

[ ARC PREMIER SYSTEM ]

See clearly and consistently,  
**with confidence.**



Arc™ PREMIER

Waters

THE SCIENCE OF WHAT'S POSSIBLE.™



Today's scientists and lab managers need to confidently produce the most accurate, reliable, and reproducible data. The Waters™ **Arc™ Premier System** produces correct, robust results from the very first injection, reliably and easily. The Arc Premier System features new, innovative MaxPeak™ High Performance Surfaces (HPS) Technology, which effectively reduces non-specific adsorption due to metal interactions, without complicated mobile phases or laborious methods.

The Arc Premier System sharpens chromatographic peaks for metal-sensitive compounds by eliminating secondary interactions from metals, resulting in:

- Improved compliance from higher quality data
- Faster, more reproducible, and accurate data integration
- Shorter time from sample to result, without conditioning

## [ ARC PREMIER SYSTEM ]

For over 60 years, laboratory-driven organizations have relied on the expertise of Waters to deliver reliable, robust, and reproducible solutions to ensure confidence in their analytical results. With over 100,000 LC systems installed worldwide, we understand the significant impact the right technology has on your business and the implications it has on characterizing the quality and safety of your products.

With the Arc Premier System, we continue to deliver on the product quality you expect, combined with recent innovations in MaxPeak HPS Technology, to always deliver the best possible results. Whether you are working to ensure the safety of a new and innovative product, maintain the consistency and supply of a current one, or test your food safety and quality, the Arc Premier System gives you greater data quality, flexibility, reproducibility, and faster data integration with right first-time results right out of the box, without the need for complicated mobile phases and laborious methods to prepare your system.

- MaxPeak HPS Technology, minimizing risk of metal-analyte interactions
- Pressure envelope extends to 9500 psi through a flow rate range of 1–5 mL/min, providing an optimized pairing with column dimension and particle size
- Flexible quaternary and binary pumping options
- High performance analytical optical detectors, include photodiode array (PDA), UV/Vis, and fluorescence (FLR)
- Mass detection options with the ACQUITY™ QDa™ Mass Detector, SQD2 Detector, Xevo™ TQ-S micro, and Xevo TQ-S cronos
- Flexible column manager options available for up to six columns ranging in length from 50 mm to 300 mm, with a temperature range of 4 °C to 90 °C
- Auto•Blend Plus™ Technology for mobile phase reproducibility and Gradient SmartStart for method transfer
- Wide range of trusted particle technologies in MaxPeak Premier Columns
- Compliance-ready Empower™ Chromatography Data System (CDS) delivering high quality data integrity
- Automated quantification tools to minimize compliance costs and time



# Flexible and Robust HPLC Designed for Your Development and Routine Testing Needs

## Low dispersion HPLC

High performing HPLC with bandspread of <math><30 \mu\text{L}</math> for high chromatographic resolution.

## Versatile column management

Support for analytical LC column dimensions up to 300\* mm with capacity to automatically select between as many as six analytical columns. Equipped with independently controlled temperature zone, active pre-heating, and eCord™ Intelligent Chip Technology for Waters columns.

## Flow-through needle Injector

Volume range of 0.1 to 1000  $\mu\text{L}$  and ultra-low carryover performance compatible with sensitive LC-MS applications.

## High Performance Surfaces Technology

With MaxPeak HPS Technology, analytes are impeded from Lewis acid-base interactions and adsorptive losses. This technology has proven to be effective in improving the analysis of electron-rich compounds, such as those containing phosphate and carboxylate groups.

## Consumables

Compatible with MaxPeak Premier Column chemistry to meet the needs of your reversed-phase and HILIC applications. Quality Control (QC) Reference Material benchmarks your Arc Premier System and enables perfect resolution. Certified clean QuanRecovery™ vials to give full sample integrity.



## Laboratory Informatics

Software control within your existing Empower or MassLynx™ infrastructure. Empower Method Validation Manager (MVM) allows you to perform chromatographic method validation in one application. Optional S-Matrix Fusion Software automates your method development according to AQbD guidelines.

## High performance analytical detectors

A wide range of high-performance detection capabilities, optimized with HPS, to support diverse applications. Includes photodiode array, UV/Vis, and fluorescence, with the additional option of single and triple quad mass detection.

## Solvent blending

Quaternary or binary solvent mixing. Delivers precise and accurate separations at pressures up to 9500 psi. Optional solvent select valve adds access to additional solvents. Automated solvent compressibility, integrated solvent degassing, and programmable seal wash maximize flow accuracy, precision, and reliability.

## Auto-Blend Plus Technology

Reduce human error and accelerate method robustness testing for chromatographic methods by programming gradients to control mobile phase pH and ionic strength.

## Gradient SmartStart

Adjust the injection relative to the gradient start to emulate other HPLC systems' dwell volumes, without the need to alter the gradient table. Successfully transfer most methods in just two injections.

\* MaxPeak Premier Columns are recommended for use with the Arc Premier System and are currently only available in lengths up to 150 mm.

# The Universal Platform for Liquid Chromatography

Non-specific adsorption of metal-sensitive compounds is an unpredictable challenge, resulting in chromatography with large relative standard deviations (RSDs) and broad, overlapping peaks, which can be challenging to integrate quickly and be accurate consistently.

Designed with MaxPeak HPS Technology and paired with MaxPeak Premier 2.5  $\mu\text{m}$  Columns, the Arc Premier System improves data quality for challenging compounds, including metal-sensitive compounds tested with LC methods – so you can see clearly and consistently, with confidence.

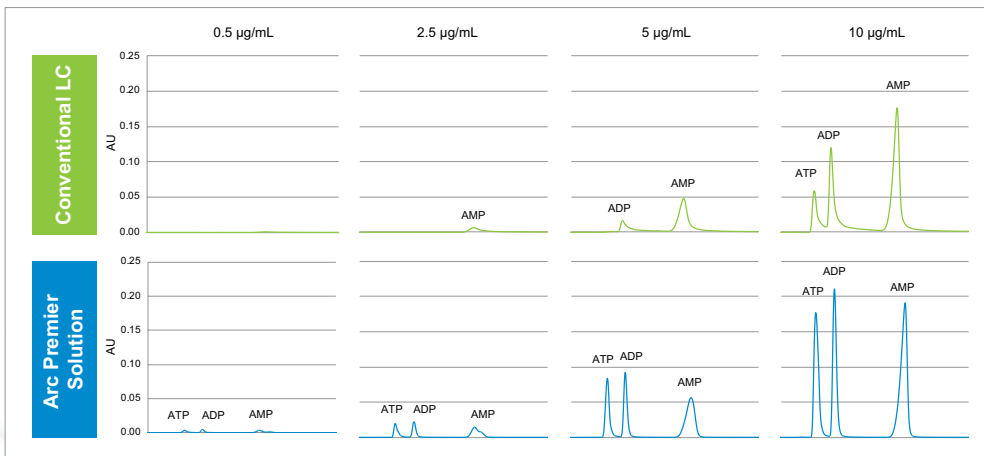
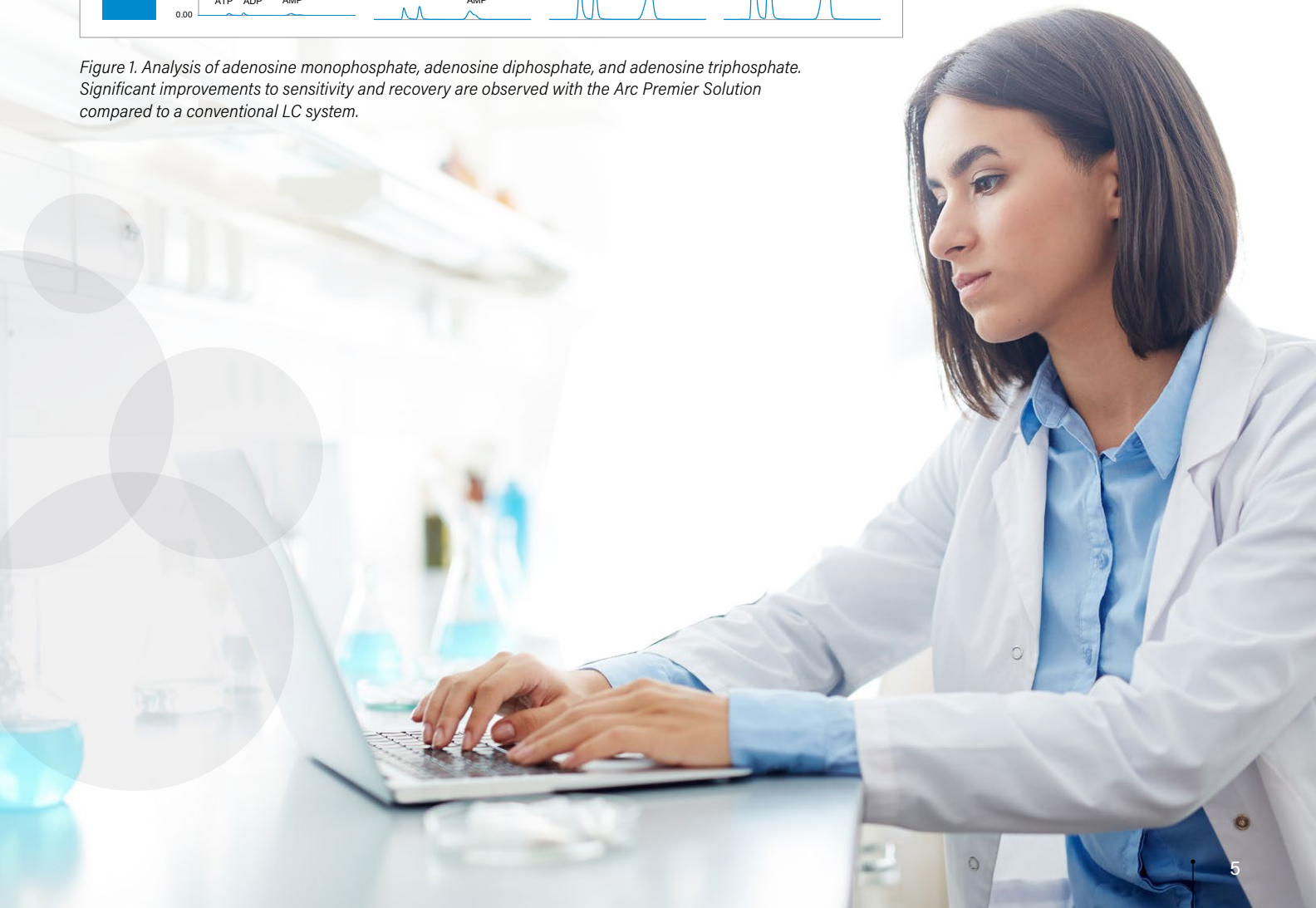


Figure 1. Analysis of adenosine monophosphate, adenosine diphosphate, and adenosine triphosphate. Significant improvements to sensitivity and recovery are observed with the Arc Premier Solution compared to a conventional LC system.



## Clear.

Future-proof your lab for the next generation of challenging compounds with MaxPeak HPS Technology, which sharpens peaks for metal-sensitive compounds, resulting in higher data quality and improved sensitivity with chromatographic reproducibility and precision.

Data quality and performance are critical for your lab, but those can't come at the sacrifice of ruggedness and ease of use.

With MaxPeak HPS Technology and flexible LC performance, your lab gets the typical benefits of an LC system optimized for 2.x  $\mu\text{m}$  column chemistry with the MaxPeak HPS Technology's ability to shorten run times and achieve sharp peaks - no lengthy and complex conditioning and conditioning methodologies for metal-sensitive compounds required.

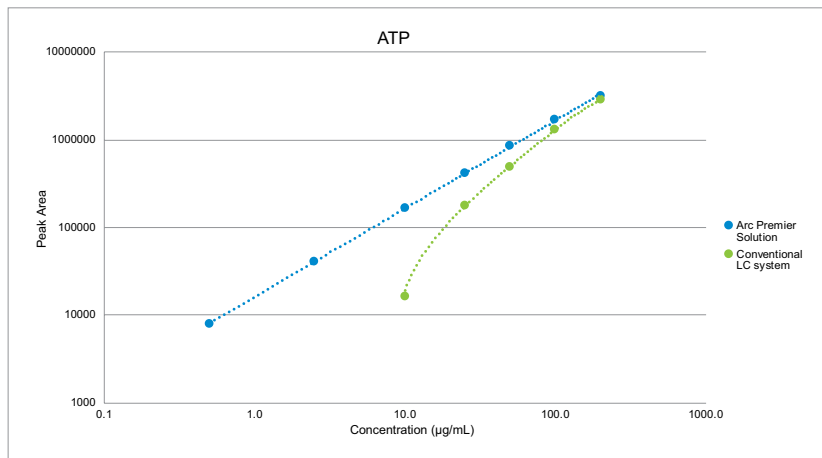


Figure 2. Analysis of adenosine triphosphate. Lower limits of detection and increased calibration curve linearity are demonstrated with the Arc Premier Solution compared to a conventional LC system.



## Consistent.

Seeing your results more clearly than ever is critical, but those results must be consistent and error-free and your methods easily reproducible, so you can spend less time on analysis and ensure compliance.

By significantly sharpening peak shapes for metal-sensitive analytes, scientists report an improvement in %RSD when integrating data from metal-sensitive compounds on the Arc Premier System. Along with the improvement in data consistency users also report a decrease of time needed to integrate peaks by approximately 30%.

The Arc Premier System eliminates the need for variability-prone conditioning and complex mobile phases – so you can minimize user errors, improve compliance, and reduce expensive audits from red flag-inducing conditioning injections.

Your organization needs to reliably migrate higher-quality methods between your systems for maximum reproducibility. With MaxPeak HPS Technology and flexible pump configurations, your lab can easily, reliably migrate methods between MaxPeak HPS-based systems quickly, saving you time and money from unnecessary rework. You can also migrate methods from non-MaxPeak HPS-enabled systems safely, as method performance of non-metal-sensitive compounds have been shown to not be adversely affected.

Combining higher data quality with ease of use for analysts and seamless method transfer, enables results that can be generated consistently between runs and with various analysts.

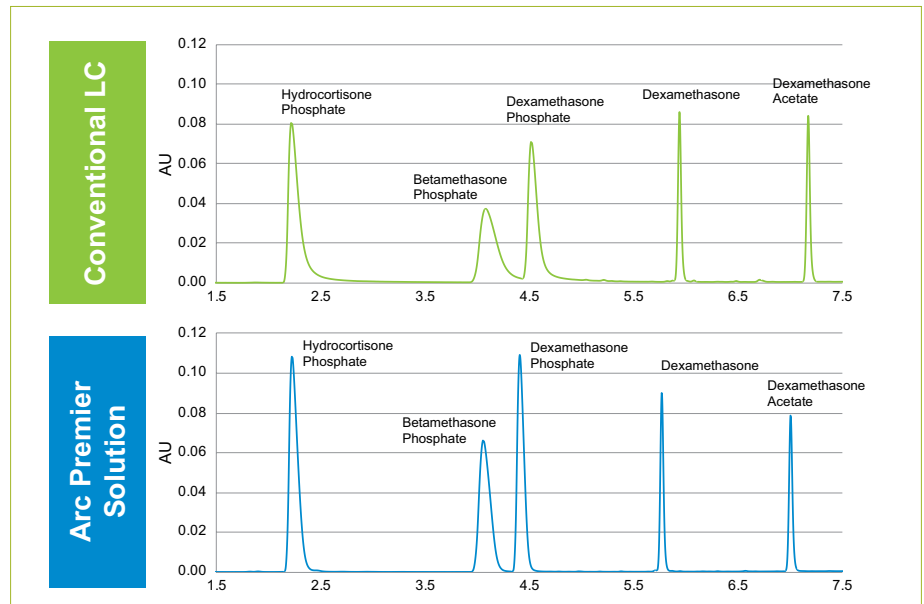


Figure 3. Analysis of hydrocortisone phosphate, betamethasone phosphate, dexamethasone, and dexamethasone acetate. Peak heights increased and peak shapes are more symmetrical for metal-sensitive compounds on the Arc Premier Solution compared to a conventional LC system.

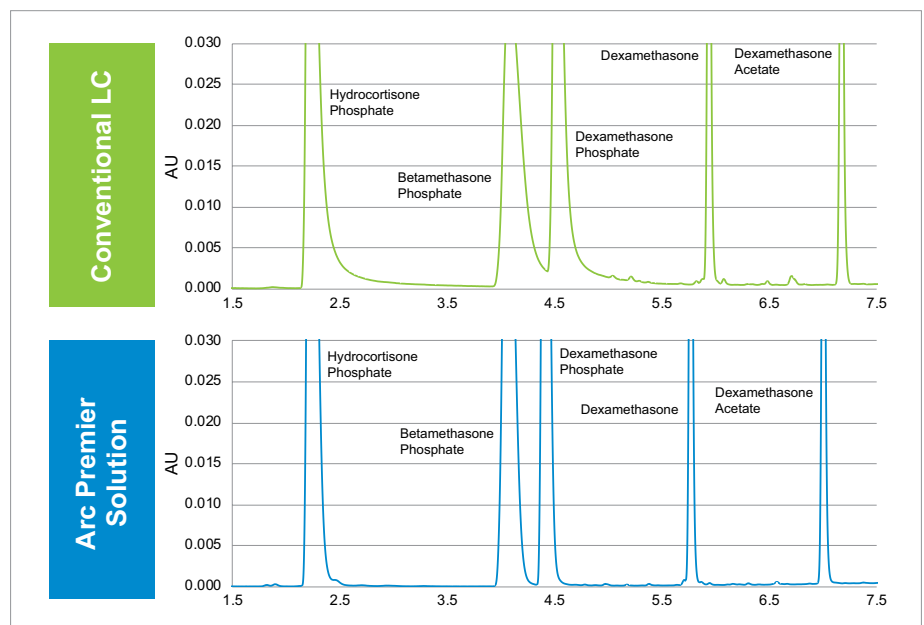


Figure 4. Analysis of hydrocortisone phosphate, betamethasone phosphate, dexamethasone, and dexamethasone acetate. A zoom in on the baseline shows improved peak shapes and resolution for metal-sensitive compounds on the Arc Premier Solution compared to a conventional LC system, improving baseline resolution.

# Confident.

Reducing analytical uncertainty and achieving peace of mind are important for your organization. With MaxPeak HPS Technology, metal-sensitive analytes become visible that were previously undetectable. This allows you to quickly and confidently know that you've seen everything in your sample, giving you the confidence to stand behind your data-driven decisions.

The combination of MaxPeak HPS Technology, flexible pump and column management options, and precise optical and MS detection give you the method development and verification capabilities to know that no matter the sample - you can deliver a robust method you can stand behind.

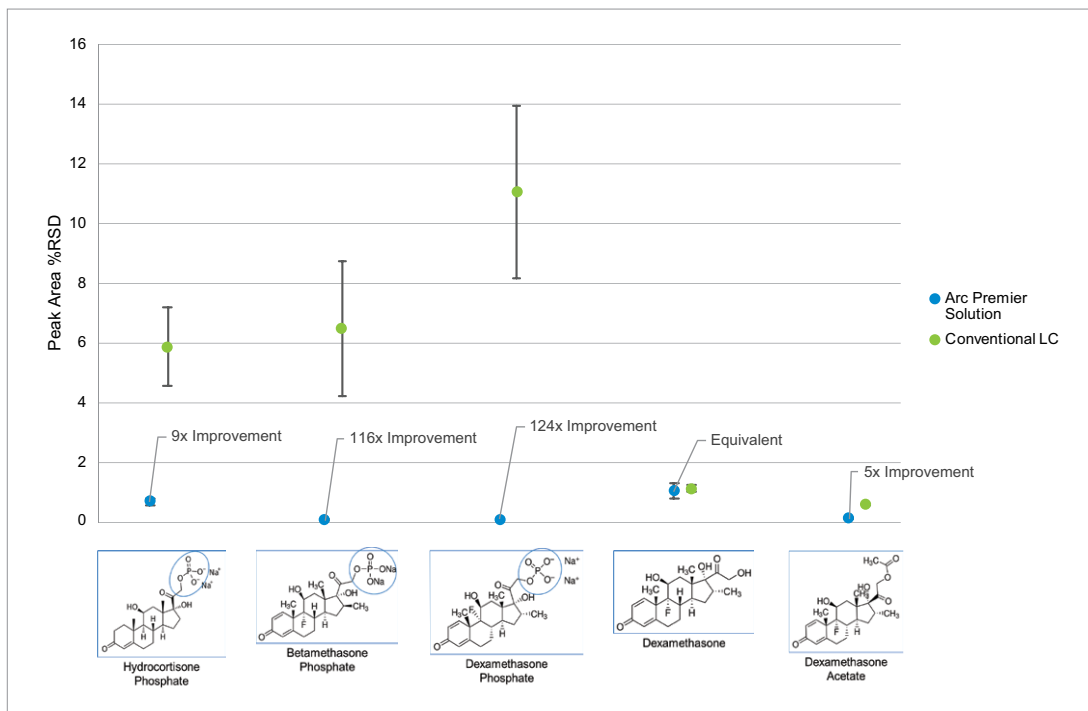


Figure 5. Analysis of data of hydrocortisone phosphate, betamethasone phosphate, dexamethasone, and dexamethasone acetate from an Arc Premier System and a conventional LC system by six users. Peak area reproducibility improved 9–124x when integrating the same data from metal-sensitive compounds across six users.

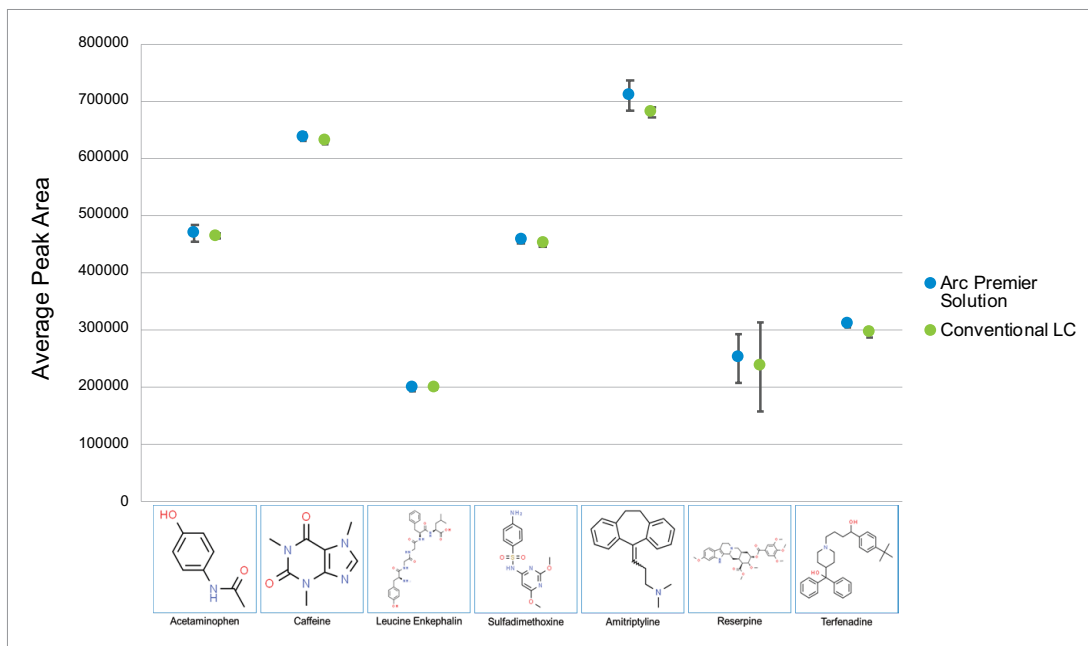


Figure 6. Analysis of acetaminophen, caffeine, leucine enkephalin, sulfadimethoxine, amiriptryline, reserpine, and terfenadine shows that non-metal-sensitive compounds demonstrate comparable performance between the Arc Premier Solution and conventional LC systems.



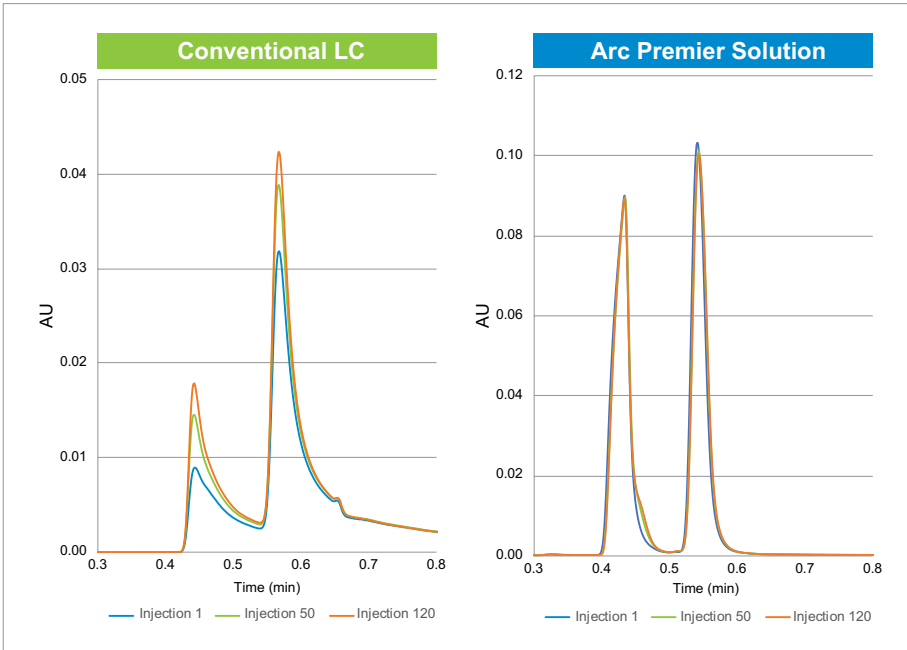


Figure 7. Comparison of adenosine triphosphate and adenosine diphosphate peaks using a conventional LC system and the Arc Premier Solution over 120 injections. The peak areas of metal-sensitive compounds remain constant from the first to the 120th injection using the Arc Premier Solution. Peak areas of metal-sensitive compounds on a conventional LC system continuously increase over time and do not stabilize even after 120 injections.

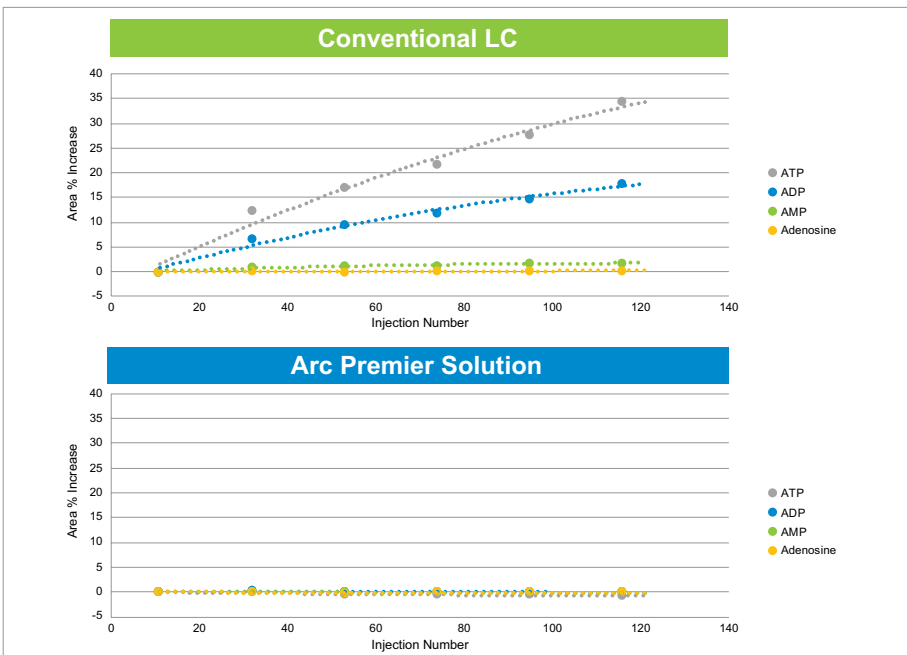


Figure 8. Comparison of adenosine triphosphate and adenosine diphosphate peaks using a conventional LC system and the Arc Premier Solution over 120 injections. The peak areas of metal-sensitive compounds remain constant from the first to the 120th injection using the Arc Premier Solution showing less than a 1% change in peak area for all compounds. Peak areas of metal-sensitive compounds on a conventional LC system show an increase of 2–35% when compared to the first injection and show no signs of stabilization.

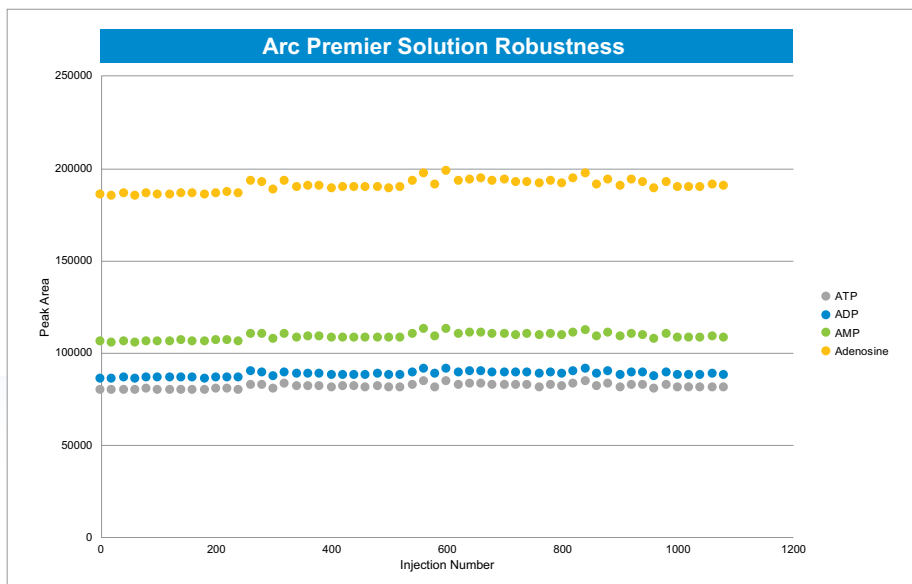


Figure 9. Adenosine triphosphate, adenosine diphosphate, adenosine monophosphate, and adenosine stability using the Arc Premier Solution over 1000 injections. The peak areas of metal-sensitive compounds remain consistent over 1000 injection using the Arc Premier Solution demonstrating the robustness of the system.

By eliminating for need of time-consuming system conditioning, your organization can both **decrease the time** to obtain results as well as **reduce excessive mobile phase consumption**. This gives your laboratory **more confidence** in meeting timeline, budgetary, and sustainability goals.

Arc™ PREMIER





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