

Strata™ -X Polymeric SPE

U.S. Patent No. 7,119,145

Strata-X

Step 1. Select a Sorbent Compound-Directed Phase Selection

Analyte pK_a	0	1	2	3	4	5	6	Neutral	8	9	10	11	12	13	14
Strata-X Strata-XL	Neutral Analyte or Analyte with $\log P > -0.5$ Modified N-Vinylpyrrolidone functional group results in multiple mechanisms of retention for the widest range of selectivity. Strong retention of neutral compounds allows for aggressive washes for increased sensitivity and method reproducibility.														
Strata-X-A Strata-XL-A	Acidic Analyte $pK_a \geq 2$ Dimethyl butyl quaternary amine functional group provides strong retention of weakly acidic analytes and allows for 100 % organic washes, increasing sensitivity and method reproducibility.														
Strata-X-AW Strata-XL-AW	Acidic Analyte $pK_a \leq 5$ Di-amino functional group is highly selective for charged acidic compounds and allows for 100 % organic washes, increasing sensitivity and method reproducibility.														
Strata-X-C Strata-XL-C	Basic Analyte $pK_a \leq 10.5$ Sulfonic acid functional group is highly selective for weakly basic compounds and allows for 100 % organic washes, increasing sensitivity and method reproducibility.														
Strata-X-CW Strata-XL-CW	Basic Analyte $pK_a \geq 8$ Carboxylic acid functional group allows for reversible binding of strong bases and quaternary amines. High selectivity for all basic compounds allows for 100 % organic washes, increasing sensitivity and method reproducibility.														
Specialty Sorbents	Application										Phase Description				

Strata-X-Drug B	Basic Drugs of Abuse	Proprietary strong cation-exchange sorbent that eliminates the need to condition / equilibrate the sorbent.
Strata-X-Drug N	Neutral Drugs of Abuse	Proprietary reversed phase sorbent that eliminates the need to condition / equilibrate the sorbent.

Step 2. Select a Sorbent Mass Loading Capacity Chart

Strata-X Phase	Plasma /Serum	Urine	Filtered Tissue Homogenates	Water (particulate free)	Water (particulate-laden)	Mass (mg in tube)
Strata-X, X-C, X-CW, X-A, X-AW	100 μ L	250 μ L	10 mg	N.A.	N.A.	10 mg
	250 μ L	1 mL	50 mg	N.R.	N.R.	30 mg
	500 μ L	2 mL	100 mg	N.R.	N.R.	60 mg
	1 mL	4 mL	150 mg	50 mL	25 mL	100 mg
	N.A.	8 mL	300 mg	100 mL	50 mL	200 mg
	N.A.	20 mL	500 mg	500 mL	100 mL	500 mg
Strata-XL, XL-C, XL-CW, XL-A, XL-AW	50 μ L	125 μ L	5 mg	N.A.	N.A.	10 mg
	125 μ L	500 μ L	25 mg	N.R.	N.R.	30 mg
	250 μ L	1 mL	50 mg	N.R.	N.R.	60 mg
	500 μ L	2 mL	75 mg	25 mL	13 mL	100 mg
	N.A.	4 mL	150 mg	50 mL	25 mL	200 mg
	N.A.	10 mL	250 mg	250 mL	50 mL	500 mg

N.A. = Not Applicable (not commonly used)
 N.R. = Not Recommended (may not provide expected results)



See the following pages for specific phase details and general extraction protocols.

Strata™ -X Polymeric SPE

guarantee

U.S. Patent No. 7,119,145

Strata-X-C and Strata-XL-C

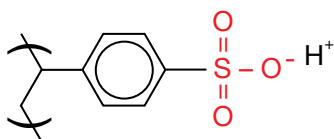
A strong cation-exchange functionalized polymeric sorbent that allows for complete retention of basic compounds with a pK_a less than 10.5, making 100 % organic wash conditions possible.

If Strata SPE products do not perform as well or better than your current SPE product of similar phase, mass and size, send in your comparative data within 45 days and keep the Strata SPE product for FREE!

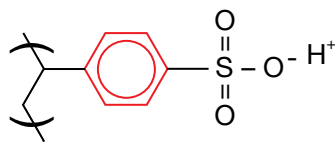
	Strata-X-C, 33 μ m, 85 Å	Strata-XL-C, 100 μ m, 300 Å
High Concentration Samples	✓	
Small Target Analytes (< 10 kDa)	✓	
Large Target Analytes (> 10 kDa)		✓
Large Volume Samples		✓
Viscous Samples		✓

3 Mechanisms of Retention

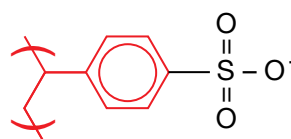
Strong Cation-Exchange



π - π Bonding



Hydrophobic Interaction



Strata-X-C

Ordering Information

Format	Sorbent Mass	Part Number	Unit	Price
Tube				
	30 mg	8B-S029-TAK**	1 mL (100/box)	
	30 mg	8B-S029-TBJ	3 mL (50/box)	
	60 mg	8B-S029-UBJ**	3 mL (50/box)	
	100 mg	8B-S029-EBJ	3 mL (50/box)	
	100 mg	8B-S029-ECH	6 mL (30/box)	
	200 mg	8B-S029-FBJ	3 mL (50/box)	
	200 mg	8B-S029-FCH	6 mL (30/box)	
	500 mg	8B-S029-HBJ	3 mL (50/box)	
	500 mg	8B-S029-HCH	6 mL (30/box)	

Giga™ Tube

	500 mg	8B-S029-HDG	12 mL (20/box)	
	1 g	8B-S029-JDG	12 mL (20/box)	
	1 g	8B-S029-JEG	20 mL (20/box)	
	2 g	8B-S029-KEG	20 mL (20/box)	
	5 g	8B-S029-LFF	60 mL (16/box)	

96-Well Plate

	10 mg	8E-S029-AGB	2 Plates/Box	
	30 mg	8E-S029-TGB	2 Plates/Box	
	60 mg	8E-S029-UGB	2 Plates/Box	

On-line Extraction Cartridge

Description	Part Number	Unit/Box	Price
Strata-X-C on-line extraction cartridge, 20 x 2.0 mm	00M-S048-B0-CB	ea	
Cartridge holder, 20 mm	CH0-5845	ea	

**Tab-less tubes available. Contact Phenomenex for details.

Strata-XL-C

Ordering Information

Format	Sorbent Mass	Part Number	Unit	Price
Tube				
	30 mg	8B-S044-TAK	1 mL (100/box)	
	60 mg	8B-S044-UBJ	3 mL (50/box)	
	100 mg	8B-S044-EBJ	3 mL (50/box)	
	100 mg	8B-S044-ECH	6 mL (30/box)	
	200 mg	8B-S044-FBJ	3 mL (50/box)	
	200 mg	8B-S044-FCH**	6 mL (30/box)	
	500 mg	8B-S044-HCH	6 mL (30/box)	

Giga Tube

	2 g	8B-S044-KDG	12 mL (20/box)	
	2 g	8B-S044-KEG	20 mL (20/box)	
	5 g	8B-S044-LEG	20 mL (20/box)	
	5 g	8B-S044-LFF	60 mL (16/box)	
	10 g	8B-S044-MFF	60 mL (16/box)	

96-Well Plate

	30 mg	8E-S044-TGB	2 Plates/Box	
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General Extraction Protocol

Method written for a 30 mg/1 mL tube

Condition

1 mL Methanol followed by 1 mL D.I. Water

Load

Recommended volume of sample (pH 6-7) (see page 56)

Wash

1 mL 0.1 N Hydrochloric acid in D.I. Water followed by 1 mL 0.1 N Hydrochloric acid in Methanol

Elute

2x 500 μ L 5 % Ammonium hydroxide in Methanol or Acetonitrile



For Large Volume Cleanup/Flash Analysis, use Giga Tubes
For SPE Vacuum Manifolds and Accessories, see pp. 73-75



The General Extraction Protocol is a convenient starting point for SPE method development. Further optimization may be required to tailor the method to your specific needs.

Strata™-X Polymeric SPE

guarantee

U.S. Patent No. 7,119,145

Strata-X-CW and Strata-XL-CW

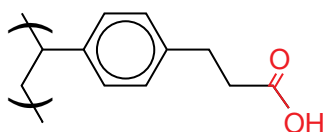
A weak cation-exchange functionalized polymeric sorbent that allows for complete retention of basic compounds with a pK_a greater than 8, including quaternary amines, making 100 % organic wash conditions possible.

If Strata SPE products do not perform as well or better than your current SPE product of similar phase, mass and size, send in your comparative data within 45 days and keep the Strata SPE product for FREE!

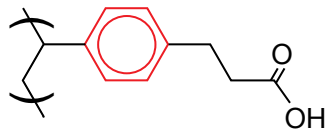
	Strata-X-CW, 33 μ m, 85 Å	Strata-XL-CW, 100 μ m, 300 Å
High Concentration Samples	✓	
Small Target Analytes (< 10 kDa)	✓	
Large Target Analytes (> 10 kDa)		✓
Large Volume Samples		✓
Viscous Samples		✓

3 Mechanisms of Retention

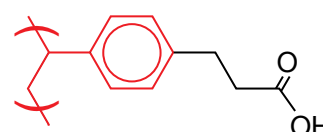
Weak Cation-Exchange



π - π Bonding



Hydrophobic Interaction



Strata-X-CW

Ordering Information

Format	Sorbent Mass	Part Number	Unit	Price
Tube				
	30 mg	8B-S035-TAK**	1 mL (100/box)	
	30 mg	8B-S035-TBJ	3 mL (50/box)	
	60 mg	8B-S035-UBJ**	3 mL (50/box)	
	100 mg	8B-S035-ECH	6 mL (30/box)	
	200 mg	8B-S035-FBJ	3 mL (50/box)	
	200 mg	8B-S035-FCH	6 mL (30/box)	
	500 mg	8B-S035-HBJ	3 mL (50/box)	
	500 mg	8B-S035-HCH	6 mL (30/box)	

Giga™ Tube

	500 mg	8B-S035-HDG	12 mL (20/box)	
	1 g	8B-S035-JDG	12 mL (20/box)	
	1 g	8B-S035-JEG	20 mL (20/box)	
	2 g	8B-S035-KEG	20 mL (20/box)	
	5 g	8B-S035-LFF	60 mL (16/box)	

96-Well Plate

	10 mg	8E-S035-AGB	2 Plates/Box	
	30 mg	8E-S035-TGB	2 Plates/Box	
	60 mg	8E-S035-UGB	2 Plates/Box	

On-line Extraction Cartridge

Description	Part Number	Unit/Box	Price
Strata-X-CW on-line extraction cartridge, 20 x 2.0 mm	00M-S036-B0-CB	ea	
Cartridge holder, 20 mm	CHO-5845	ea	

**Tab-less tubes available. Contact Phenomenex for details.



For Large Volume Cleanup/Flash Analysis, use Giga Tubes
For SPE Vacuum Manifolds and Accessories, see pp. 73-75



The General Extraction Protocol is a convenient starting point for SPE method development. Further optimization may be required to tailor the method to your specific needs.

Strata-XL-CW

Ordering Information

Format	Sorbent Mass	Part Number	Unit	Price
Tube				
	30 mg	8B-S052-TAK	1 mL (100/box)	
	60 mg	8B-S052-UBJ	3 mL (50/box)	
	100 mg	8B-S052-EBJ	3 mL (50/box)	
	100 mg	8B-S052-ECH	6 mL (30/box)	
	200 mg	8B-S052-FBJ	3 mL (50/box)	
	200 mg	8B-S052-FCH	6 mL (30/box)	
	500 mg	8B-S052-HCH	6 mL (30/box)	

Giga Tube

	2 g	8B-S052-KDG	12 mL (20/box)	
	2 g	8B-S052-KEG	20 mL (20/box)	
	5 g	8B-S052-LEG	20 mL (20/box)	
	5 g	8B-S052-LFF	60 mL (16/box)	
	10 g	8B-S052-MFF	60 mL (16/box)	

96-Well Plate

	30 mg	8E-S052-TGB	2 Plates/Box	
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General Extraction Protocol

Method written for a 30 mg/1 mL tube

Condition

1 mL Methanol followed by 1 mL D.I. Water

Load

Recommended volume of sample (pH 6-7) (see page 56)

Wash

1 mL D.I. Water followed by 1 mL Methanol

Elute

2x 500 μ L 5 % Formic acid in Methanol or Acetonitrile

Strata™-X Polymeric SPE



U.S. Patent No. 7,119,145

Strata-X-A and Strata-XL-A

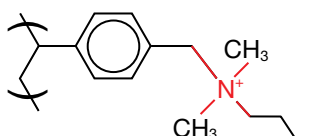
A strong anion-exchange functionalized polymeric sorbent that allows for complete retention of weakly acidic compounds with pK_a greater than 2, making 100 % organic wash conditions possible.

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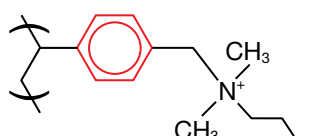
	Strata-X-A, 33 μ m, 85 Å	Strata-XL-A, 100 μ m, 300 Å
High Concentration Samples	✓	
Small Target Analytes (< 10 kDa)	✓	
Large Target Analytes (> 10 kDa)		✓
Large Volume Samples		✓
Viscous Samples		✓

3 Mechanisms of Retention

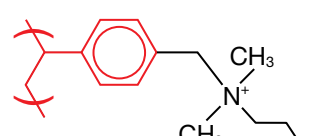
Strong Anion-Exchange



π - π Bonding



Hydrophobic Interaction



Strata-X-A

Ordering Information

Format	Sorbent Mass	Part Number	Unit	Price
Tube				
	30 mg	8B-S123-TAK**	1 mL (100/box)	
	30 mg	8B-S123-TBJ	3 mL (50/box)	
	60 mg	8B-S123-UBJ	3 mL (50/box)	
	100 mg	8B-S123-EBJ	3 mL (50/box)	
	100 mg	8B-S123-ECH	6 mL (30/box)	
	200 mg	8B-S123-FBJ	3 mL (50/box)	
	200 mg	8B-S123-FCH	6 mL (30/box)	
	500 mg	8B-S123-HBJ	3 mL (50/box)	
	500 mg	8B-S123-HCH	6 mL (30/box)	
Giga™ Tube				
	500 mg	8B-S123-HDG	12 mL (20/box)	
	1 g	8B-S123-JDG	12 mL (20/box)	
	1 g	8B-S123-JEG	20 mL (20/box)	
	2 g	8B-S123-KEG	20 mL (20/box)	
	5 g	8B-S123-LFF	60 mL (16/box)	
96-Well Plate				
	10 mg	8E-S123-AGB	2 Plates/Box	
	30 mg	8E-S123-TGB	2 Plates/Box	
	60 mg	8E-S123-UGB	2 Plates/Box	

Strata-XL-A

Ordering Information

Format	Sorbent Mass	Part Number	Unit	Price
Tube				
	30 mg	8B-S053-TAK	1 mL (100/box)	
	60 mg	8B-S053-UBJ	3 mL (50/box)	
	100 mg	8B-S053-EBJ	3 mL (50/box)	
	100 mg	8B-S053-ECH	6 mL (30/box)	
	200 mg	8B-S053-FBJ	3 mL (50/box)	
	200 mg	8B-S053-FCH	6 mL (30/box)	
	500 mg	8B-S053-HCH	6 mL (30/box)	
Giga Tube				
	2 g	8B-S053-KDG	12 mL (20/box)	
	2 g	8B-S053-KEG	20 mL (20/box)	
	5 g	8B-S053-LEG	20 mL (20/box)	
	5 g	8B-S053-LFF	60 mL (16/box)	
	10 g	8B-S053-MFF	60 mL (16/box)	
96-Well Plate				
	30 mg	8E-S053-TGB	2 Plates/Box	

General Extraction Protocol

Method written for a 30 mg/1 mL tube

Condition

1 mL Methanol followed by 1 mL D.I. Water

Load

Recommended volume of sample (pH 6-7) (see page 56)

Wash

1 mL 25 mM Ammonium acetate (pH 6-7) followed by 1 mL Methanol

Elute

2x 500 μ L 5 % Formic acid in Methanol or Acetonitrile

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For Large Volume Cleanup/Flash Analysis, use Giga Tubes
For SPE Vacuum Manifolds and Accessories, see pp. 73-75



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Strata™-X Polymeric SPE

guarantee

U.S. Patent No. 7,119,145

Strata-X-AW and Strata-XL-AW

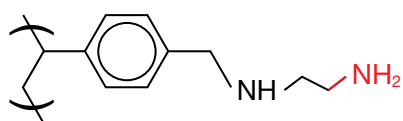
A weak anion-exchange functionalized polymeric sorbent that allows for complete retention of acidic compounds with pK_a less than 5, making 100 % organic wash conditions possible.

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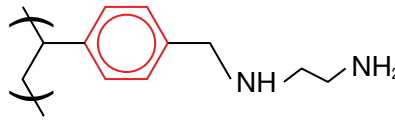
	Strata-X-AW, 33 μ m, 85 Å	Strata-XL-AW, 100 μ m, 300 Å
High Concentration Samples	✓	
Small Target Analytes (< 10 kDa)	✓	
Large Target Analytes (> 10 kDa)		✓
Large Volume Samples		✓
Viscous Samples		✓

3 Mechanisms of Retention

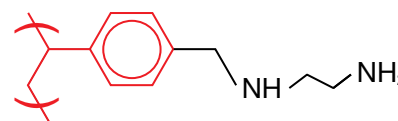
Weak Anion-Exchange



π - π Bonding






Hydrophobic Interaction



Strata-X-AW

Ordering Information

Format	Sorbent Mass	Part Number	Unit	Price
Tube				
	30 mg	8B-S038-TAK**	1 mL (100/box)	
	30 mg	8B-S038-TBJ	3 mL (50/box)	
	60 mg	8B-S038-UBJ	3 mL (50/box)	
	100 mg	8B-S038-EBJ	3 mL (50/box)	
	100 mg	8B-S038-ECH	6 mL (30/box)	
	200 mg	8B-S038-FBJ	3 mL (50/box)	
	200 mg	8B-S038-FCH	6 mL (30/box)	
	500 mg	8B-S038-HBJ	3 mL (50/box)	
	500 mg	8B-S038-HCH	6 mL (30/box)	
Giga™ Tube				
	500 mg	8B-S038-HDG	12 mL (20/box)	
	1 g	8B-S038-JDG	12 mL (20/box)	
	1 g	8B-S038-JEG	20 mL (20/box)	
	2 g	8B-S038-KEG	20 mL (20/box)	
	5 g	8B-S038-LFF	60 mL (16/box)	
96-Well Plate				
	10 mg	8E-S038-AGB	2 Plates/Box	
	30 mg	8E-S038-TGB	2 Plates/Box	
	60 mg	8E-S038-UGB	2 Plates/Box	

**Tab-less tubes available. Contact Phenomenex for details.






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For SPE Vacuum Manifolds and Accessories, see pp. 73-75



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Strata-XL-AW

Ordering Information

Format	Sorbent Mass	Part Number	Unit	Price
Tube				
	30 mg	8B-S051-TAK	1 mL (100/box)	
	60 mg	8B-S051-UBJ	3 mL (50/box)	
	100 mg	8B-S051-EBJ	3 mL (50/box)	
	100 mg	8B-S051-ECH	6 mL (30/box)	
	200 mg	8B-S051-FBJ	3 mL (50/box)	
	200 mg	8B-S051-FCH	6 mL (30/box)	
	500 mg	8B-S051-HCH	6 mL (30/box)	
Giga Tube				
	2 g	8B-S051-KDG	12 mL (20/box)	
	2 g	8B-S051-KEG	20 mL (20/box)	
	5 g	8B-S051-LEG	20 mL (20/box)	
	5 g	8B-S051-LFF	60 mL (16/box)	
	10 g	8B-S051-MFF	60 mL (16/box)	
96-Well Plate				
	30 mg	8E-S051-TGB	2 Plates/Box	

General Extraction Protocol

Method written for a 30 mg/1 mL tube

Condition

1 mL Methanol followed by 1 mL D.I. Water

Load

Recommended volume of sample (pH 6-7) (see page 56)

Wash

1 mL 25 mM Ammonium acetate (pH 6-7) followed by 1 mL Methanol

Elute

2x 500 μ L 5 % Ammonium hydroxide in Methanol or Acetonitrile

Strata™-X Polymeric SPE



U.S. Patent No. 7,119,145

Strata-X-Drug B

A proprietary strong cation-exchange sorbent that is designed and quality controlled for basic drugs of abuse analysis. This sorbent does not require a conditioning/equilibrating step.

If Strata SPE products do not perform as well or better than your current SPE product of similar phase, mass and size, send in your comparative data within 45 days and keep the Strata SPE product for FREE!

Strata-X-Drug B Certificate of Analysis

Strata™-X-Drug B 33 µm, Cation Mixed-Mode Polymeric Sorbent
Sorbent Lot Number: S326-XX

Recovery Tests		Specification	%CV (n=4)
Compound			
1 Codeine	≥ 85%	96	≤ 5.0%
2 Morphine			≤ 5.0%
Absence of Interconversion of Norcodeine and Normorphine to Parent Compounds			
Result Pass			
Sorbent Test		Specification	Result
Exchange Capacity (meq/g)		0.9-1.2	1.0
Surface Area (m ² /g)	705-825	764	
Pore Size (Å)	75-91	89	
Pore Volume (ml/g)	1.57-1.87	1.70	
Mean Particle Size (µm)	28 - 34	29	
Fine Content (<10µm by Vol. %)	< 0.2 %	0.0	

We test recovery by extracting codeine and morphine from urine to ensure that each batch provides you with the best results possible!

Strong cation-exchange sorbents can sometimes promote conversion of norcodeine and normorphine to parent compounds. Strata-X-Drug B is guaranteed not to promote this interconversion.

SAMPLE PREPARATION | STRATA-X POLYMERIC SPE

Ordering Information

Format	Sorbent Mass	Part Number	Unit	Price
Tube				
	10 mg	8B-S128-AAK	1 mL (100/box)	
	10 mg	8L-S128-AAK†	1 mL (100/box)	
	30 mg	8B-S128-TAK	1 mL (100/box)	
	30 mg	8L-S128-TAK†	1 mL (100/box)	
	30 mg	8B-S128-TBJ	3 mL (50/box)	
	60 mg	8B-S128-UBJ	3 mL (50/box)	
	60 mg	8B-S128-UCH	6 mL (30/box)	
	60 mg	8B-S128-UCL	6 mL (200/box)	
Giga™ Tube				
	100 mg	8B-S128-EDG	12 mL (20/box)	
96-Well Plate				
	10 mg	8E-S128-AGB	2 Plates/box	
	30 mg	8E-S128-TGB	2 Plates/box	
	60 mg	8E-S128-UGB	2 Plates/box	

†Tab-less tube

Strata-X-Drug B Extraction Protocols

	1	2	3
	Opiates, 6-MAM, PCP, Amphetamines, Methadone, Healthcare Opiates, and Propoxyphene*	Marijuana Metabolites	Cocaine Metabolites
Condition	Not Required		
Load	Pre-treated urine sample	Pre-treated urine sample	Pre-treated urine sample
Wash 1	2 mL of 100 mM Sodium acetate buffer (pH 5.0)	2 mL of 100 mM Sodium acetate buffer (pH 5.0)	2 mL of 0.1 N Hydrochloric acid
Wash 2	2 mL Methanol	2 mL of Acetonitrile:100 mM Sodium acetate buffer (pH 5.0) (30:70)	2 mL Methanol
Dry	10 minutes under full vacuum	15 minutes under full vacuum	10 minutes under full vacuum
Elute	2 mL of Ethyl acetate: Isopropanol: Ammonium hydroxide (70:20:10)	2 mL of Ethyl acetate: Isopropanol (85:15)	2 mL of Ethyl acetate: Isopropanol: Ammonium hydroxide (70:20:10)

* Opiates, 6-MAM, PCP, Amphetamines, Methadone, Healthcare Opiates, and Propoxyphene can be extracted simultaneously or separately using the same SPE methodology.

Methods are written for 60 mg/6 mL Strata-X-Drug B; however they can be scaled to accommodate smaller or larger sample sizes and sorbent masses.