrifuge→②)

2. Adsorption

Sample solution 800 μ L

3. Wash

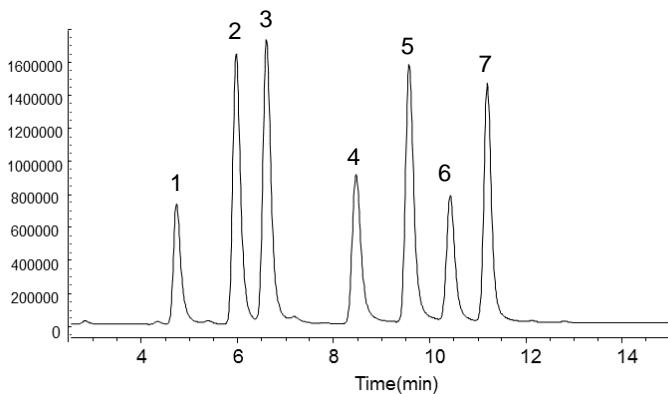
Buffer (pH 13) 300 μ L

4. Elution

Methanol-0.1 % Formic acid (1:1, v/v) 100 μ L

Purified sample

Centrifuge : 5,000 \times g



Conditions

Column : InertSustainSwift C18 (3 μ m, 150 \times 2.1 mm I.D.)

Eluent : A) 10 mM HCOONH₄ (pH 3.3)

B) CH₃OH

A/B = 90/10 - 2 min - 90/10 - 13 min - 70/30, v/v

Flow Rate : 0.3 mL/min

Col. Temp. : 40 $^{\circ}$ C

Detection : LC/MS

Sample : 1. Norephedrine

5. Methamphetamine

2. Ephedrine

6. 3,4-methylenedioxyamphetamine

3. Methylephedrine

7. 3,4-methylenedioxymethamphetamine

4. Amphetamine

※ Data provided by Dr. Namera, Hiroshima University

Recovery of drugs in biological samples using MonoSpin C18

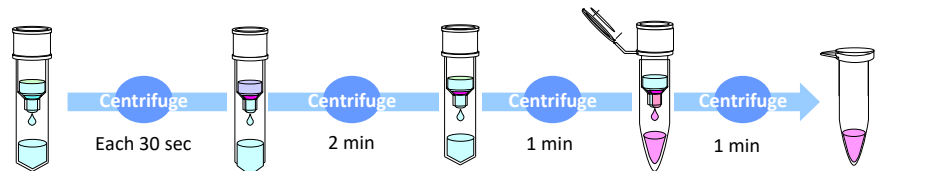
Sample Volume 600 μ L

Serum : 200 μ L

10 mM potassium phosphate :

400 μ L (pH 7.0)

* Sample was mixed for 1 min at 10,000 \times g. Transferred and used the supernatant as sample.



1. Conditioning

- ① Methanol 300 μ L
- ② 10 mM Potassium phosphate (pH 7.0) 300 μ L
- (①→Centrifuge→②)

2. Adsorption

Sample solution 600 μ L

3. Wash

Water 300 μ L

4. Elution

Acetonitrile 200 μ L

Purified sample

Centrifuge : 2,300 \times g

Day-to-day reproducibility of the drug in serum using MonoSpin C18 (3 days, n = 10).

| Sample | Concentration (ng/mL) | Recovery rate (%) | RSD (%) |
|-------------|-----------------------|-------------------|---------|
| Desipramine | 5 | 91.2 | 4.8 |
| | 10 | 86.1 | 3.3 |
| | 50 | 85.2 | 5.9 |
| | 250 | 88.4 | 6.5 |
| Imipramine | 5 | 96.3 | 9.5 |
| | 10 | 95.8 | 1.5 |
| | 50 | 94.5 | 0.9 |
| | 250 | 95.9 | 0.9 |
| Fluvoxamine | 5 | 96.8 | 11.6 |
| | 10 | 87.1 | 5.0 |
| | 50 | 86.8 | 8.1 |
| | 250 | 87.5 | 9.7 |

| Sample | Concentration (ng/mL) | Recovery rate (%) | RSD (%) |
|-------------|-----------------------|-------------------|---------|
| Paroxetine | 5 | 83.7 | 3.9 |
| | 10 | 84.1 | 7.8 |
| | 50 | 83.9 | 8.2 |
| | 250 | 86.7 | 7.5 |
| Maprotiline | 5 | 85.7 | 8.1 |
| | 10 | 84.7 | 3.2 |
| | 50 | 88.6 | 5.4 |
| | 250 | 87.5 | 7.7 |
| Duloxetine | 5 | 106.3 | 9.9 |
| | 10 | 104.8 | 6.7 |
| | 50 | 99.8 | 8.7 |
| | 250 | 99.8 | 6.0 |

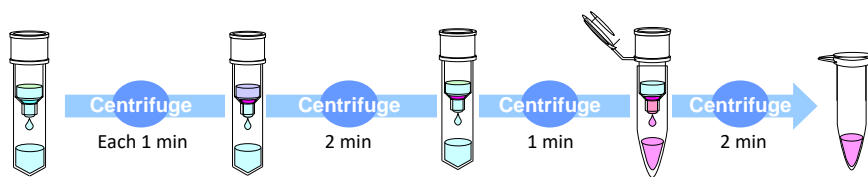
| Sample | Concentration (ng/mL) | Recovery rate (%) | RSD (%) |
|---------------|-----------------------|-------------------|---------|
| Amitriptyline | 5 | 83.7 | 7.0 |
| | 10 | 81.8 | 2.8 |
| | 50 | 83.8 | 3.0 |
| | 250 | 88.4 | 2.7 |
| Sulpiride | 5 | 97.9 | 9.0 |
| | 10 | 95.5 | 8.5 |
| | 50 | 90.8 | 2.6 |
| | 250 | 92.6 | 3.0 |

Desalination of protein digestion using MonoSpin C18

Maximum sample solution 800 μ L

After Tryptic digestion, add TFA to adjust the concentration to 0.1%.

Centrifuge : 2,300 \times g



1. Conditioning

- ① Acetonitrile 200 μ L
- ② 0.1% aqueous TFA 200 μ L
- (①→Centrifuge→②)

2. Adsorption

Sample solution
Maximum 800 μ L

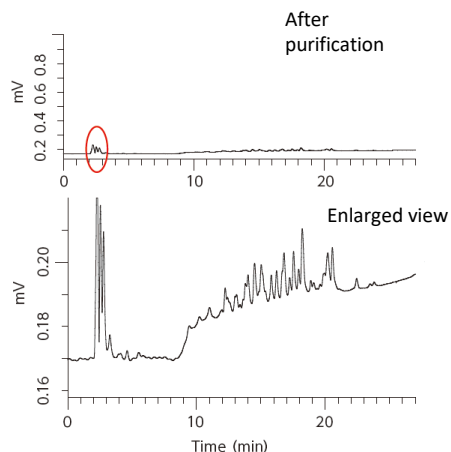
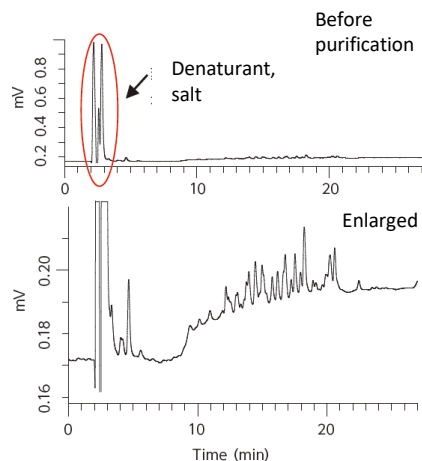
3. Wash

0.1 % aqueous TFA
200 μ L

4. Elution

60 % acetonitrile
200 μ L

Desalted samples



Conditions

Column : Inertsil ODS-3
(3 μ m, 150 \times 2.1 mm I.D.)
Eluent : A)H₂O (0.1 % TFA)
B)CH₃CN (0.1 % TFA)
A/B = 90/10 - 20 min - 50/50
Flow Rate : 0.2 mL/min
Col. Temp. : 40 $^{\circ}$ C
Detection : UV 210 nm
Sample : Digested BSA 2 μ L

Highly concentrated denaturant and salt in digestive were successfully removed using MonoSpin C18.

Rapid Digestion of BSAs by MonoSpin's Trypsin HP

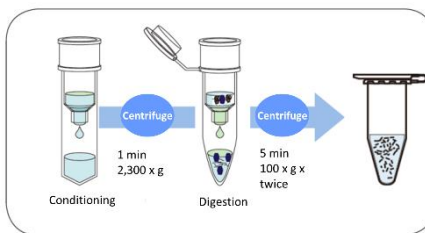
Ex. Reductive alkylation protocol

1 mg bovine serum-albumin

- 500 mM Tris-HCL(pH 8. 0)-- 8M urea (Solution 1): 175 μ L
- 40 mg/mL Dithiothreitol in Solution 1: 25 μ L
- Incubation at 37 $^{\circ}$ C for 90 min
- 40 mg/mL Iodoacetamide in Solution 1: 50 μ L
- Incubation at 37 $^{\circ}$ C for 30 min (under shaded conditions)

Reductive alkylation of proteins: 250 μ L

- Dilute with 50mM Ammonium bicarbonate to adjust the urea to 2M: 750 μ L



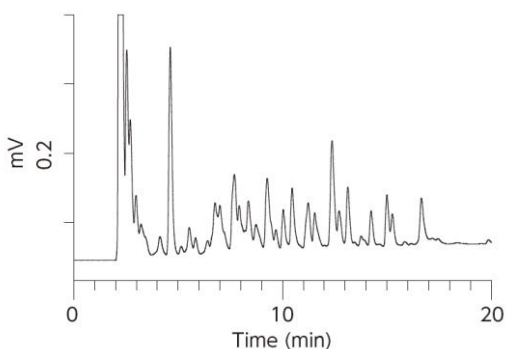
Conditions

Column : Inertsil ODS-3
(3 μ m, 150 \times 2.1 mm I.D.)
Eluent : A)H₂O (0.1 %HCOOH)
B)CH₃CN (0.1 %HCOOH)
A/B = 90/10 - 20 min - 50/50
Flow Rate : 0.2 mL/min
Col. Temp. : 40 $^{\circ}$ C
Detection : UV 210 nm
Sample : Digested BSA 2 μ L

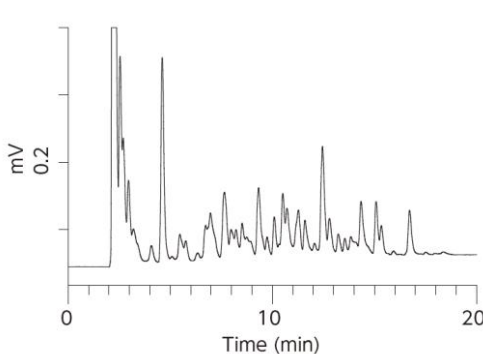
MonoSpin Trypsin HP

NOTE) The method of reductive alkylation should be optimized depending on the type of protein.

● In-Solution digestion (37 $^{\circ}$ C for 10 h)



● Digested with MonoSpin Trypsin HP(at 25 $^{\circ}$ C for 10 min)



Trypsin-immobilized spin column can complete the process just in 10 min.

NOTE) For digestion, be sure to use protein after reductive alkylation.

Application

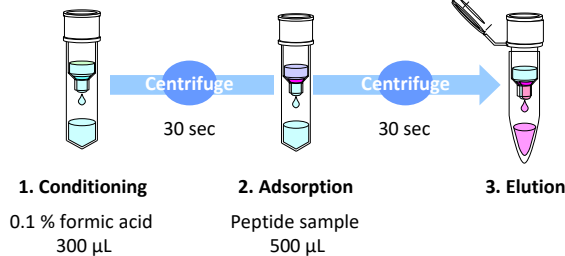
Fractionation of Protein digests using MonoSpin SCX

The use of spin columns and elution salt concentration stepwise makes it feasible to fractionate peptides without using 2D-LC or other complex systems.

Sample Volume: 500 μ L

Used Peptide sample dissolved in 0.1% Formic acid after desalting with MonoSpin C18.

Centrifuge : 10,000 $\times g$



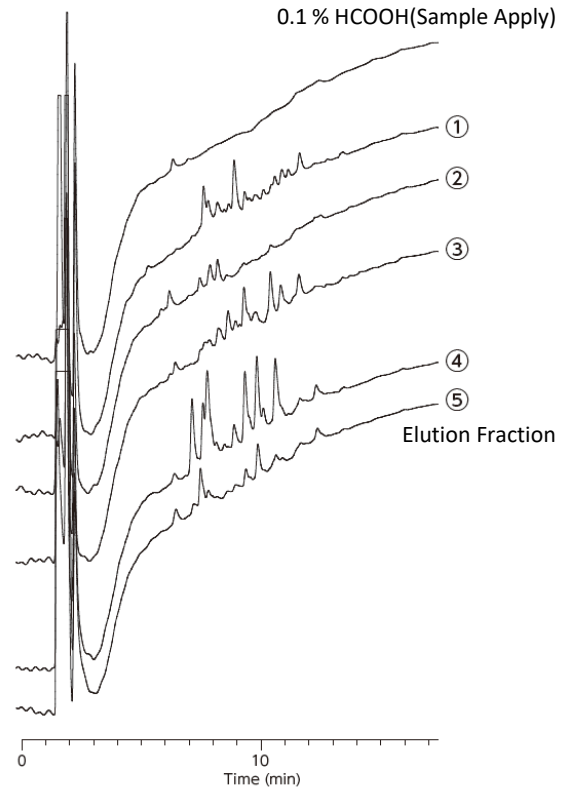
Apply the eluent, centrifuge, and then attach a new tube to apply the next eluent.

Each eluate composition

- ① 25 mM HCOONH₄ 200 μ L
 - ② 50 mM HCOONH₄ 200 μ L
 - ③ 100 mM HCOONH₄ 200 μ L
 - ④ 500 mM HCOONH₄ 200 μ L
 - ⑤ 1 M HCOONH₄ 200 μ L
- Injection) Each solution contains 10% acetonitrile.

Conditions

Column : Inertsil ODS-3 (3 μ m, 2.1 \times 150 mm) Detection : UV 210 nm
 Eluent : A) H₂O (0.1 % HCOOH) Flow Rate : 0.2 mL/min
 B) CH₃CN (0.1 % HCOOH) Col. Temp. : 40 $^{\circ}$ C
 A/B = 90/10 - 20 min - 50/50 Injection Vol. : 2 μ L

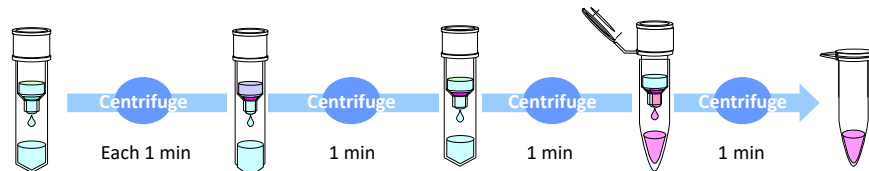


Purification of pyridylaminated glycans using MonoSpin's NH2

Sample volume: 800 μ L

Dissolve the sample to adjust the concentration of ACN to 90~95%.

Centrifuge : 2,300 $\times g$

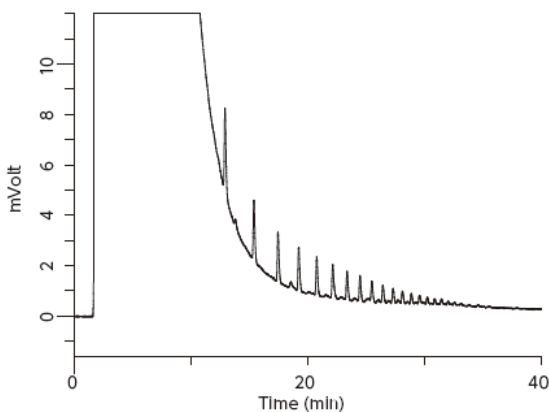


- 1. Conditioning**
① 50 % acetonitrile (0.1 % formic acid) 500 μ L
 - 2. Adsorption**
Sample solution 800 μ L
 - 3. Wash**
90 % acetonitrile (0.1 % formic acid) 500 μ L
 - 4. Elution**
50 % acetonitrile (0.1 % formic acid) 50 - 800 μ L
 - Purified sample**
- (①→Centrifuge→②)

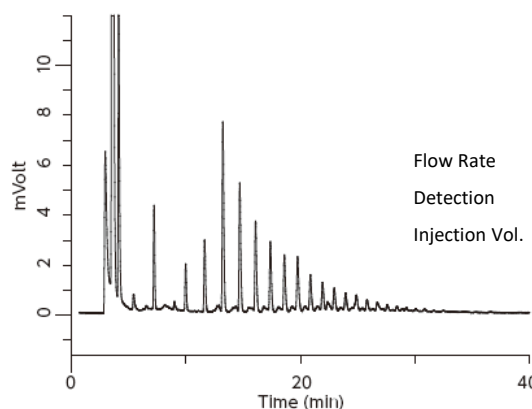
Conditions

Column : NH₂ Column (5 μ m, 250 \times 4.6 mm I.D.)
 Eluent : A) H₂O/CH₃CN = 5/95 0.1 % HCOOH
 B) H₂O/CH₃CN = 95/5 0.1 % HCOOH
 A/B = 90/10-10 min-90/10-40 min-60/40
 Flow Rate : 1 mL/min
 Detection : FL Em 320 nm, Ex 400 nm
 Injection Vol. : 1.5 μ L

Before purification



Purified with MonoSpin NH2

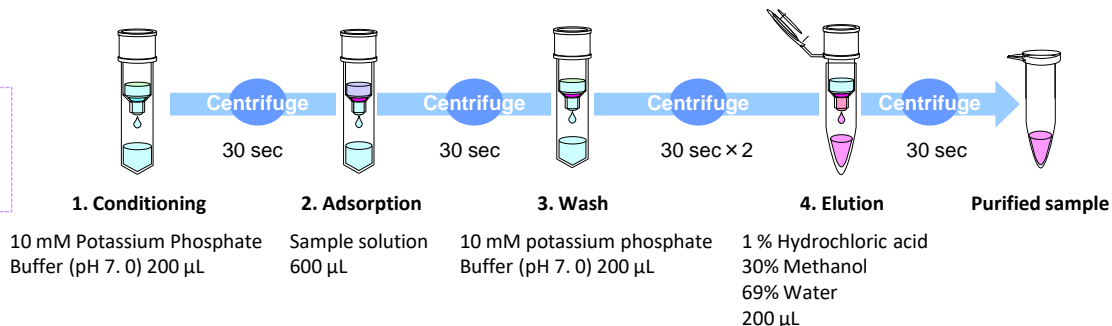


Purification of Paraquat and Diquat using MonoSpin CBA

Sample volume 600 μ L

Urine: 200 μ L
10 mM potassium phosphate
Buffer solution (pH 7.0): 400 μ L

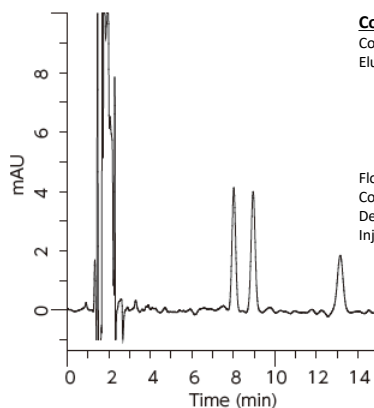
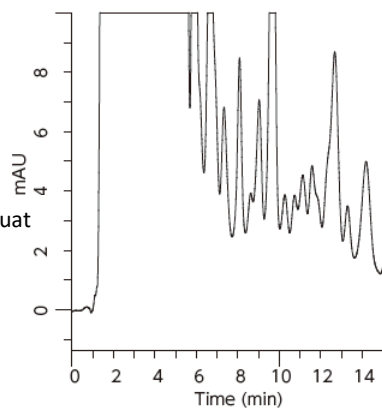
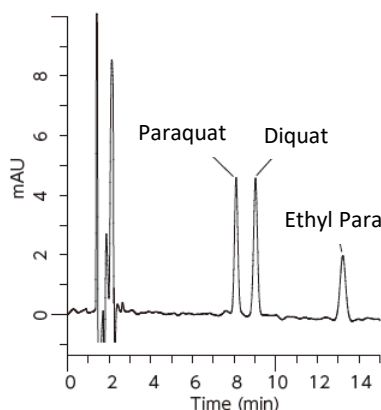
Centrifuge : 10,000 \times g



Standard Solution (1 μ g/mL)

Urine + pesticide (1 μ g/mL each)

After purification with MonoSpin CBA



Conditions

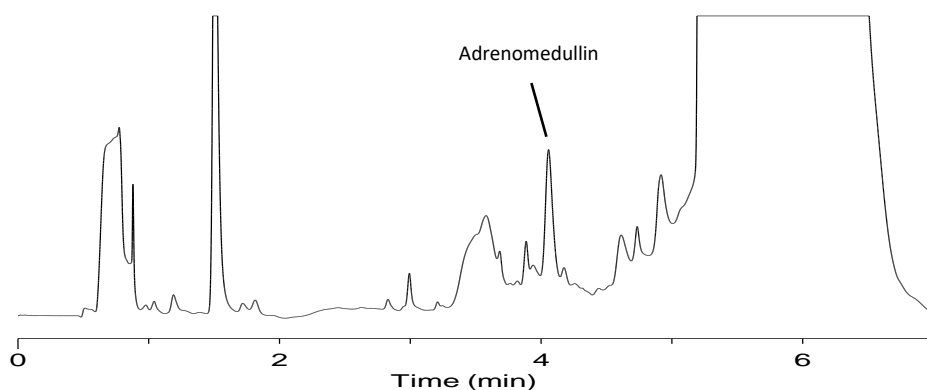
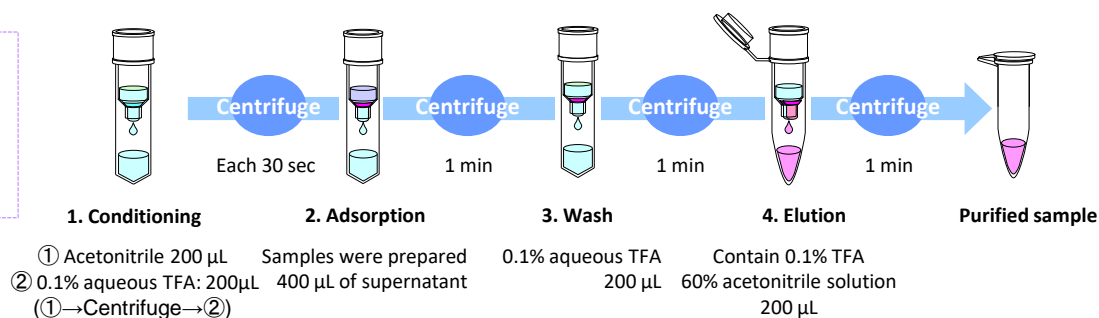
Column :Inertsil ODS-3 (5 μ m, 150 mm \times 4.6 mm I.D.)
Eluent :0.2 M phosphoric acid, 0.1 M diethyl amine, 7.5 mM IPCC08(IPCC-0.8, Sodium 1-Octanesulfonate) /Acetonitrile=89/11
Flow Rate :1 mL/min
Col.Temp. :40 $^{\circ}$ C
Detection :PDA 290 nm
Injection Vol. :50 μ L

Recovery of hormones in serum using MonoSpin C18

Sample preparation

Add 10 μ L of 1 mg/mL adrenomedullin to serum: 190 μ L.
Centrifuge the sample after addition of 0.1% TFA solution 200 μ L.
Used the supernatant as sample.

Centrifuge : 2,300 \times g



Conditions

Column :InertSustain C18 (2 μ m, 50 \times 2.1 mm I.D.)
Eluent :A)0.1 % TFA in Water
B) 0.1 % TFA in Acetonitrile
A/B = 85/15 – 5 min – 50/50 – 2 min-50/50
Flow Rate :200 μ L/min
Col. Temp. :40 $^{\circ}$ C
Detection :UV 210 nm
Injection Vol. :10 μ L

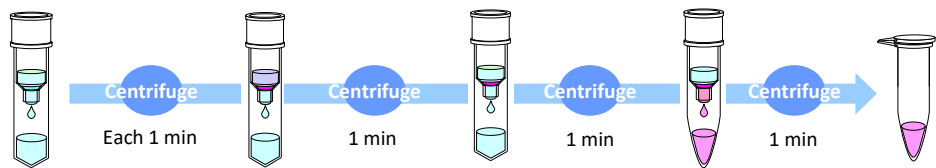
Application

Purification of Catecholamines using MonoSpin PBA

Sample solution 250 μ L

Sample solution (urine or serum)
200 μ L
1 M Dipotassium hydrogen phosphate
(adjusted to pH 8 with phosphoric acid)
50 μ L

Centrifuge : 10,000 \times g



1. Conditioning

1% acetic acid solution: 200 μ L
→ 100 mM Dipotassium hydrogen phosphate
Adjusted to pH 8: 50 μ L

2. Adsorption

Sample solution
250 μ L

3. Wash

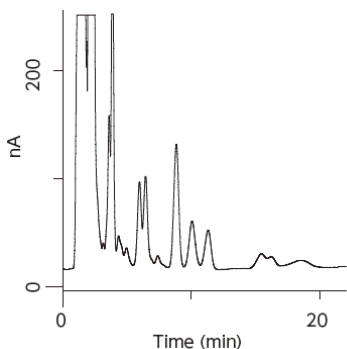
100 mM hydrogen phosphate
Aqueous dipotassium solution
(adjusted to pH 8 with phosphate) 200 μ L

4. Elution

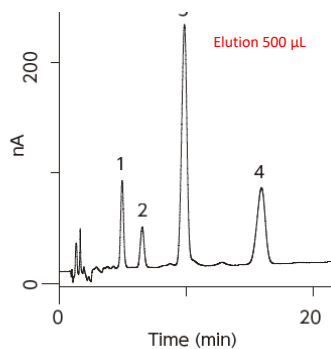
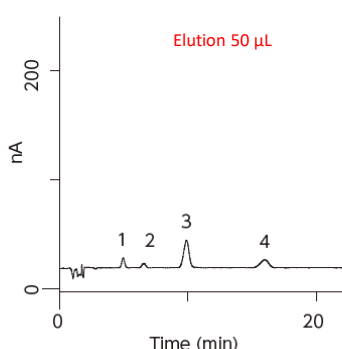
1% acetic acid solution
200 μ L

Purified sample

Before Purification



Purification with MonoSpin PBA (sample amount: 500 μ L)



Conditions

Column : Inertsil ODS-3
(5 μ m, 150 mm \times 2.1 mm I.D.)
Eluent : 50 mM Phosphate Buffer (pH 5.6)
50 mg/L EDTA
600 mg/L IPCC-008
-10 % Methanol
Flow Rate : 0.3 mL/min
Col.Temp. : 35 $^{\circ}$ C
Injection : 5 μ L
Detection : ECD Pulse Mode
Sample : 1. Noradrenaline
2. Adrenaline
3. DHBA
4. Dopamine

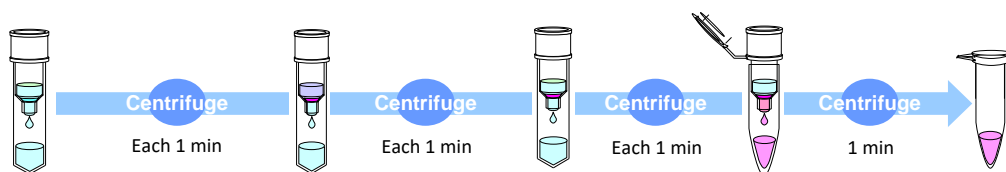
By using MonoSpin PBA, we can selectively recover and purify compounds with cis-type diols such as catecholamines. See our website Technical Note LT093 for more information.

Purification of Organophosphorus pesticides in human serum using MonoSpin TiO

Sample Volume 50 μ L

Sample 10 μ L
Water 40 μ L

Centrifuge : 5,200 \times g



1. Conditioning

① 80% acetonitrile (0.1 % TFA) 50 μ L
② 50% acetonitrile (0.1 % TFA) 50 μ L
(①→Centrifuge→②)

2. Adsorption

Sample solution 50 μ L
→ Collect the solution and repeat
Put on a column

3. Wash

① 80% acetonitrile (0.1 % TFA) 50 μ L
② 50% acetonitrile (0.1 % TFA) 50 μ L
(①→Centrifuge→②)

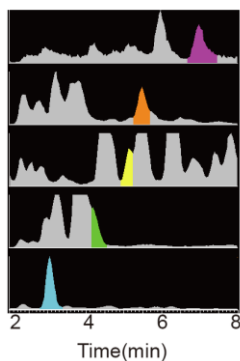
4. Elution

2% ammonia solution
50 μ L

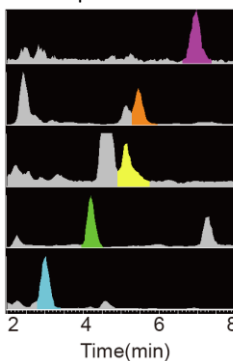
Purified sample

N-acetyl-O-methyl Derivatives
To LC/MS

Before purification



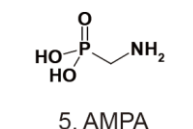
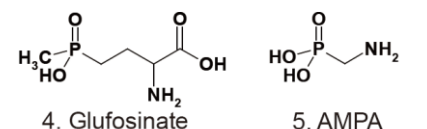
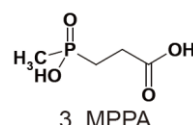
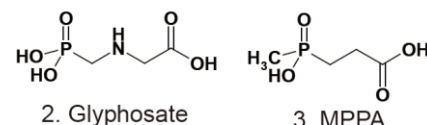
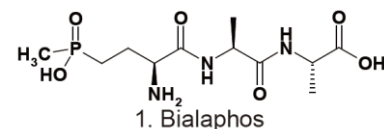
After purification using MonoSpin TiO



Bialaphos
Glyphosate
MPPA
Glufosinate
AMPA

Conditions

Column : ODS Column (150 \times 2.1 mm I.D.)
Eluent : A) CH₃OH
B) 20 mM HCOONH₄ (pH 3.0)
A/B = 15/85, v/v
Flow Rate : 0.2 mL/min
Detection : SIM
Injection Vol. : 5 μ L
Sample : 1. Bialaphos
2. Glyphosate
3. MPPA
4. Glufosinate
5. AMPA



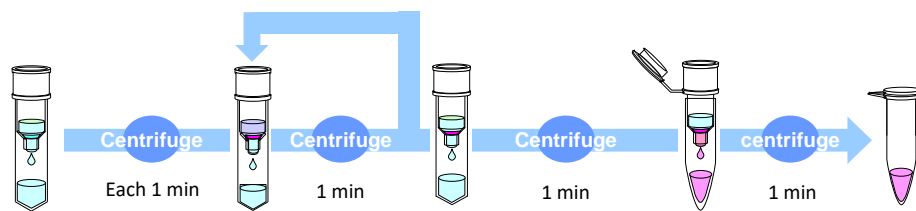
MonoSpin TiO shows selectivity for phosphate sites in compounds.

With Insulin or BSAs

Sample Preparation

Adjust concentration of Insulin and BSA with 0.1% aqueous TFA.

Centrifuge : 2000 × g



1. Conditioning

- ① ACN: 300μL
- ② 0.2% TFA in H₂O: 300μL
- (①→Centrifuge→②)

2. Adsorption

Sample solution
300 μL

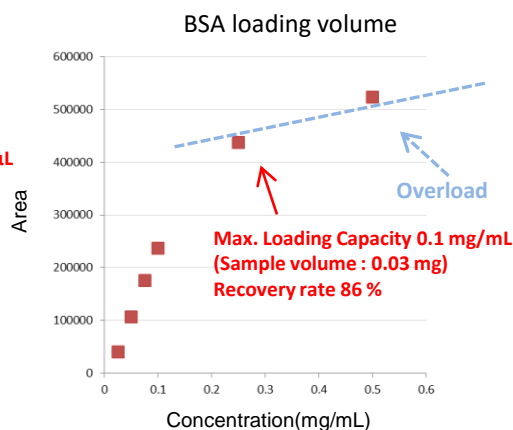
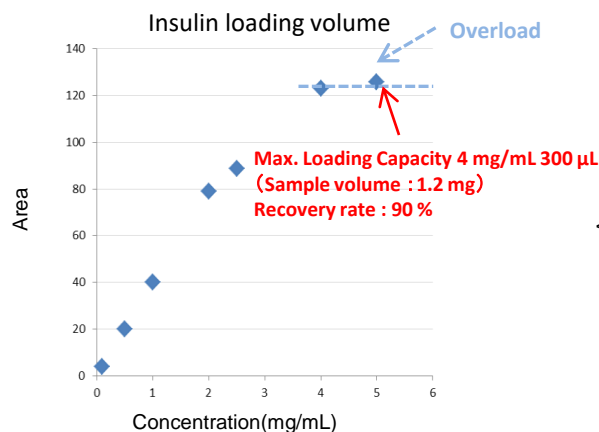
3. Wash

0.2 % TFA in H₂O
300 μL

4. Elution

C₂H₅OH/H₂O/TFA
=60:40:0.1 300 μL

Purified sample



Please see Technical Note LT157 for more information .

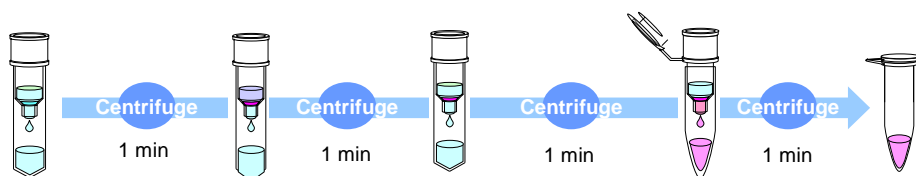
Analysis of blood samples using MonoSpin C18FF

Sample Preparation

Mix blood sample(0.3mL) and 300mM phosphate buffer(pH 10.0).

Use supernatant as sample after centrifugation at 12,000 x g for 5 min.

Centrifuge : 1,000 x g



1. Conditioning

- ① MeOH: 300μL
- ② 300 mM phosphate buffer (pH 10): 300μL
- (①→Centrifuge→②)

2. Adsorption

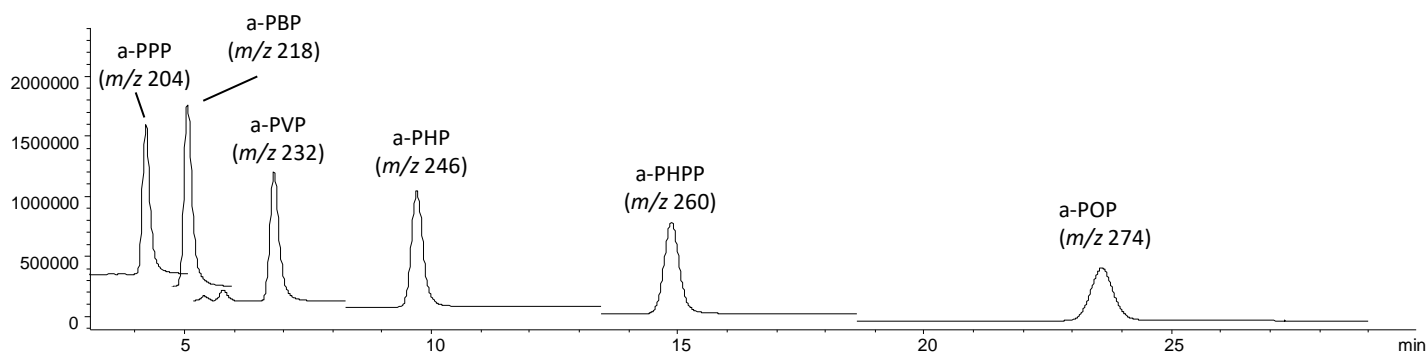
3. Wash

300 mM phosphate buffer(pH 10): 300μL

4. Elution

MeOH 100 μL

Purified sample

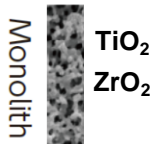


Conditions

Column : InertSustain Phenyl (3 μm, 150 × 2.1 mm I.D.)
Eluent : CH₃CN-HCOONH₄(10 mM, 0.1 % HCOOH) = 25:75 (v/v)

Flow Rate : 0.2 mL/min
Col. Temp. : 40 °C
Detection : MS(ESI)

MonoSpin Phospholipid



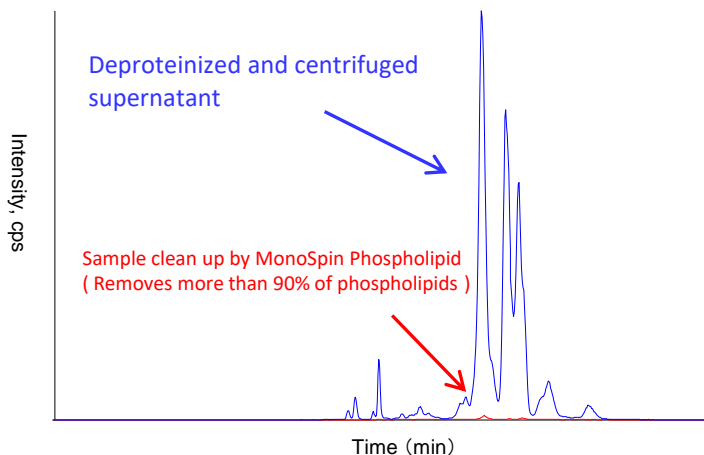
Phospholipid removal column coated with titanium dioxide and zirconium dioxide on silica monolith. It adsorbs phospholipids in samples such as blood and serum with easy pretreatment. More significantly, the adsorbed phospholipids can also be collected very well.

Cartridge shape: S-type, L type

Functional groups: titanium dioxide, zirconium dioxide

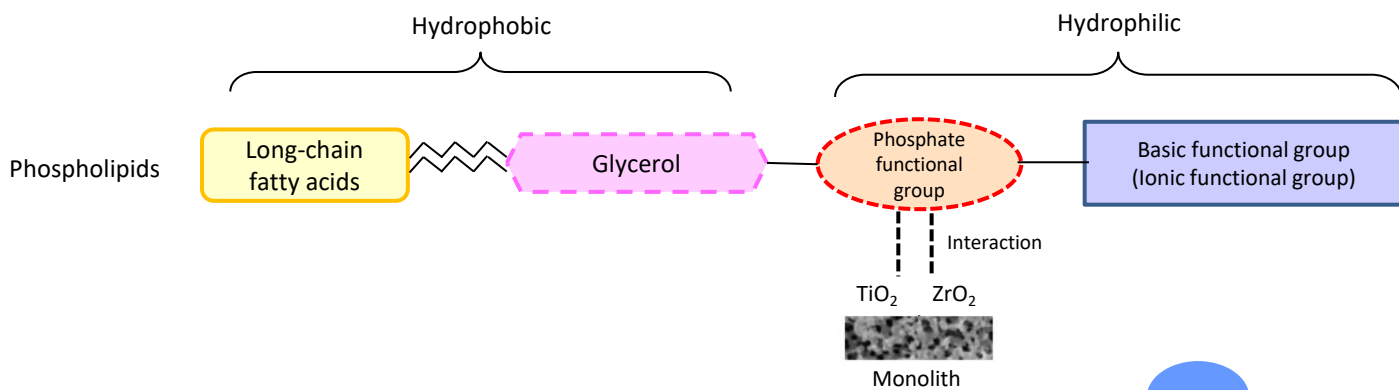
【Features】

- Phospholipids in the biological sample can be removed in few easy steps.
- The matrix effect is reduced considerably since it removes more than 90% of Phospholipids.
- Capable of processing small volume sample
- Adsorbed phospholipids are easily recovered.



Adsorption principle

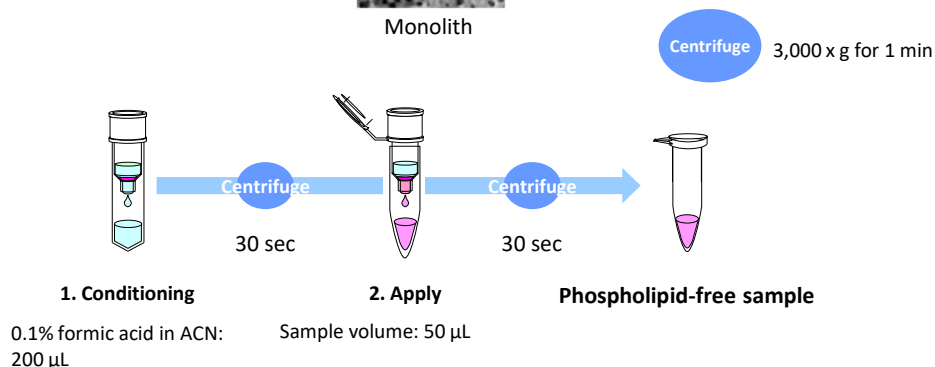
The specific interaction of the metal oxide and phosphate compound retains the phospholipids in the packing material.



Operation

Sample Preparation

Mix 0.1 % formic acid and serum sample 4:1 into 2mL micro tube.
 ↓
 Use supernatant after centrifugation at 10,000 × g 30 sec



Related Product



The FastRemover for Phospholipid 96-well plate delivers a fast and efficient removal of proteins and phospholipids in plasma and serum samples without sacrificing the recovery of your target analytes.

Publicly Available Reference

| Functional group | Compounds | Reference |
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Publicly Available Reference

| Functional group | Compounds | Reference | |
|------------------|--|--|--|
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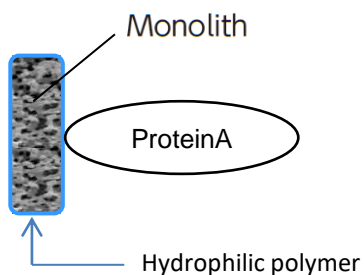
MonoSpin ProA, MonoSpin ProG

MonoSpin ProA and MonoSpin ProG are already immobilized onto a silica monolith offering rapid purification of antibodies. Additionally, a 96-well plate format is available to purify a multi-analyte. Each reagent for the purification of samples is attached.



【Features】

The silica is modified with a hydrophilic polymer and then immobilized with either Protein A or Protein G to prevent the adsorption of proteins, resulting in higher purification and recovery of antibodies.



Silica monolith surfaces immobilized with Protein A and Protein G have modified hydrophilic polymers, suppressing the non-specific adsorption of proteins and allowing the recovery of purer antibodies.

【Specification】

| | |
|----------------------|---------------------------|
| Through-pore size | : 2 μm |
| Meso-pore size | : 60 nm |
| Disk size | : 4.2 \times 1.5 mm |
| Sample Volume | : 500 μL |
| Sample Volume | : 50 μL |
| Centrifugation speed | : 2,300 $\times g^*$ |
| Recovery rates | : 400 μg (IgG) |

*:96-well plate type can also be used with vacuum aspiration (e.g., -0.015 MPa).

Shapes

Spin Column Type



- Purification with compact tabletop centrifuge just in two minutes (e.g., 2,300 $\times g$)
- Appropriate for purification of small volume sample (approximately 0.4 mg)

Large Spin Column



- Maximum 16 mg antibody can be recovered by centrifuge.

96 Well plate type

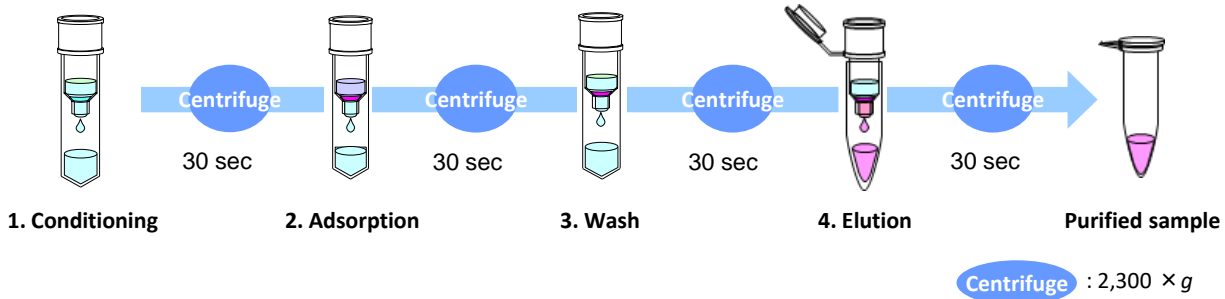


- Purification by both aspiration or centrifuge
- Available for a multi-analyte with the same spin column volume.

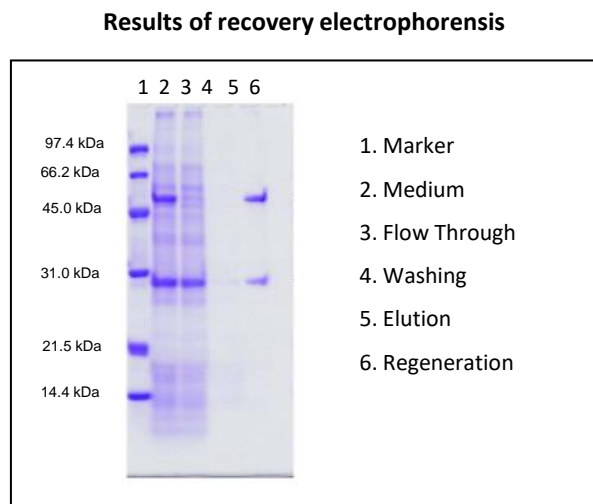
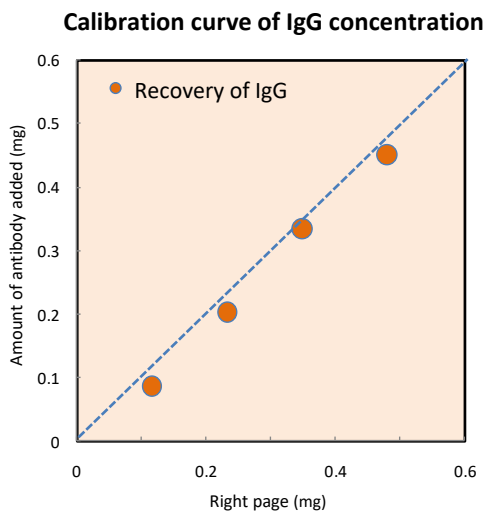
MonoSpin ProA, MonoSpin ProG

Ultra-high-speed processing ensures stable recovery

Antibodies can be easily purified by centrifugation in a short time in a tabletop centrifuge With silica monoliths. When collecting antibodies, the neutralizing solution can be added to the collection tube in advance to immediately neutralize the antibodies collected by the acid immediately. This action greatly reduces the risk of antibody degeneration.

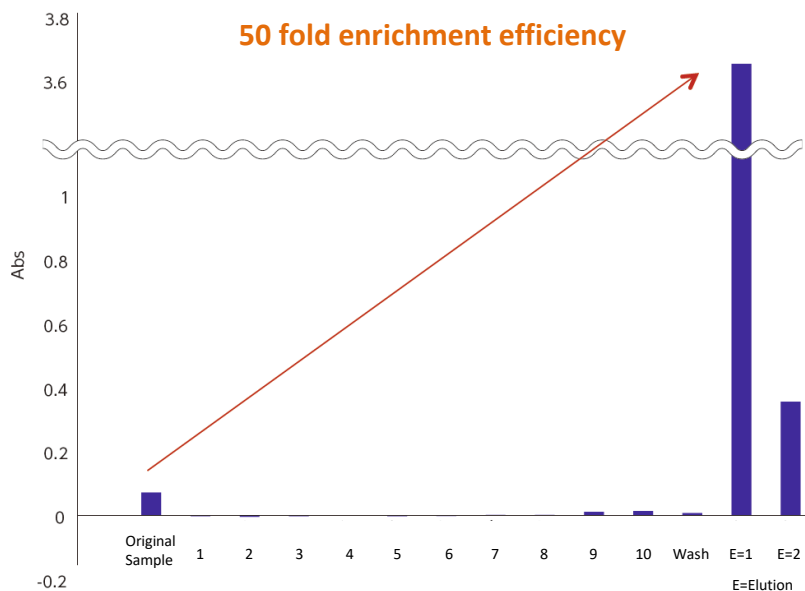


As shown below, the antibody concentrations were determined quantitatively from the medium of CHO cells. The purified antibodies show very few impurities by the results of electrophoresis.



Enrichment of Antibody Solution Using MonoSpin ProA

Human IgG solution (500 μ L of 0.025 mg/mL) was applied to a MonoSpin ProG spin column 10 times (In = I1–I10). Then, the elution of IgG concentration was determined twice with 100 μ L elution buffer (En = E1 and E2). The first IgG elution (E1) was 50 fold concentration of the standard solution and indicates a 90% recovery of IgG without loss.



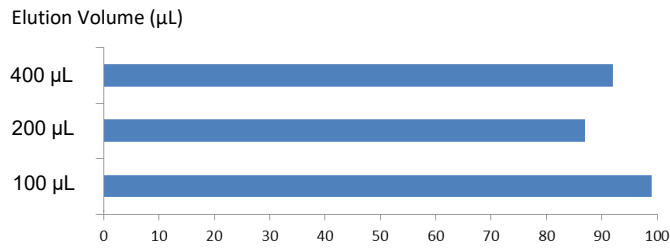
MonoSpin ProA, MonoSpin ProG

Elution Volume and Recovery Rate Comparing with Other Brands Products

MonoSpin ProA needs only 100 μL elution buffer to obtain a recovery rate of at least 90% IgG. However, other brands' products require 400 μL or more elution buffer with a recovery rate of 70% IgG.

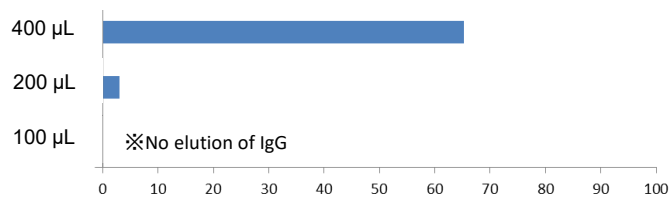
MonoSpin ProA

90 % recovery rate of IgG with 100 μL elution.



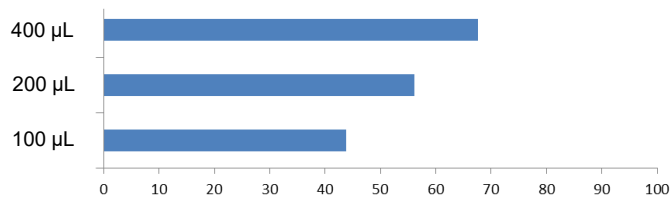
Brand T's Product

60 – 65 % recovery rate of IgG with 400 μL elution



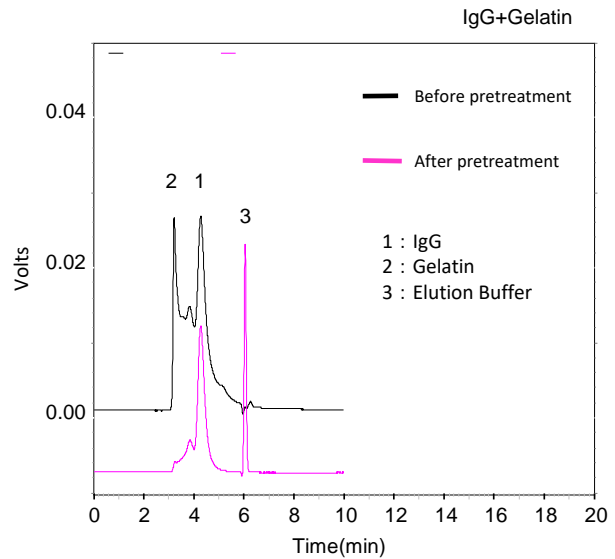
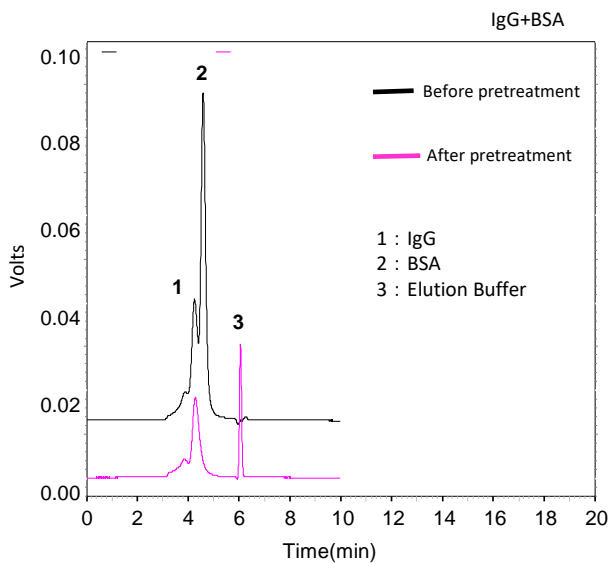
Brand G's Product

65 – 70 % recovery rate of IgG with 400 μL elution



Recovery Rate (%)

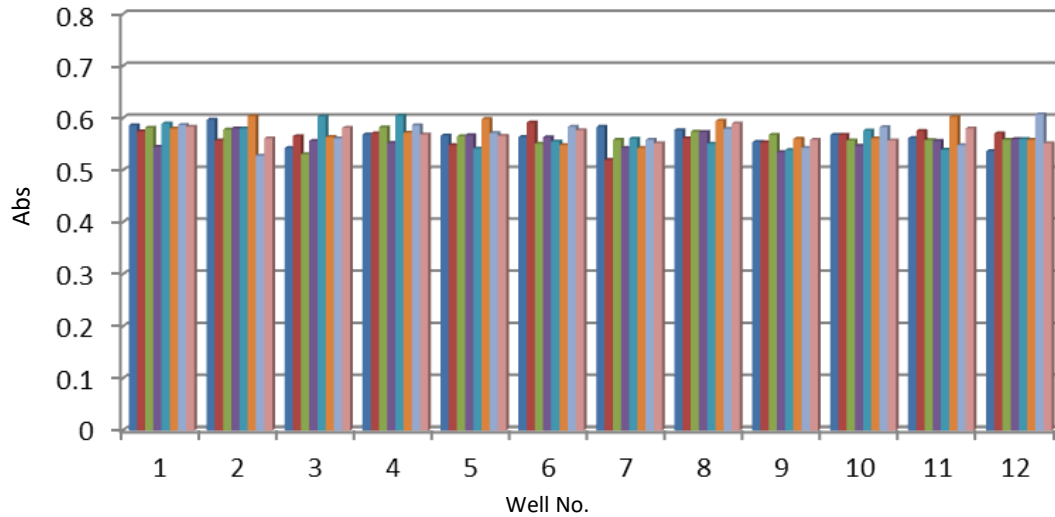
Removal of preservatives in antibody solutions



MonoSpin ProA/ProG enables you to remove proteins such as BSA and Gelatin in antibody solutions without dilution.

MonoSpin ProA, MonoSpin ProG

Recovery of antibodies from CHO cell culture medium (96-well plate)



Sample volume : 150 μ L
Elution volume : 150 μ L
Recovery rate : 90% (CV 3.1 %)
IgG concentration : 1.3 mg/mL



Purification of multiple antibodies using MonoSpin L and ProA

Procedure

1. Apply 5 mL of equilibration buffer.
2. Apply sample (Max. 8 mL) after filtration through 0.2 μ m filtration.
3. Apply 5 mL of washing buffer.
4. Apply 5 mL of elution buffer.

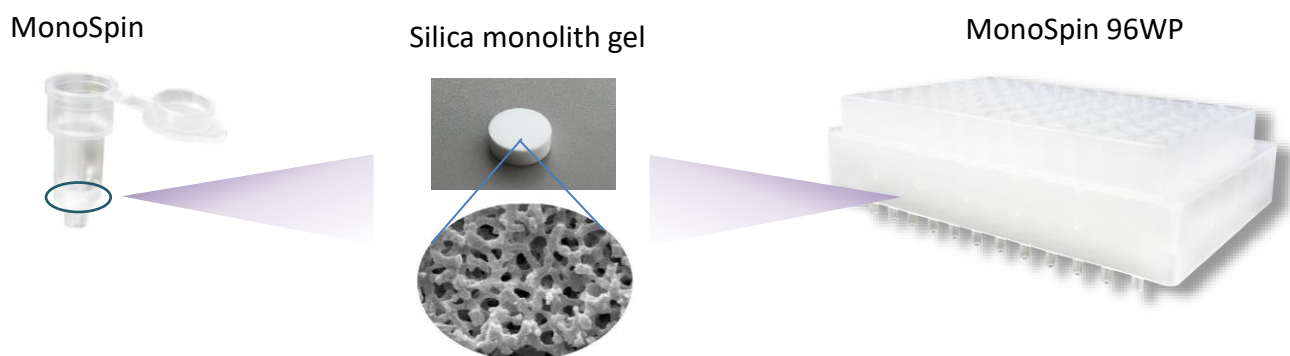
Centrifugal force at each step : 1,500 x g, 2 min

* MonoSpin ProA/G buffer kit was used.



MonoSpin 96 Well Plate

MonoSpin 96WP is a multi-specimen pretreatment plate with immobilized silica monolith disks. The same monolithic disks earlier used in MonoSpin have been fixed and designed to specifications that facilitate the same amount of load and results as when spin columns are used.



【Features】

- Fix the same gels as MonoSpin spin columns to a 96-well plate
- Can be used with centrifugal or suction (-0.05 MPa or higher recommended)
- Rapid pretreatment of biological samples is possible
- Capable of processing solution compositions similar to spin columns
- Extensive lineup

【Application】

- Desalting, purification, and fractionation of peptide samples
- Protein recovery and purification
- Purification after iTRAQ derivatization
- Purification of glycans
- Recovery of drugs from biological samples (urine, serum, plasma)
- Purification of catecholamines
- Recovery and purification of organic acids

| Description | Qty. | Cat.No. |
|----------------------|------|------------|
| MonoSpin 96WP C18 | 1 | 5010-21900 |
| MonoSpin 96WP NH2 | 1 | 5010-21901 |
| MonoSpin 96WP PBA | 1 | 5010-21902 |
| MonoSpin 96WP SAX | 1 | 5010-21903 |
| MonoSpin 96WP SCX | 1 | 5010-21904 |
| MonoSpin 96WP Amide | 1 | 5010-21905 |
| MonoSpin 96WP CBA | 1 | 5010-21906 |
| MonoSpin 96WP C18-CX | 1 | 5010-21907 |
| MonoSpin 96WP C18-AX | 1 | 5010-21908 |

96 Deep Well Plate / GL Sticker for 96 well plate

96 Deep Well Plate



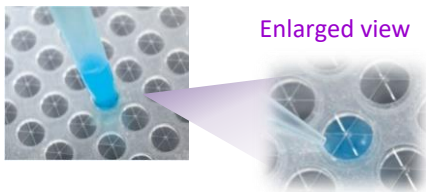
【Features】

- Plate dimensions conform to SBS standards for the automatic operation of dispensing machines
- V-bottom well geometry reduces sample loss
- Made of polypropylene with outstanding heat, cold, and solvent resistance
- Low adsorption (LB type) suppresses non-specific adsorption of proteins and peptides by super hydrophilic surface treatment

| Description | Material | Qty. | Cat.No. |
|---|--|------|------------|
| MS Plate | Polypropylene | 50 | 6045-00201 |
| MS Plate Low adsorption (LB type) | Polypropylene (hydrophobic polymer) | 15 | 6045-00203 |

GL Sticker for 96 well plate

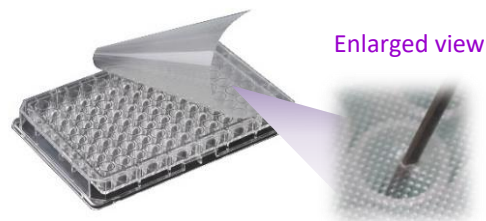
Evapo Less Slit



【Features】

- Sticker closes automatically after each application.
- Adhesive-free on top of the sticker to prevent contamination.
- Can be operated under -80°C – 100°C

Sealing Sticker



【Features】

- High durability against organic solvent
- High air leakage efficiency
- Used to store samples down to -80°C

| Description | Material | Qty. | Cat.No. |
|-----------------|--------------|------|------------|
| Evapo Less Slit | PET, Silicon | 100 | 5010-21950 |
| Sealing Sticker | Polyolefin | 100 | 5010-21951 |

Order Information

MonoSpin type S

| Description | Qty. | Cat.No. |
|-----------------------------------|------|------------|
| MonoSpin C18 | 50 | 5010-21700 |
| | 100 | 5010-21701 |
| MonoSpin C18 FF | 50 | 5010-21670 |
| | 100 | 5010-21671 |
| MonoSpin Ph | 50 | 5010-21733 |
| | 100 | 5010-21734 |
| MonoSpin C18-AX | 50 | 5010-21735 |
| | 100 | 5010-21736 |
| MonoSpin C18-CX | 50 | 5010-21731 |
| | 100 | 5010-21732 |
| MonoSpin SAX | 50 | 5010-21720 |
| | 100 | 5010-21721 |
| MonoSpin SCX | 50 | 5010-21725 |
| | 100 | 5010-21726 |
| MonoSpin NH2 | 50 | 5010-21710 |
| | 100 | 5010-21711 |
| MonoSpin CBA | 50 | 5010-21729 |
| | 100 | 5010-21730 |
| MonoSpin Amide | 50 | 5010-21727 |
| | 100 | 5010-21728 |
| MonoSpin PBA | 50 | 5010-21715 |
| | 100 | 5010-21716 |
| MonoSpin TiO | 50 | 5010-21705 |
| | 100 | 5010-21706 |
| MonoSpin Trypsin HP [KEEP COOL] | 30 | 7510-11302 |
| MonoSpin ME | 50 | 5010-21737 |
| | 100 | 5010-21738 |
| MonoSpin Phospholipid | 50 | 5010-21698 |
| | 100 | 5010-21699 |



MonoSpin Type S



Recovery tube
(1.7 mL)



Liquid waste tube
(2 mL)

MonoSpin type S Trial kit

Trial and custom kits are shipped with various columns packaged for initial method development.

| Description | Content | Cat.No. |
|----------------------|------------------------------|------------|
| MonoSpin Trial Kit 1 | C18, TiO, SCX, SAX 10 each | 5010-21740 |
| MonoSpin Trial Kit 2 | C18, Amide, CBA, NH2 10 each | 5010-21741 |
| MonoSpin Trial Kit 3 | SCX, SAX, CBA, NH2 10 each | 5010-21742 |

MonoSpin type L

| Description | Qty. | Cat.No. |
|-------------------------|------|------------|
| MonoSpin L C18 | 30 | 7510-11320 |
| MonoSpin L SAX | 30 | 7510-11321 |
| MonoSpin L SCX | 30 | 7510-11322 |
| MonoSpin L NH2 | 30 | 7510-11323 |
| MonoSpin L CBA | 30 | 7510-11324 |
| MonoSpin L ME | 30 | 7510-11325 |
| MonoSpin L Phospholipid | 30 | 7510-11326 |



MonoSpin type L

MonoSpin 96 well plate

| Description | Qty. | Cat.No. |
|----------------------|------|------------|
| MonoSpin 96WP C18 | 1 | 5010-21900 |
| MonoSpin 96WP NH2 | 1 | 5010-21901 |
| MonoSpin 96WP PBA | 1 | 5010-21902 |
| MonoSpin 96WP SAX | 1 | 5010-21903 |
| MonoSpin 96WP SCX | 1 | 5010-21904 |
| MonoSpin 96WP Amide | 1 | 5010-21905 |
| MonoSpin 96WP CBA | 1 | 5010-21906 |
| MonoSpin 96WP C18-CX | 1 | 5010-21907 |
| MonoSpin 96WP C18-AX | 1 | 5010-21908 |

MonoSpin ProA, MonoSpin ProG

| Description | | Qty. | Cat.No. |
|-----------------------------|---------------|------|------------|
| MonoSpin ProA column | [KEEP COOL] | 10 | 7510-11310 |
| MonoSpin ProG column | [KEEP COOL] | 10 | 7510-11311 |
| MonoSpin ProA 96 well plate | [KEEP COOL] | 1 | 7510-11312 |
| MonoSpin ProG 96 well plate | [KEEP COOL] | 1 | 7510-11313 |
| MonoSpin L ProA | [KEEP COOL] | 4 | 7510-11314 |
| MonoSpin L ProG | [KEEP COOL] | 4 | 7510-11315 |
| MonoSpin ProA/G buffer kit | [KEEP COOL] | - | 7510-11316 |

| | |
|--------------------|--|
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