- New Polymeric Sorbent with Matrix Removal Technology
- Reduce Protocol Time by at Least 40% with 3-Step and 2-Step SPE
- High Recoveries Without Conditioning or Equilibration



phenomenex ...breaking with tradition



Solid Phase Extraction (SPE)

Solid Phase Extraction (SPE) is a very targeted form of sample preparation that allows you to isolate your analyte of interest while removing any interfering compounds that may be in your sample.

5+ steps to achieve:

- Ultra clean extracts
- Concentration of samples for better chromatographic results
- Solvent switching for GC or LC compatibility
- Longer column lifetime and improved chromatographic results

And now an innovative new SPE sorbent is the **faster, cleaner way** to extract your samples, completely revolutionizing traditional methods.











Your happiness is our mission. Take 45 days to try our products. If you are not happy, we'll make it right. www.phenomenex.com/behappy

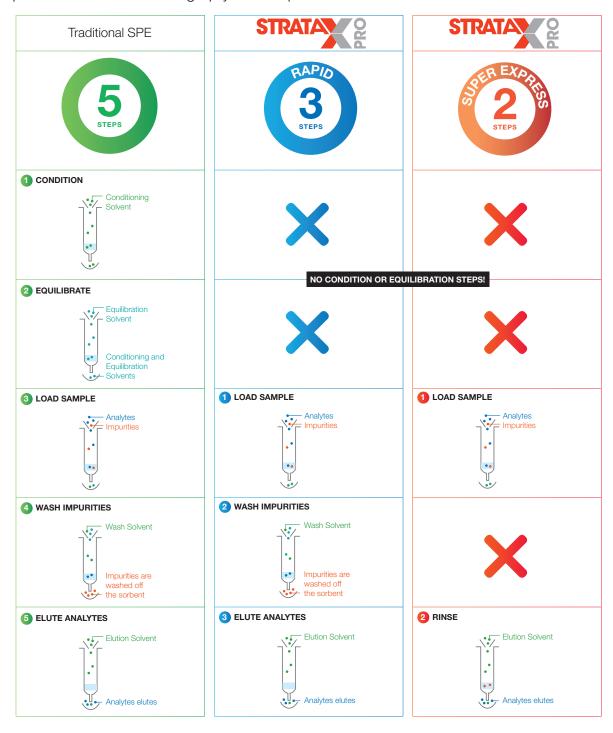
What to Expect from Strata®-X PRO SPE

New Polymeric Sorbent p. 4
A revolutionary combination of polymeric sorbent and matrix removal technology, with no additional method development required
Faster and Quicker Methods p. 5
Less steps (no conditioning or equilibration required!) for faster solid phase extraction methods
Cleaner Extractions pp. 6-7
Reduce matrix effects and eliminate phospholipids for acids, neutrals, and bases
Increased Sensitivity p. 8
Removal of phospholipids results in higher sensitivity of analytes
Better Response p. 9
Pigment removal and planar pesticides analysis displays an alternative to traditional methods
High Recoveries pp. 10-11
Compared to traditional SPE solutions for the extraction of peptides from plasma
Ultra-Quick 2-Step Clean-Up pp. 12-13
Reduce ion suppression when analyzing veterinary drugs from milk
Simplified Methods pp. 14-16
High sensitivity with less matrix effects for benzos, opiates, barbs, analgesics
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Dual HPLC/UHPLC Combo
Pair with a Kinetex® or Luna® Omega LC Columns for incredible performance gains and versatile selectivity
Sample Preparation Tools and Resources n. 19



New Polymeric Sorbent

Strata-X PRO offers improved and rugged polymeric sorbent performance combined with matrix removal technology for a revolutionary solution. With a faster SPE method, it results in at least 40% reduction in time on your SPE protocol. Less steps with no conditioning or equilibration creates a fast SPE method without losing out on the importance of SPE: cleaning up your samples.



Reduce method time by at least 40% with no decrease in recovery or compromising cleanliness of injections!

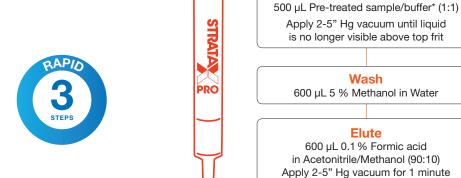
Faster and Quicker Methods

Strata®-X PRO also improves on traditional SPE by implementing straightforward recommended methods that will work with most extractions, and optimization is only optional. This helps to save even more time in the lab and get you back to the things you really want to be doing. Like asking yourself, is a narwhal real? Yes, and now so is Strata-X PRO.

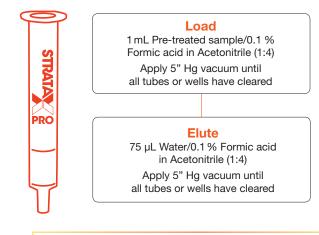
Sorbent Properties

Analyte Sorbent Mechanism **Functional Group Functional Group** hydrocarbon hydrocarbon Reversed Phase (O) (OTO) aromatic aromatic

So unreal it's real.







Load

Wash

Elute

*Select a buffer that maximizes the hydrophobicity of the analytes. For example, if an analyte is basic, dilute with a base.

Methods are written for 30 mg/1 mL tube; adjust based on sorbent size.



Cleaner Extractions

With a brand new polymeric sorbent and less interferences from the matrix to ruin results and cause issues with your LC column or mass spec, Strata-X PRO works to eliminate phospholipids and harmful particulates in the sample while targeting analytes. For a **panel of acids, neutrals, and bases from plasma**, Strata-X PRO provides high recoveries, especially for the polar analytes, and less matrix effects that could result in ion suppression or enhancement when compared to traditional polymeric SPE.

SPE Protocol

96-Well Plate: Strata-X PRO, 30 mg/well

Part No.: 8E-S536-TGA

Load: 400 µL Plasma/0.1 % Formic acid in Water (1:1)

Wash: 1 mL 5 % Methanol in Water

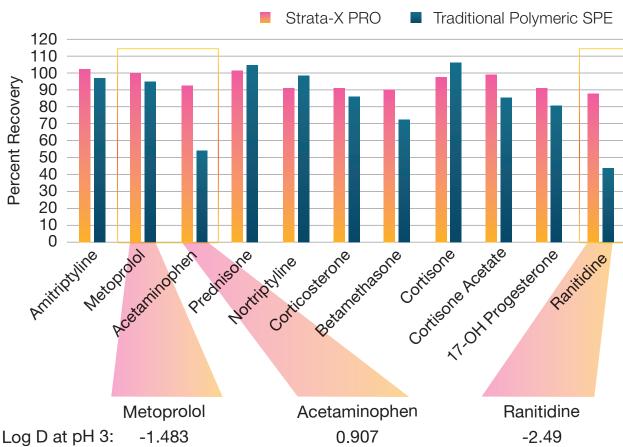
Dry: 1 minute at 5" Hg

Elute: 1 mL 0.1 % Formic acid in Acetonitrile/Methanol (90/10)

Dry Down: 1 minute at 5" Hg

Reconstitute: 200 µL 5 % Methanol in Water

Recovery from Human Plasma



For extremely polar analytes, Strata-X PRO provides higher recoveries!

Cleaner Extractions (cont'd)

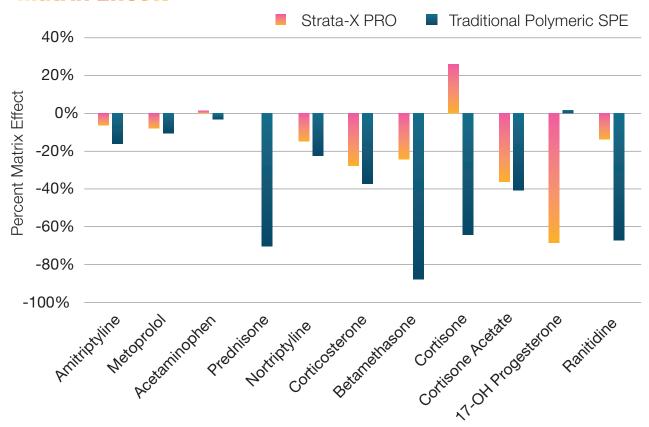
Matrix components, especially phospholipids, will have a negative impact on overall LC analyses and can even degrade system components over time. It's important to use solutions such as Strata-X PRO to ensure these interferences are removed!

% RSD of Recovery

Analyte Name	Strata-X PRO	Traditional Polymeric SPE
Amitriptyline	3.80	4.68
Metoprolol	4.70	4.17
Acetaminophen	4.05	6.87
Prednisone	6.54	14.01
Nortriptyline	6.63	5.65
Corticosterone	10.78	18.70
Betamethasone	18.52	34.64
Cortisone	4.95	11.18
Cortisone Acetate	9.42	13.92
17-OH Progesterone	12.52	9.21
Ranitidine	8.50	16.10

Consistently high recoveries, with less variation between samples and less matrix effects using Strata-X PRO.

Matrix Effects





Increased Sensitivity

Due to matrix removal technology, Strata-X PRO shows increased sensitivity with increased phospholipid removal when compared to traditional SPE. Strata-X PRO excels with providing an enhanced SPE solution and an increase in sensitivity by reducing ion suppression, another reason why you just have to see it to believe it.

Strata-X PRO

Cartridge: Strata-X PRO, 30 mg/1 mL

Part No.: 8B-S536-TAK

Load: 600 µL Plasma/0.1 % Formic acid in Water (1:1)

Wash: 600 µL 30 % Methanol in Water

Elute: 600 µL 0.1 % Formic acid in Acetonitrile/Methanol (90:10)

Polymeric SPE

Condition: 600 µL Methanol 1 Equilibrate: 600 µL Water 2

Load: 600 µL Plasma/0.1 % Formic acid in Water (1:1)

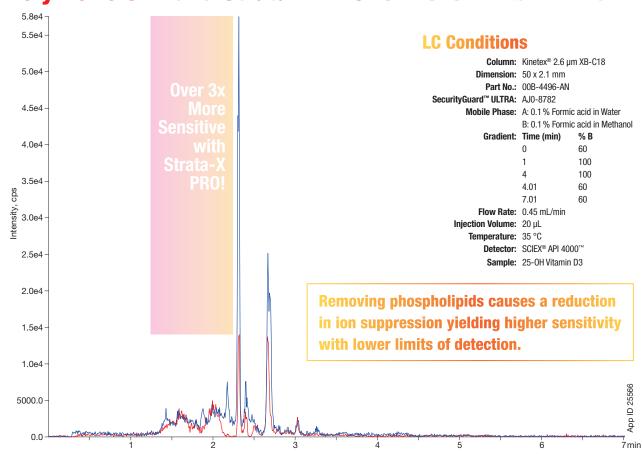
Wash: 600 µL 30 % Methanol in Water

Elute: 600 µL 0.1 % Formic acid in Acetonitrile/Methanol (90:10)



2 more steps!

Comparison of Sensitivity Between Polymeric SPE and Strata-X PRO for 25-OH Vitamin D3





Better Response

In only a 2-step SPE method, Strata®-X PRO shows **high removal of pigments** that's comparable with the step laden QuEChERS technique that's commonly used to clean-up food and environmental samples. QuEChERS tends to require many steps within the extraction and clean-up portions. In addition, Strata-X PRO also shows improvement to the graphitized carbon black (GCB) QuEChERS for the **extraction of planar pesticides**.

SPE Protocol

Cartridge: Strata-X PRO, 30 mg/1 mL

Part No.: 8B-S536-TAK

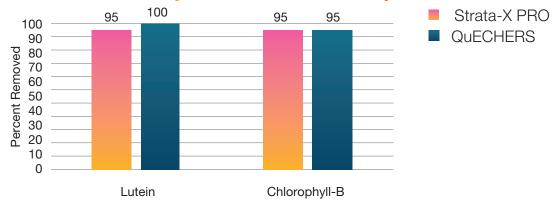
 $\textbf{Load:}\ \ 300\ \mu\text{L}\ \text{Acetonitrile/Acetic}\ \text{acid}\ (99:1)\ \text{was}\ \text{spiked}\ \text{with}$

450 μg/mL of lutein and 180 μg/mL of chlorophyll B

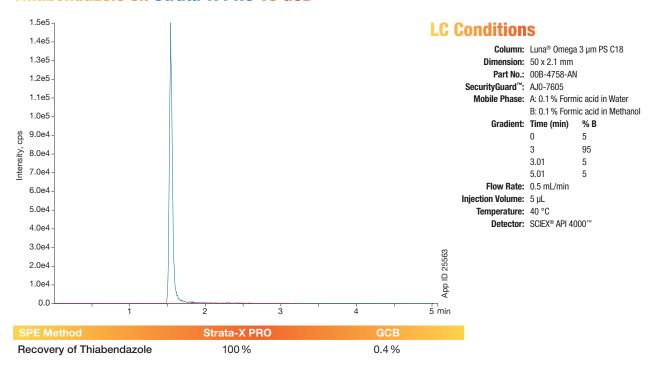
Wash: 25 µL Acetonitrile/Acetic acid (99:1)

In only 2-Steps pigments are removed!

Pigment Removal Comparison between the QuEChERS Technique and Strata-X PRO 2-Step SPE



Thiabendazole on Strata-X PRO vs GCB





High Recoveries

Strata-X PRO shows high recoveries for the extraction of **peptides from plasma** when compared to two different types of ion-exchange polymeric sorbents: WCX and SAX. This is accomplished with a shorter, more effective protocol. This method improves upon the Strata-X PRO standard method to use TFA to increase recovery of peptides and show a better comparison for the ion-exchange sorbents.

SPE Protocol

Strata-X PRO

Microelution 96-Well Plate: Strata-X PRO, 2 mg/well

Part No.: 8M-S536-4GA

Load: 400 µL Plasma/4 % Phosphoric acid in Water (1:1)

Wash: 200 µL Water

Elute: 2x 25 μL of TFA/Acetonitrile/Water (1:74:25)

50% reduction in the protocol time!

Polymeric WCX and SAX 96-Well Microelution Plates

Condition: 200 µL Methanol 1 Equilibrate: 200 µL Water 2

Load: 400 μL Plasma/4 % Phosphoric acid in Water (1:1) **Wash 1:** 200 μL 5 % Ammonium hydroxide in Water **Wash 2:** 200 μL 20 % Acetonitrile in Water **3**

Elute: 2x 25 µL of TFA/Acetonitrile/Water (1:74:25)

3 more steps

LC Conditions

Column: Luna® Omega 3 µm PS C18

Dimension: 50 x 2.1 mm
Part No.: 00B-4758-AN
SecurityGuard™: AJ0-7605

Mobile Phase: A: 0.1 % Formic acid in Water B: 0.1 % Formic acid in Methanol

Gradient: Time (min) % B
0 5
3 95
4 95
4.01 5
6 5

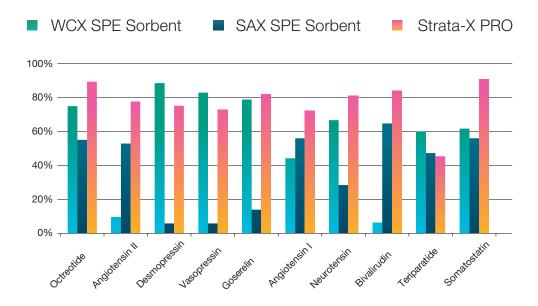
Flow Rate: 0.6 mL/minInjection Volume: $5 \mu L$ Temperature: $40 \, ^{\circ} C$ Detector: $SCIEX^{\circ} API \, 4000^{\top M}$



So good you'll think it's made up

High Recoveries (cont'd)

Recovery of Peptides from Plasma



% Recovery and % CVs of Peptides Using 3 Types of SPE Sorbent

		Strata-X	Strata-X PRO Polyn		Polymeric WCX		c SAX
Peak No.	Analyte Name	% Recovery	% CV	% Recovery	% CV	% Recovery	% CV
1	Octreotide	89.5	9.6	75	5.6	55	6.2
2	Angiotensin II	77.8	13.4	10	12.6	53	2.3
3	Desmopressin	75.2	10.8	89	6.2	6	26.1
4	Vasopressin	72.9	10.2	83	6.5	6	15.6
5	Goserelin	82.1	7.8	79	5.6	14	11.9
6	Angiotensin I	72.2	11.2	44	9.5	56	4.3
7	Neurotensin	80.9	11.7	67	5.7	28	12.7
8	Bivalirudin	84.0	13.2	6	30.2	65	3.3
9	Teriparatide	45.5	16.0	60	17.9	47	3.0
10	Somatostatin	90.9	25.0	62	6.5	56	6.4



Ultra-Quick 2-Step Clean-Up

When working with milk as a matrix, phospholipids from milk fat must be removed to reduce any ion suppression that could occur during LC-MS/MS analysis **for veterinary drugs**. To overcome these obstacles, Strata-X PRO, offers an even faster, 2-step sample preparation method to remove phospholipids prior to MS analysis. This shows an improved solution over traditional protein precipitation methods and other types of SPE, due to greater clean-up efficiency while maintaining a rapid and fast workflow time.

SPE Protocol

Pre-treatment

To 1 mL of milk add 3 mL of 0.2% Formic acid in Acetonitrile/Methanol (90:10) and mix or vortex for 15-20 seconds. Centrifuge for 5 minutes at 10,000 RPM and collect supernatant.

Cartridge: Strata-X PRO, 60 mg/ 3 mL

Part No.: 8B-S536-UBJ

Load: Pass the pre-treated sample through the SPE cartridge and collect

Dry: Evaporate the extract to dryness under a gentle stream of nitrogen at room temperature

Reconstitute: The dried sample in 1 mL of initial mobile phase (0.1 % Formic acid in Water/0.1 %

Formic acid in Methanol (95:5)) spiked with deuterated internal standard.

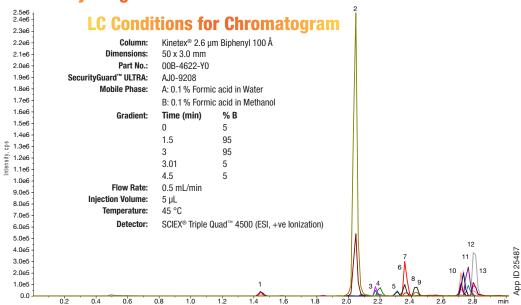
% Recovery and % CVs for Veterinary Drugs from Milk Using Strata-X PRO

Peak No.	Analyte Name	Retention Time (min)	% Recovery	% CV	Q1	Q3
1	Sulfaguanidine	1.48	46	5	215	156.1
2	Lincomycin	2.07	92	5	407.1	126
3	Sulfadiazine	2.19	38	7	251	156
4	Cephapirin	2.22	76	7	424	292.1
5	Sulfamerazine	2.32	44	5	265.1	155.8
6	Sulfamethoxazole	2.36	53	13	254.1	156.1
7	Sulfamethizole	2.36	45	8	271.1	92
8	Cefalexin	2.39	66	4	348.2	174.2
9	Sulfamethazine	2.44	59	13	279.1	186.1
10	Cortisone	2.72	83	8	361.2	163.2
11	Cortisol	2.73	95	6	363.4	120.9
12	β -methasone	2.76	97	3	393.4	355.2
13	Prednisolone	2.81	92	10	361.2	147.2

So good you'll think it's made up.

Ultra-Quick 2-Step Clean-Up (cont'd)

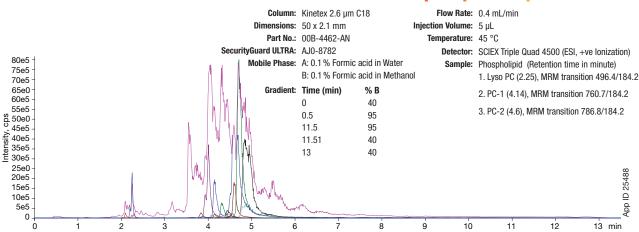
Veterinary Drugs from Milk



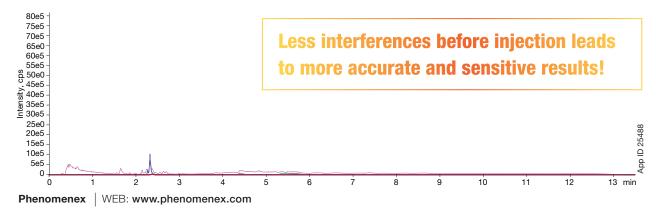
Comparative Phospholipid Trace of Clean-Up Methods

Phospholipid Trace After Protein Preciptation

LC Conditions for Phospholipid Comparison



Phospholipid Trace After Strata®-X PRO Extraction





Simplified Methods

- Barbiturates
- Analgesics
- Opiates
- Benzodiazepines

Using a generic method to **extract multiple panels** is another way Strata-X PRO excels. While the different panels of analytes are highlighted to show the ease of method development, changing the wash solvent could further optimize the method and provide even cleaner results. Using a stronger percent of organic in the wash will provide even cleaner results.

SPE Protocol

96-Well Plates: Strata-X PRO, 30 mg/well

Part No.: 8E-S536-TGA

Load: 400 µL Human serum/1 % Formic acid in Water (1:1)

Wash: 600 µL 5 % Methanol in Water

Dry: 2-3 minutes @ 5" Hg

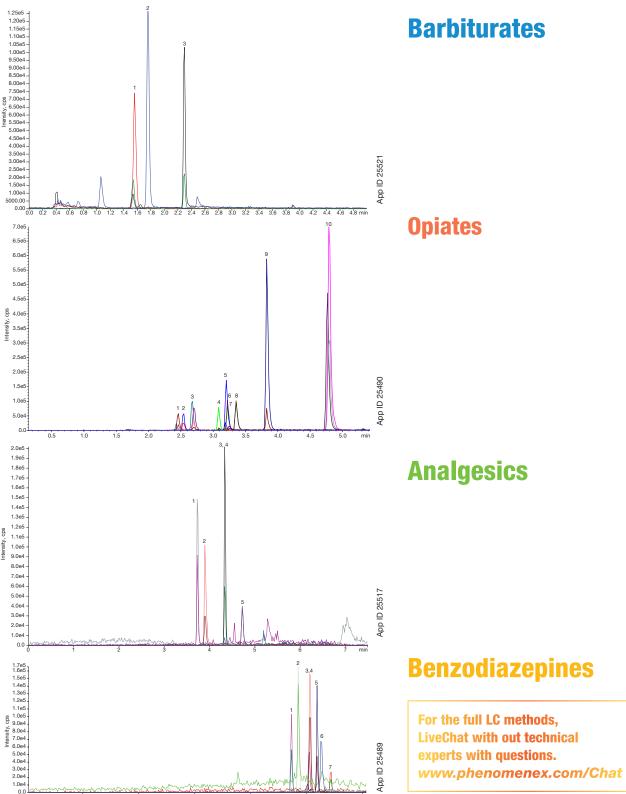
Elute: $600 \mu L 0.1 \%$ Formic acid in Acetonitrile/Methanol (90:10) **Dry Down:** Under a gentle stream of Nitrogen at 40 °C to dryness

Reconstitute: 200 µL 0.1 % Formic acid in water/0.1 % Formic acid in Methanol

Analyte	RT (min)	% Recovery	% CV
1. Phenobarbital	1.56	91	3.4
2. Butalbital	1.76	103	2.3
3. Secobarbital	2.3	98	2.1
1. Morphine	2.43	68	3.8
2. Oxymorphone	2.54	80	8.6
3. Hydromorphone	2.67	75	10.5
4. Naloxone	3.09	83	3.9
5. 6-MAM	3.2	77	7
6. Codeine	3.2	70	9
7. Oxycodone	3.36	64	0.6
8. Hydrocodone	3.41	73	3.2
9. Norfentanyl	3.83	57	3.2
10. Fentanyl	4.78	79	3.9
1. Meprobamate	3.73	70	9.2
2. Tramadol	3.9	71	5.1
3. Carisoprodol	4.3	66	9.6
4. Norbuprenorphine	4.3	70	8.4
5. Buprenorphine	4.7	60	1.6
1. Lorazepam	4.74	61	19.5
2. Oxazepam	4.86	45	14.1
3. α-Hydroxy alprazolam	5	60	14.2
4. Nordiazepam	5.05	63	13
5. Temazepam	5.19	66	6.5
6. Alprazolam	5.26	50	5
7. Diazepam	5.44	68	8

Simplified Methods (cont'd)

Strata-X PRO displays high sensitivity with less matrix effects for multiple panels of analytes with diverse properties and reduces phospholipids in the sample. In a comparison with a traditional protein precipitation method to clean up serum, Strata-X PRO removes the phospholipids to provide a cleaner background for more sensitive results and less maintenance to the MS.



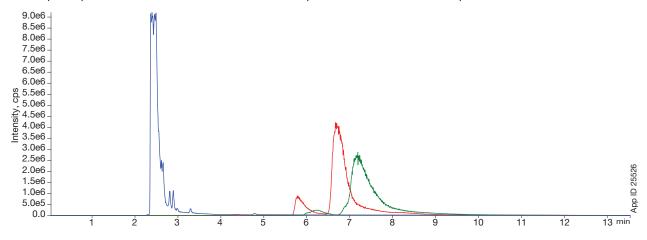
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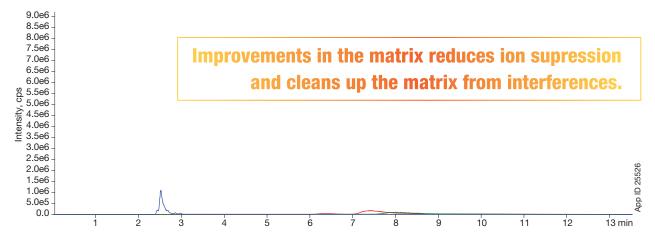
Simplified Methods (cont'd)

Comparative Phospholipid Trace of Clean-up Methods

Phospholipid Trace of Human Serum Sample After Protein Precipitation



Phospholipid Trace of Human Serum Sample After Strata-X PRO Extraction



LC Conditions for Phospholipid Comparison

Lo conditio	110 101 1	noopnonpia (
Column:	Kinetex® 2.6 μm	n C18
Dimensions:	50 x 2.1 mm	
Part No.:	00B-4462-AN	
SecurityGuard™ ULTRA:	AJ0-8782	
Mobile Phase:	A: 0.1 % Formic	acid in Water
	B: 0.1 % Formic	acid in Methanol
Gradient:	Time (min)	% B
	0	40
	0.5	95
	15.5	95
	15.51	40
	17	40
Flow Rate:	0.4 mL/min	
Injection Volume:	5 μL	
Temperature:	30 °C	
Detector:	SCIEX® Triple Qu	uad™ 4500
Sample:	Phospholipid (Re	etention time in minute)
•	1. Lyso PC (2.4)	, MRM transition 496.4/184.2
		RM transition 760.7/184.2
		RM transition 786.8/184.2
	, ,,	

Ordering Information

Strata®-X PRO SPE

Format	Sorbent Mass	Part Number	Unit
	10 mg	8B-S536-AAK	1 mL (100/box)
STRATAS 2	30 mg	8B-S536-TAK	1 mL (100/box)
	30 mg	8B-S536-TBJ	3 mL (50/box)
	60 mg	8B-S536-UBJ	3 mL (50/box)
	200 mg	8B-S536-FBJ	3 mL (50/box)
	100 mg	8B-S536-ECH	6 mL (30/box)
	200 mg	8B-S536-FCH	6 mL (30/box)
	500 mg	8B-S536-HCH	6 mL (30/box)
96-Well Plate			
	10 mg/well	8E-S536-AGA	ea
	30 mg/well	8E-S536-TGA	ea
1 1/11 mm	60 mg/well	8E-S536-UGA	ea
96-Well Microelutio	n Plate		
STERIS TO STORY	2 mg/well	8M-S536-4GA	ea



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Round Well Collection Plates (polypropylene)

Part No.	Well Bottom	Well Volume	Unit	Suggested Sealing Mats
AH0-7279	Round	1 mL	50/pk	AH0-8631 AH0-8632
AH0-8636	Round	2 mL	50/pk	AH0-8633 AH0-8634

Round Well Collection Plate (Low Bind)

Part No.	Well Bottom	Well Volume	Unit	Suggested Sealing Mats
AH1-7036	Conical	2 mL	120/pk	AH0-8633 AH0-8634

Square Well Collection Plates (polypropylene)

Part No.	Well Bottom	Well Volume	Unit	Suggested Sealing Mats
AH0-7192	Conical	350 µL	50/pk	AHO-8597 AHO-8598 AHO-8199 AHO-7195
AH0-7193	Conical	1 mL	50/pk	AH0-8597 AH0-8598 AH0-8199 AH0-7195
AH0-7194	Conical	2 mL	50/pk	AHO-8597 AHO-8598 AHO-8199 AHO-7195
AH0-8635	Round- Conical	2 mL	50/pk	AH0-8597 AH0-8598 AH0-8199 AH0-7195

Round Well Sealing Mats

Part No.	Description	Material	Unit
AH0-8631	Pierceable, 7 mm diameter	Silicone	50/pk
AH0-8632	Pre-Slit, 7 mm diameter	Silicone	50/pk
AH0-8633	Pierceable, 8 mm diameter	Silicone	50/pk
AH0-8634	Pre-Slit, 8 mm diameter	Silicone	50/pk
AH0-7362	Sealing Tap Pad	_	10/pk

Square Well Sealing Mats

Part No.	Description	Material	Unit
AH0-8597	Pierceable	Silicone	50/pk
AH0-8598	Pre-Slit	Silicone	50/pk
AH0-8199	Pierceable	Santoprene™	100/pk
AH0-7195	Pierceable	Ethylene Vinyl Acetate (EVA)	50/pk
AH0-7362	Sealing Tap Pad	_	10/pk

Sample Processing

Streamline your 96-well plate processing for easier sample preparation with a pneumatic positive pressure manifold.

- Pneumatic Handling
- Consistent Flow Rates
- Safe and Easy-to-Use

Presston™ 1000 Positive Pressure Manifold

Part No. Description

AH1-7033 Presston 1000 Positive Pressure Manifold, 96-Well Plate



Phenomenex warrants the Presston 1000 Positive Pressure Manifold against defects in materials and workmanship under normal installation, use, and maintenance for a period of 12 months following delivery.

Please visit www.phenomenex.com/presstonwarranty for complete warranty information

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Dual HPLC/UHPLC Combo

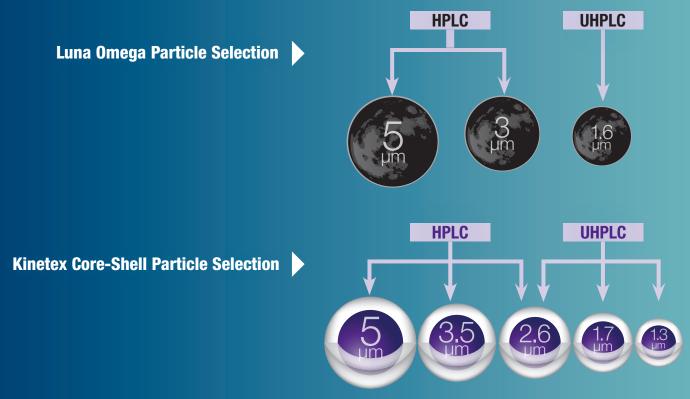
Gain Incredible Performance, Versatile Selectivities, and Upgraded Throughput



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Technology delivers dramatic
improvements in efficiency over
conventional fully porous media which
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greatly improve productivity, reduce
solvent consumption, and decrease costs.

Complete Scalable Solution from UHPLC to HPLC



Sample Preparation Tools and Resources

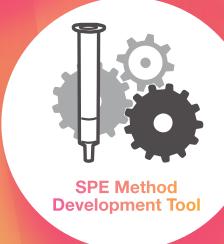






Sample Preparation Support at Your Fingertips

www.phenomenex.com/ sampleprep





Believe it when you see it



- New Polymeric Sorbent with Matrix Removal Technology
- Reduce Protocol Time by at Least 40% with 3-Step and 2-Step SPE
- High Recoveries Without Conditioning or Equilibration

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SecurityGuard is patented by Phenomenex. U.S. Patent No. 6,162,362 CAUTION: this patent only applies to the analytical-sized guard cartridge holder, and does not apply to SemiPrep, PREP or ULTRA holders, or to any cartridges.

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