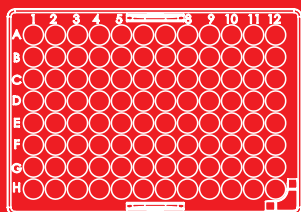


REVOLUTIONARY,
YET ABSURDLY SIMPLE
DRIED MATRIX
**MICROSAMPLING
DEVICE**

- Collect a 10 μ L Dried Sample Every Time
- Goodbye Ice, Centrifuges, & Freezers
- Easier & Faster than DBS Cards
- No Volumetric Blood Hematocrit Bias
- Supports NC3R Initiatives



A NEW ERA OF DRIED MATRIX MICROSAMPLING

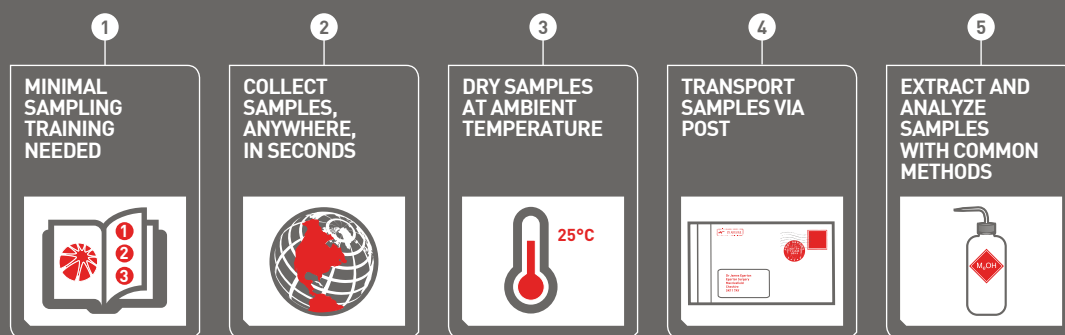
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Mitra (RUO) is developed and manufactured by Neoteryx LLC. Mitra (RUO) is distributed and supported by Phenomenex. For research use only (RUO). Should not be used for clinical diagnostics or to serve any medical purpose.

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Welcome to ABSURDLY SIMPLE Microsampling

Easily and economically collect, transport, extract, and analyze 10 μ L, dried matrix biological fluid samples to generate dependable, quantitative bioanalytical data with reduced or eliminated blood hematocrit bias.



Try absurdly simple microsampling in your lab today -
You'll know exactly what we mean!

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REVOLUTIONARY TECHNOLOGY, SIMPLE DESIGN

Based on Volumetric Absorptive Microsampling (VAMS™) technology, the patent-pending Mitra (RUO) Microsampler is a simple, elegant device attuned to biological fluid collection. The design features facilitate high-throughput sample processing, fluid draws from live hosts or tubes, and the ability to collect precise microsamples with limited training and no specialized lab equipment.

THE MITRA MICROSAMPLER

SAMPLER BODY FEATURES

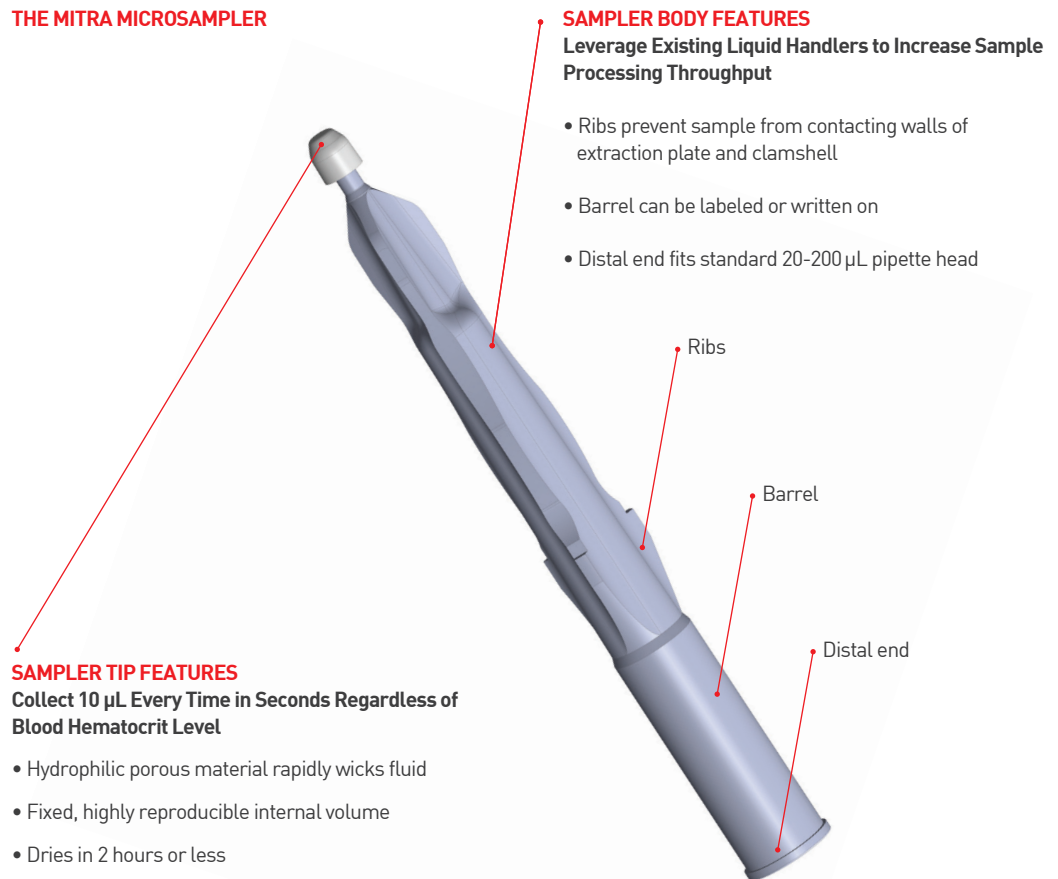
Leverage Existing Liquid Handlers to Increase Sample Processing Throughput

- Ribs prevent sample from contacting walls of extraction plate and clamshell
- Barrel can be labeled or written on
- Distal end fits standard 20-200 μ L pipette head

SAMPLER TIP FEATURES

Collect 10 μ L Every Time in Seconds Regardless of Blood Hematocrit Level

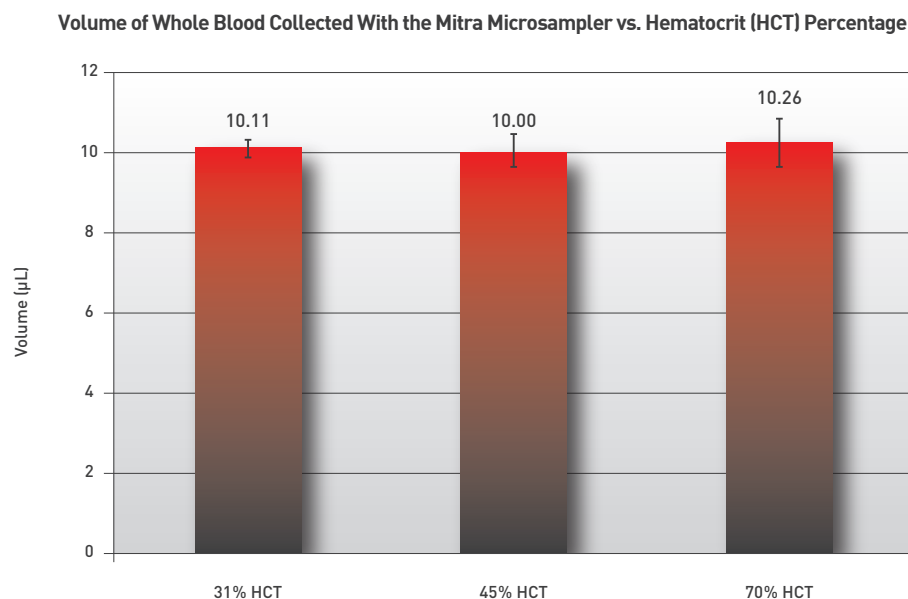
- Hydrophilic porous material rapidly wicks fluid
- Fixed, highly reproducible internal volume
- Dries in 2 hours or less
- Dried samples are not a biohazard eliminating special transportation needs and costs
- Extraction follows simple, automatable procedure



WHY 10 μ L?

For studies where the therapeutic range is in the μ g / mL range - a 10 μ L microsample is sufficient. In addition, you can achieve more consistent and better quality data with serial vs. composite sampling. Lastly, microsamples are a huge leap forward in animal welfare by reducing the number of animals needed for testing to a fraction supporting the NC3R initiatives to Replace, Refine, and Reduce.

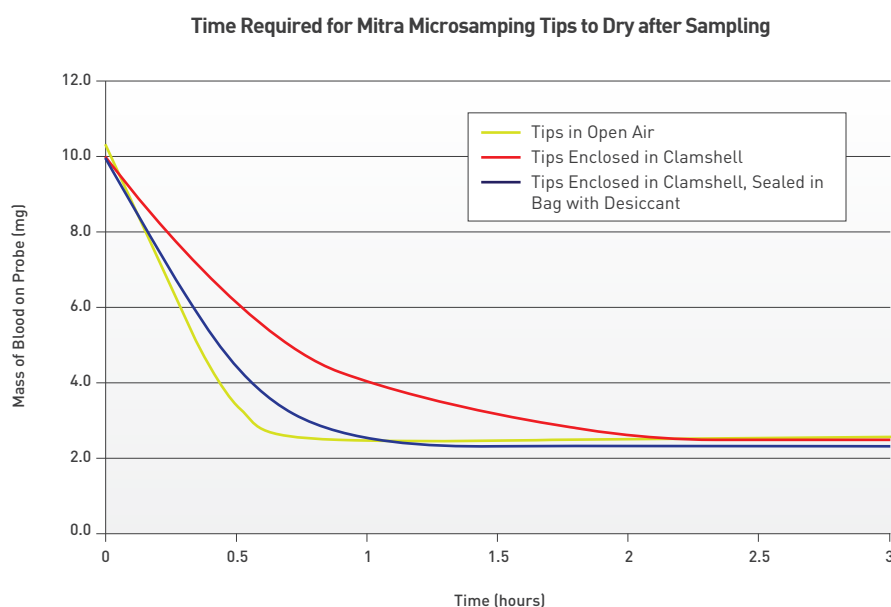
CONSISTENTLY COLLECT DEPENDABLE MICROSAMPLES



The overall average volume collected is 10.1 µL with an overall relative standard deviation (RSD) of 4.0 % illustrating that the Mitra Microsampler dependably collects 10 µL every time regardless of blood hematocrit level.

**COLLECT A 10 µL,
DRIED SAMPLE
EVERY TIME**

COLLECTED SAMPLES DRY IN 2 HOURS OR LESS



All three scenarios evaluated in the drying time study were done under ambient conditions at 10 % humidity and room temperature. Complete dryness was achieved in two hours or less in each instance, even when Mitra Microsampling Tips were not directly exposed to open air.

SIGNIFICANT COST AND TIME SAVINGS

The Mitra (RUO) Microsampler combines the best of wet sampling, microsampling, and dried blood spotting into one, state-of-the-art collection device that is extremely simple to use. Massive cost and time savings can be achieved when using the Mitra (RUO) Microsampler as opposed to other typical collection techniques.

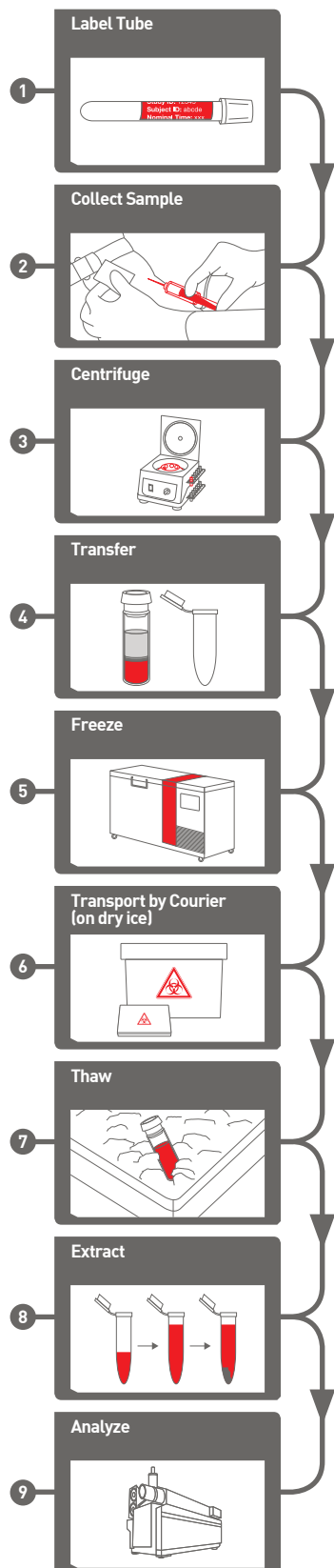
COMPARISON OF THE MITRA MICROSAMPLING DEVICE TO COMMON SAMPLING TECHNIQUES

	Mitra (RUO) Microsampler	Dried Blood Spotting (DBS)	Traditional Wet Sampling
Collects a fixed volume of blood, regardless of blood hematocrit	✓		✓
Can be transported without dry ice or biohazard needs	✓	✓	
Direct sampling approach (e.g. finger or tail prick)	✓	✓	
Robust, consistent sampling technique with minimal training needed	✓		
No sample processing required (e.g. centrifugation, isolation, spot punching, etc.)	✓		

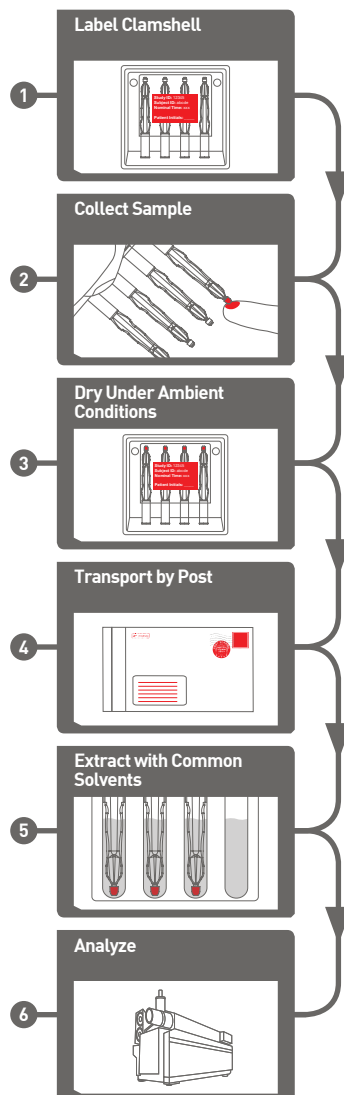
Q: How much money and time would you save if you no longer had to transport samples on dry ice or by courier? If you didn't have to do reworks? If you didn't have to pre-process your samples?

A: The Savings is Shocking...Isn't it?

TYPICAL WET WORKFLOW



STREAMLINED MITRA MICROSAMPLING WORKFLOW



STREAMLINED WORKFLOW

7

Is it really that simple?

It sure is. Download the Quick Start Guide at www.phenomenex.com/mitra/resources to confirm.

AUTOMATABLE 96-WELL PLATE FORMAT

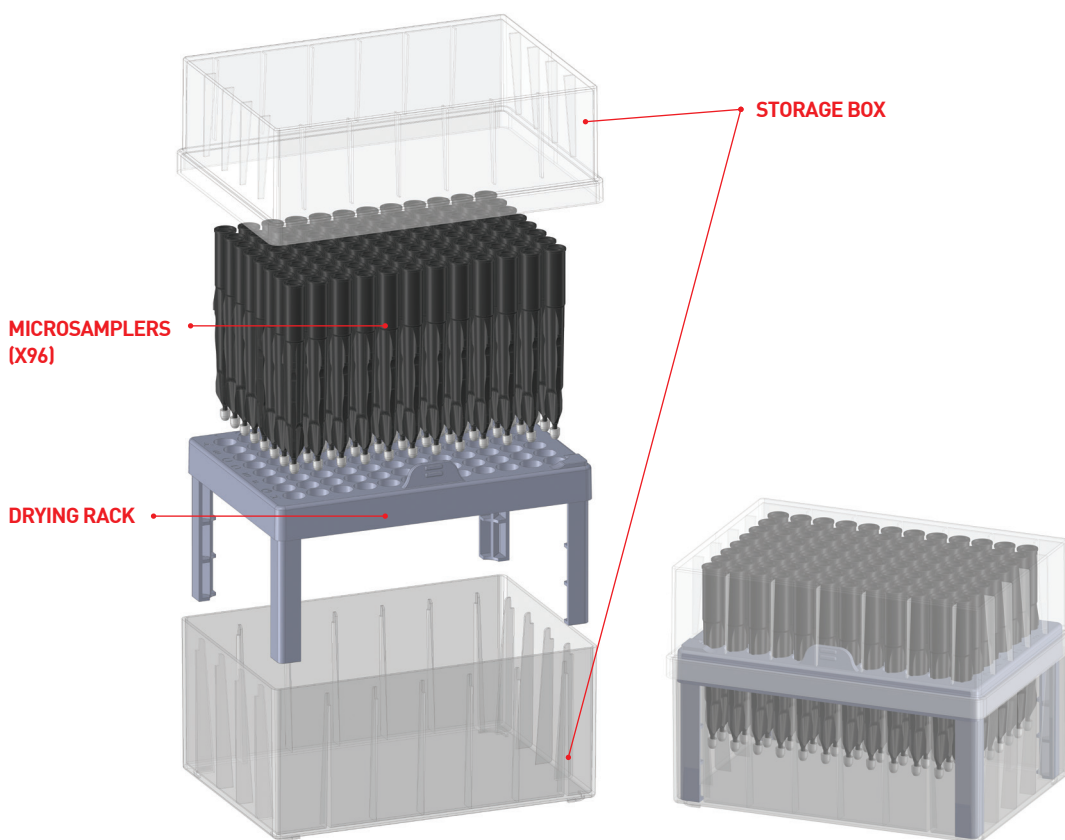
The Mitra (RUO) Microsampling Device is available in two formats: a 96-Well Plate assembly and a 4-Pack Clamshell. Your study requirements such as sample size, subject type, sample collection location, and throughput needs will dictate the best format to use.

96-WELL PLATE FORMAT

This format has standard indexing and fits SBS footprint of your liquid handler when used with the Mitra Deck Adapter, resulting in faster sample processing by using plate mapping software & instrumentation already present in your lab.

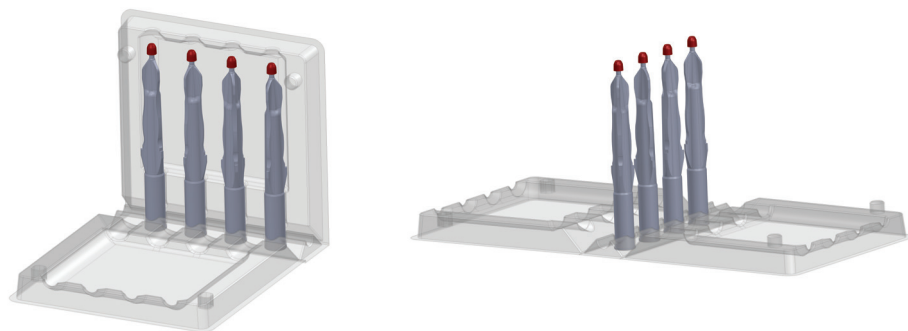
RECOMMENDED FOR:

- Discovery and pre-clinical environments
- Animal studies
- Automated sample processing
- Method development



The Mitra Sampling Tool assists in picking up the Mitra Samplers from the 96-well drying rack and can also be used to take the sample.

SAMPLE ANYWHERE CLAMSHELL FORMAT

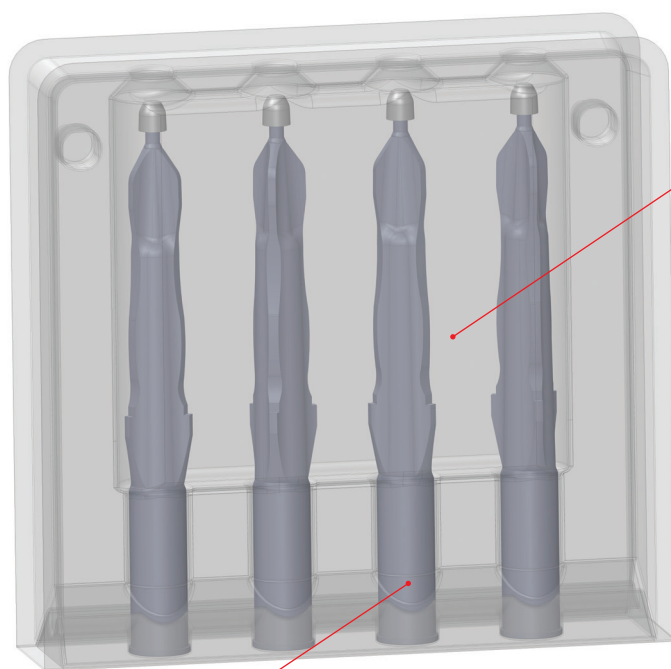


4-PACK CLAMSHELL FORMAT

Collect patient samples anytime, anywhere by anyone with this practical, user-friendly format, which requires minimal training for robust sampling technique. Simply apply patient label to clamshell, open, collect samples, close, let dry, and drop in the mail.

RECOMMENDED FOR:

- Clinical environments
- Human studies
- At-home sampling
- Remote locations



CLAMSHELL





MICROSAMPLERS (X4)

See Mitra (RU0) Microsampling Device formats in action in the product demonstration videos!

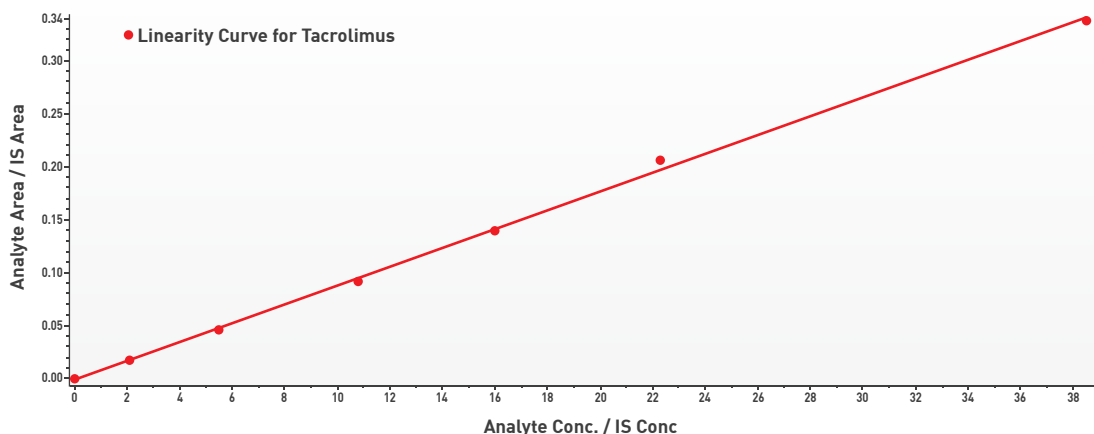
www.phenomenex.com/mitra

CONSISTENT SAMPLE QUALITY WITH GOOD LINEARITY

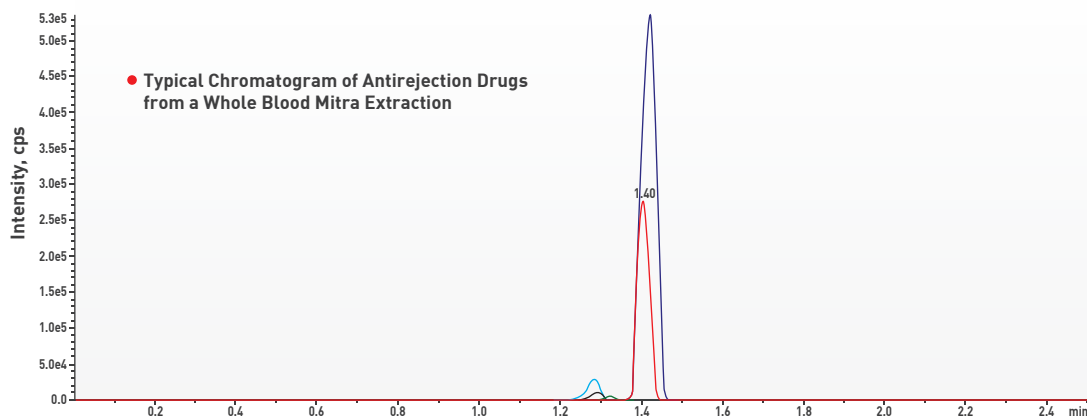
The Mitra (RUO) Microsampling Device reduces or eliminates the volumetric blood hematocrit assay bias problem associated with dried blood spotting (DBS) cards resulting in accurate and dependable bioanalytical data. In addition, because the Mitra (RUO) Microsampler collects a fixed volume every time, sample quality is always consistent and no punching is required.

COLLECT A PERFECT "SPOT" EVERY TIME			
Dried Blood Spotting			Vs. Mitra Microsampler
			
Layering	Insufficient, multiple application	Serum rings present	Homogeneous 10 µL Sample

EXCELLENT LINEARITY AND CHROMATOGRAPHY FOR IMMUNOSUPPRESSIVE DRUGS FROM A WHOLE BLOOD MITRA EXTRACTION



Good linearity was found for 3 immunosuppressive drugs tested (Cyclosporine, Sirolimus and Tacrolimus). The above example is for Tacrolimus where linearity was achieved across the full calibration range (2.1–38.5 µg/mL). Furthermore the curve showed an r value of 0.9993 showing good precision and no positive or negative bias.

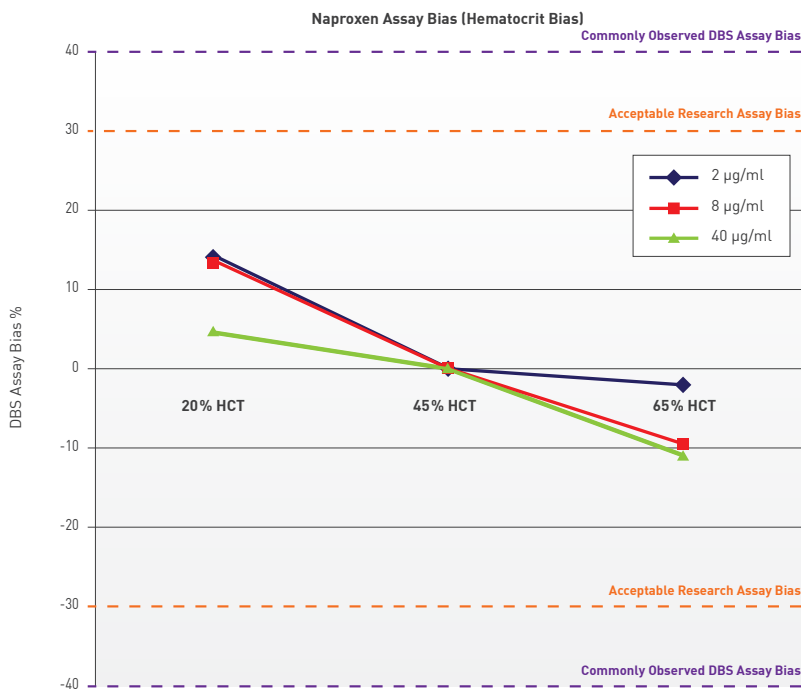


Very clean chromatograms are achieved from a simple whole blood extraction of the immunosuppressive drugs enabling easier quantitation.

CASE STUDY: Naproxen Extractions from Whole Human Blood Collected With the Mitra Microsampling Device

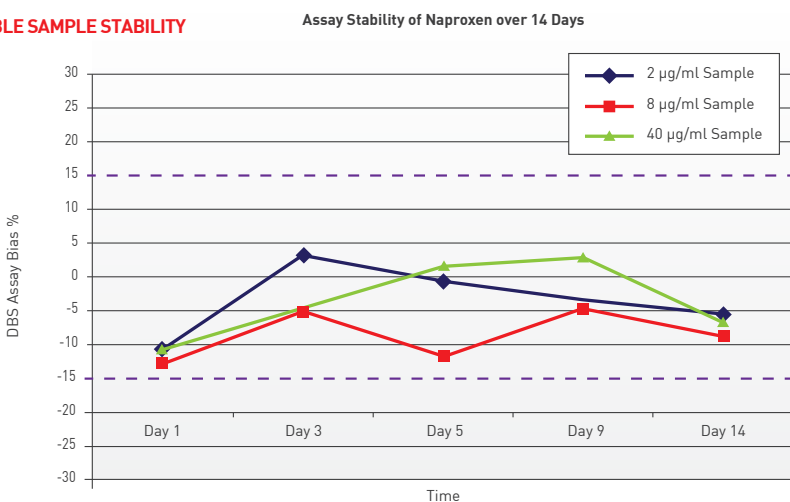
Therapeutic concentration ranges for Naproxen are used to evaluate both hematocrit bias and assay stability. The extraction methodology is methanol and 15 minutes of vortexing for all the data. This case study supports the claims that the Mitra Microsampler greatly reduces or eliminates hematocrit bias compared to DBS Assay Bias and is a stable dried matrix collection device.

EXTREMELY LOW HEMATOCRIT ASSAY BIAS



Hematocrit bias at three different concentrations of Naproxen (2, 4, and 8 µg / mL) and three different levels of blood hematocrit (20%, 45%, 65%) is illustrated. A $\pm 12\%$ assay bias is the maximum observed which is within the typical $\pm 30\%$ accuracy accepted for research assays and significantly below the 40% assay bias that can be seen for DBS with a sub-punch processing step.

DEPENDABLE SAMPLE STABILITY

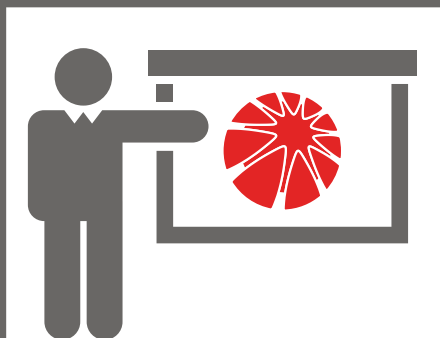


This graph illustrates on-tip stability for an analysis of Naproxen over 14 days. All the data fits within the $\pm 15\%$ assay bias requirement illustrating that the stability of the assay is good for at least up to 2 weeks.

**REDUCED OR
ELIMINATED
BLOOD
HEMATOCRIT BIAS**

RESOURCES

IN-LAB DEMONSTRATIONS & SEMINARS



IN-LAB DEMONSTRATIONS & SEMINARS

We'll bring absurd simplicity right to your doorstep! Try the Mitra (RUO) Microsampler out for yourself, in your lab, with your samples. No time for a visit? We can hold an on-line seminar too. Let us know what works best.

PRODUCT EVALUATIONS



PRODUCT EVALUATIONS

We know that the Mitra (RUO) Microsampler sounds too good to be true. However, we're so confident in the simplicity and performance of the device we will let you try it out on us*. Request a FREE 96-well plate assembly to evaluate in your lab.

*Limit one 96-well plate evaluation device per company. Free sample subject to availability. Subject to Phenomenex Standard Terms and Conditions, which may be viewed at www.phenomenex.com/TermsandConditions

RESOURCES

TECHNICAL SUPPORT



TECHNICAL SUPPORT

Let us put you first! Our team of technical consultants are available to provide unlimited, personalized support to help you implement Mitra (RUO) Microsampling in your lab. From sample collection questions to extraction method development help to analytical result troubleshooting we are committed to getting your question answered, fast and friendly.

LITERATURE, VIDEOS, & MORE



LITERATURE, VIDEOS, & MORE

This brochure hopefully got you excited about the potential of the Mitra (RUO) Microsampling Device to revolutionize your sample collection and analysis. But, we know you probably need a little more. Visit www.phenomenex.com/mitra to access product videos, peer-authored journal references, and technical literature all about Mitra.

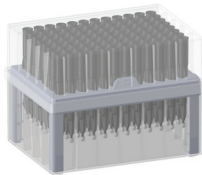
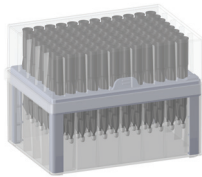

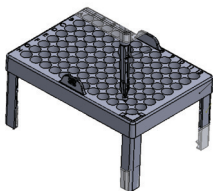
Have Questions? Want to set up a
Deminar? Get in touch with us at:
mitrasales@phenomenex.com

ORDERING INFORMATION

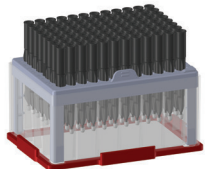

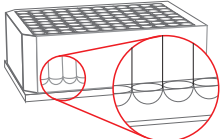
14

guarantee

The Mitra (RUO) Microsampling Device is guaranteed to collect a precise volume. If your Mitra Microsamplers do not consistently collect a precise volume, send in your data within 45 days for a full refund.

Product	Part No.	Description	Unit	Typical Uses
	9R-K002-CA	Mitra (RUO) 10µL Microsampling Device 96-Well Plate Assembly	1 ea	For high-throughput environments (e.g. discovery labs)
	9R-K002-CD	Mitra (RUO) 10µL Microsampling Device 96-Well Plate Assembly	12/pk	For animal studies For method development
	9R-K002-BF	Mitra (RUO) 10µL Microsampling Device 4-Pack Clamshell	60/pk	For clinical trials For direct sampling For at-home sampling For remote locations
	AK-9268-A	Mitra Drying Rack 96-Well Plate	1 ea	To organize sampling for high-throughput environments

ORDERING INFORMATION

Product	Part No.	Description	Unit	Typical Uses
	AK-9269-A	Mitra SBS Deck Adapter 96-Well Plate	1 ea	For mounting 96-well plate on deck of liquid handlers
	AK-9270-A	Mitra Sampling Tool	1 ea	To easily manipulate and transfer samplers in 96-well plate assembly
	AH0-8636	96-Well Collection Plate 2 mL round well with round bottom	50/pk	To perform extractions prior to analysis

Terms and Conditions

Subject to Phenomenex Standard Terms & Conditions, which may be viewed at www.phenomenex.com/TermsAndConditions.

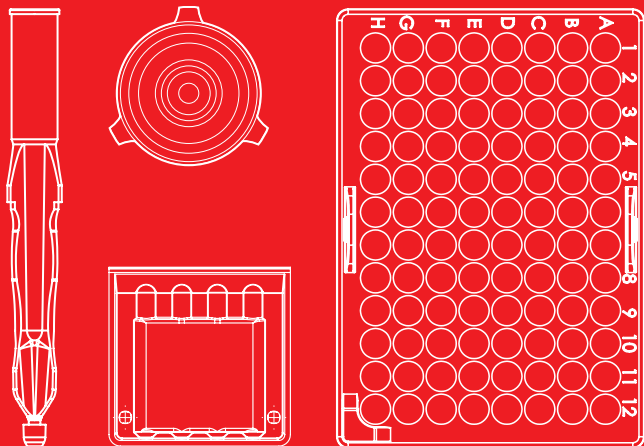
Trademarks

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Disclaimer

Mitra is patent pending.

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REVOLUTIONARY, YET ABSURDLY SIMPLE DRIED MATRIX MICROSAMPLING

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