Today's Most Sensitive and Selective QTRAP®

SCIEX

Powerful synergy results when the world's most sensitive triple quadrupole unites with innovative Linear Accelerator™ trap technology, the world's most sensitive and fastest scanning linear ion trap. The whole really is more than the sum of its parts. The unique hybrid architecture, unparalleled sensitivity, and impressive speed enable solution-based workflows that solve problems other mass spectrometry systems cannot. The QTRAP® 5500 system is truly above and beyond the extraordinary, with no sacrifice in qualitative or quantitative performance, whether targeting specific compounds or compound classes to generate accurate quantitation, or performing sensitive compound identification and confirmation in a single run. Get more performance, better results, better efficiency, and be more productive.

Sensitivity Meets Selectivity for Enhanced Quantitative and Qualitative Performance

The SCIEX QTRAP® 5500 System is next-generation technology from the leaders in mass spectrometry. Redesigned from the ground up, but bred from our industry standard triple quadrupole line of mass spectrometers, the QTRAP 5500 System brings in a new era of performance.

Fast, precise quantitative performance

Ultra-fast triple quadrupole scan speeds improve precursor ion and neutral loss scan performance, ideal for fast chromatography. Fast LC also demands incredibly short dwell times for MRM experiments. Let the innovative Scheduled MRM™ algorithm automatically optimize your dwell times and maximize your capacity to deliver gold-standard quantitation.

Now monitor even more MRM transitions than ever thought possible and still get the quantitative performance you have come to expect from SCIEX—day after day, year after year.

Driven by all-new Linear Accelerator™ trap technology

It doesn't stop there. The QTRAP® 5500 System also houses the most sensitive ion trap in the world—the all new, patented Linear Accelerator™ trap. With ultra-fast scan speeds, up to 100-fold increase in trap scan MS/MS sensitivity, and full MS^3 capabilities, there is no compromise in the qualitative data that are generated—or the confidence you will have in those data.

In a Class by Itself

Many mass spectrometry systems offer either quantitative or qualitative structural analysis. But the unique hybrid architecture of the QTRAP® system means that you can get both exceptional qualitative and quantitative information from the same instrument and in the same analytical run.

The unparalleled scan speeds and sensitivity of the QTRAP 5500 System are made possible by advanced eQ™ electronics. Next-generation eQ electronics in turn drive the unique TripleTrap™ scanning technology to move from triple quadrupole mode to Linear Accelerator™ trap mode in the blink of an eye, enabling workflow-driven data acquisition that cannot be done on any other mass spectrometer. Intelligent linking of the system's capabilities with TripleTrap™ scanning opens up powerful and unique workflows that accelerate your research and bring new levels of productivity and reproducibility.

For example, predictive MRM (pMRM) identifies and characterizes a comprehensive set of metabolites including extremely low level metabolites in one time-saving analysis; screening for Pesticides and Pharmaceutical and Personal Care Products (PPCP) is achieved with ultimate confidence; and MRM assay development of peptides and proteins using the MIDAS™ workflow results in more robust MRM assays and saves money and time by removing the need for synthetic or purified peptide or protein standards.
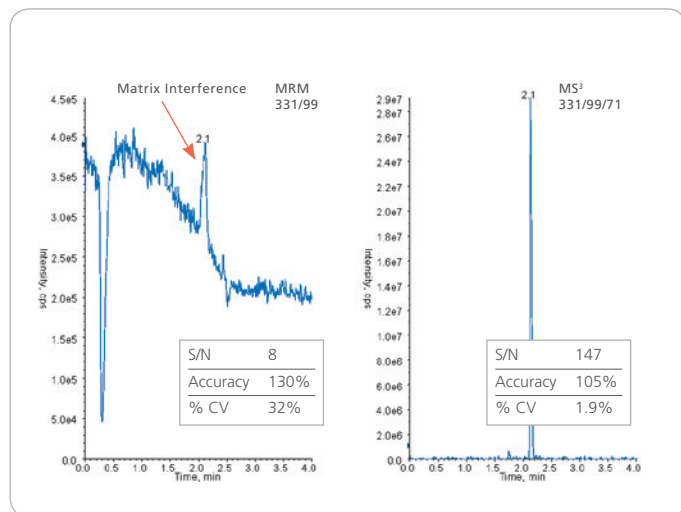

MS³ quantification provides better selectivity to improve the detection limits and also improve the quality of the quantification data of analytes. Above is a comparison of MRM versus MS³ selectivity for detecting 10 ppb Malathion in a 50x diluted QuEchERS extract of apple. The transition 331/99 in the XIC on the left had an elevated background level and also matrix interference; in contrast, the MS³ transition, 331/99/71 in the XIC on the right, showed superior selectivity, a better signal-to-noise ratio, improved accuracy and tighter %CV.
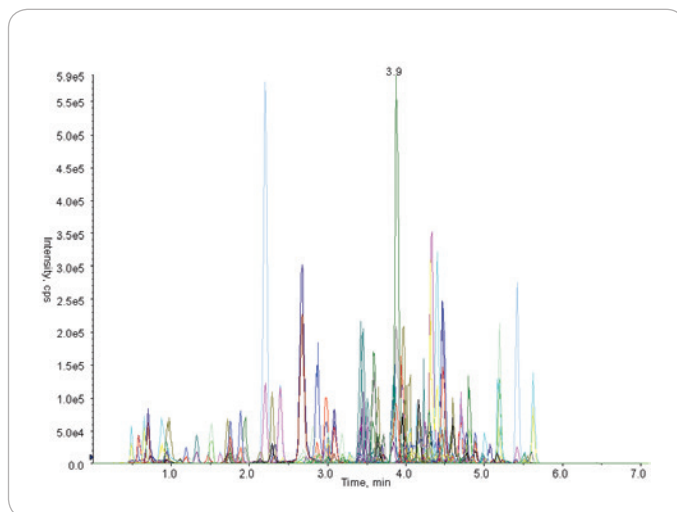
Ultra-fast and selective MRM scans mean you can target and quantify hundreds to thousands of compounds in a single analysis without compromise in data quality.
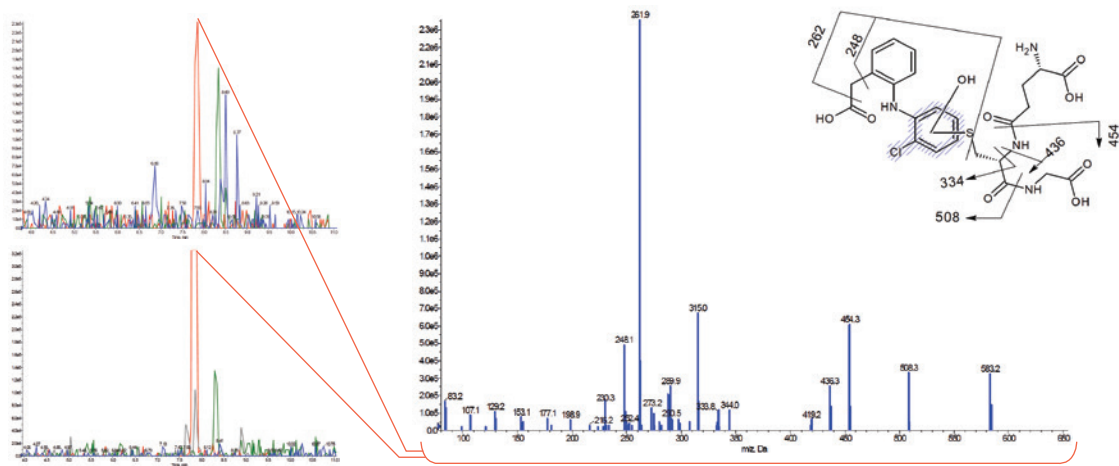
The power of TripleTrap™ scanning is illustrated in the above metabolite ID example. In this UHPLC experiment, two survey scans for characteristic GSH fragments, a positive ion neutral loss of m/z 129 and a negative ion precursor ion scan of m/z 272, automatically trigger enhanced product ion scans to screen for potential reactive metabolites. Including the polarity switch between survey scans, the total cycle time is 2.1 seconds.
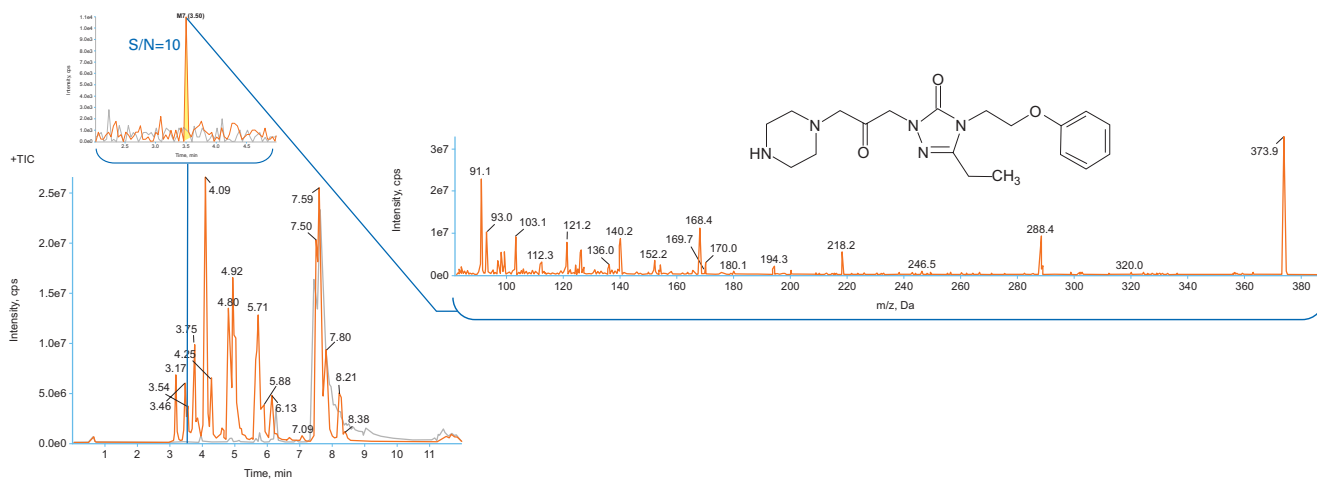

Highest sensitivity Linear Accelerator trap technology can track MRM scans to the limits of detection.

Cutting Edge Technology and Reliable Too

Due to our long legacy as the industry leader, our customers expect maximum uptime and a system that can handle even the most difficult matrices with ease. Our Turbo V™ source and Curtain Gas™ interface are the benchmark for reliability. The new QJet® ion guide, eQ™ electronics, Qurved LINAC® collision cell, and AcQuRate™ pulse counting detector found in the QTRAP® 5500 System have been designed to improve on our already industry-leading robustness. With reliability designed into the system, new levels of dependability and consistency are certain.
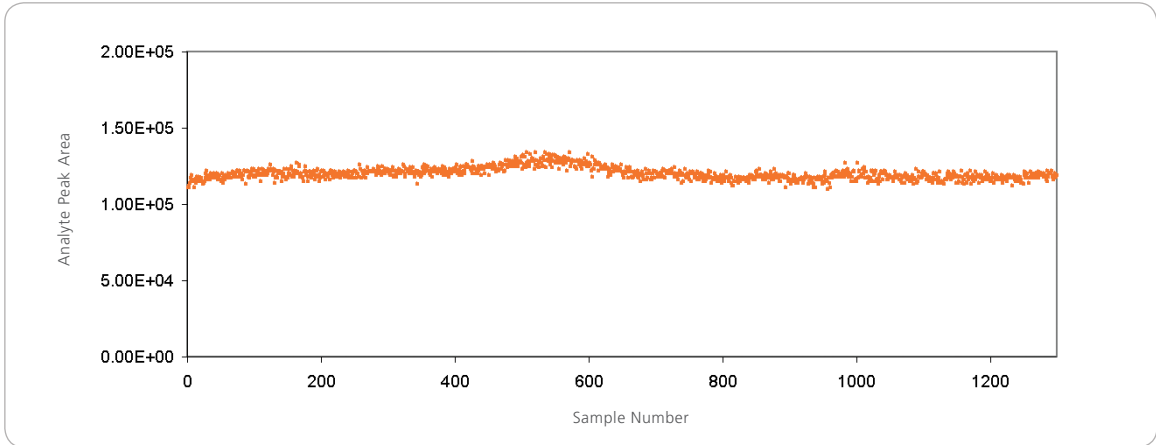
The very low % CV of 3.3 for the analyte peak area of 1300 injections of spiked Diazepam in protein-precipitated human plasma demonstrates the industry-leading ruggedness, reproducibility and reliability of the QTRAP® 5500 System.
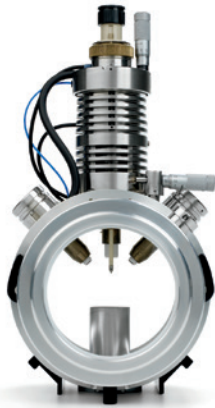
Turbo V™ source provides high-sensitivity analysis over a wide range of flow rates with quick-change APCI and TurboIonSpray® probes. From 50 µL/min to 5 mL/min, the Turbo V source is the perfect match for narrow bore, standard bore and UHPLC flow rates, delivering unprecedented desolvation and stability for even the toughest high-flow applications utilized to drive productivity.
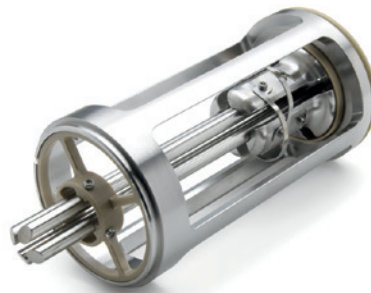
QJet® ion guide's patented design yields improved ion containment and operates at high pressure, providing better collisional focusing to enhance ion transmission for ultimate sensitivity. The new design also reduces the gas load, allowing the turbopump to run cooler in its ideal operating range. All this leads to our most reliable system yet and with tool-free maintenance, clean-up is simple and straightforward.

NanoSpray® III ion source is an easy to assemble and disassemble nanoflow source that makes working with nanoflow chromatography easy while providing the highest sensitivity and stability. The NanoSpray III source supports regular and column-packed emitter tips for ultimate chromatographic flexibility, and the new camera design allows clear spray visualization that simplifies optimization. Fingertight fittings enable you to change tips quickly so you are up and running in no time.
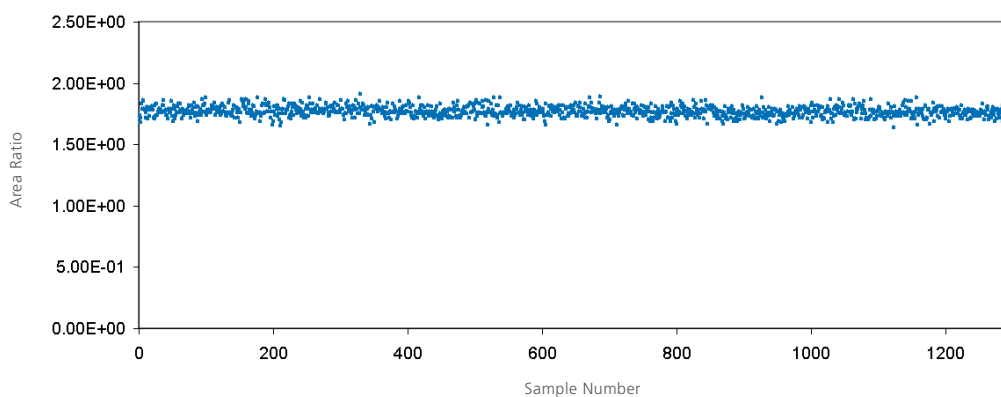
The excellent % CV of 2.3 for the area ratio of Diazepam and deuterated internal standard in protein-precipitated human plasma shows the reproducibility and stability of the AcQuRate™ pulse counting detector for consistent quantitification results day in day out, week after week, month after month.

The Future Path of QTRAP® Technology

The SCIEX QTRAP® 5500 System brings together the latest hardware from the world's best selling triple quadrupole family, and adds next-generation, ultra-fast and sensitive Linear Accelerator™ trap functionality. Delivering unmatched qualitative and quantitative analysis—the QTRAP 5500 System enables productive, time-saving workflows that simply cannot be done with other mass spectrometry systems.

AcQuRate™ Pulse Counting Detector

The AcQuRate™ pulse counting detector is the latest in detector technology combined with a pulse overlap correction algorithm, enabling more accurate and precise ion detection over a wide dynamic range. Operating at maximum gain all the time drives the detector into the digital domain, simplifying the elimination of electronic noise and guaranteeing maximum sensitivity with unparalleled accuracy and precision. The best gets even better.

Patented QJet® Ion Guide

Optimized design yields better ion containment and operates at high pressure, providing better collisional focusing to enhance ion transmission for ultimate sensitivity. The new design also lets the turbopump run cooler and in its ideal operating range.
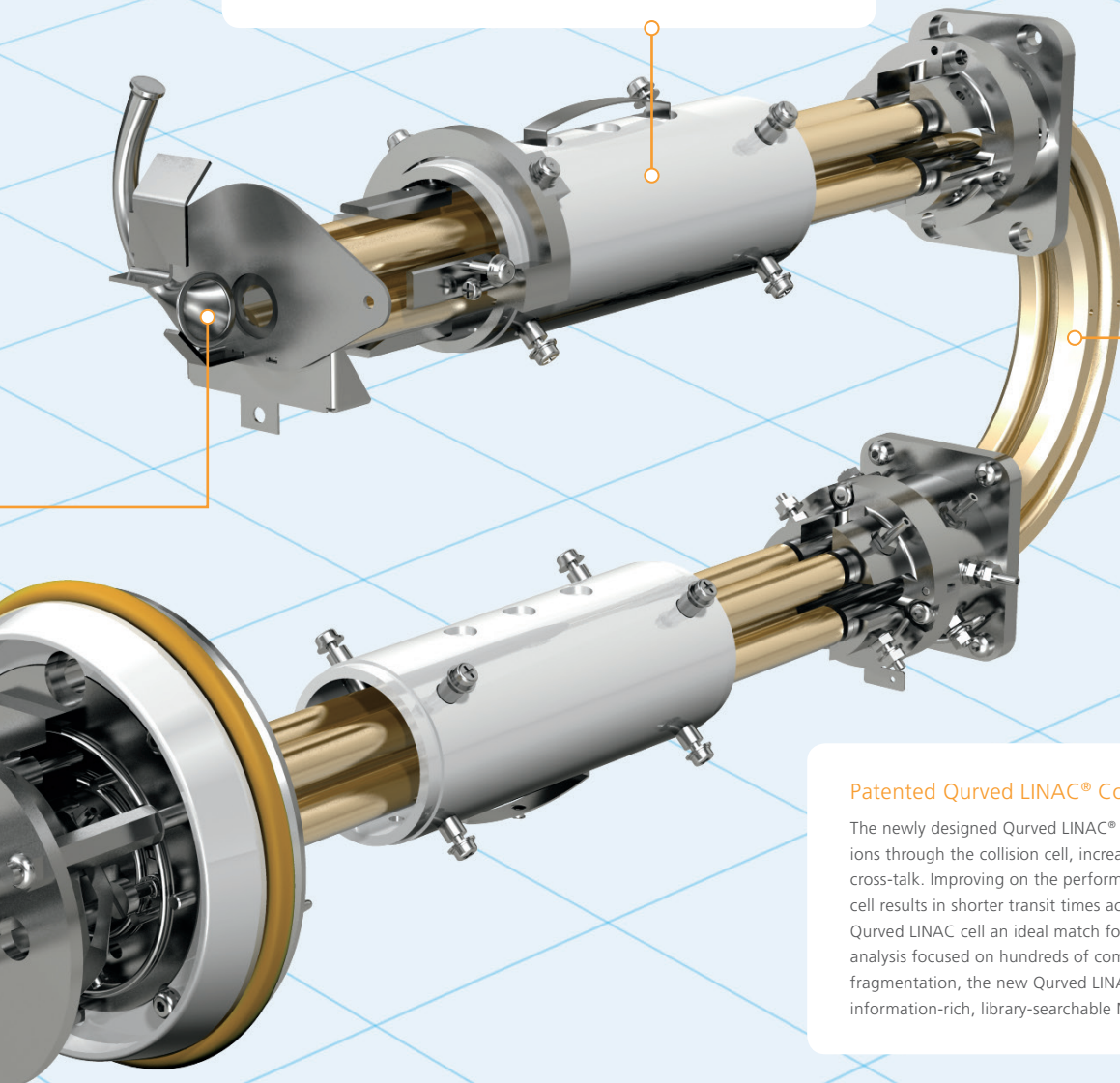
Patented Q0 High-Pressure Cell

Q0 collisional focusing. Patented high pressure collisional focusing technology maximizes transmission of ions for superior sensitivity.

Q0 trapping. Ions can be accumulated in the Q0 region while the Linear Accelerator™ trap is performing MS/MS and MS³ scans. This yields superior sensitivity in ion trap mode, which can be extremely important for fast UHPLC applications where time and duty cycle are condensed.
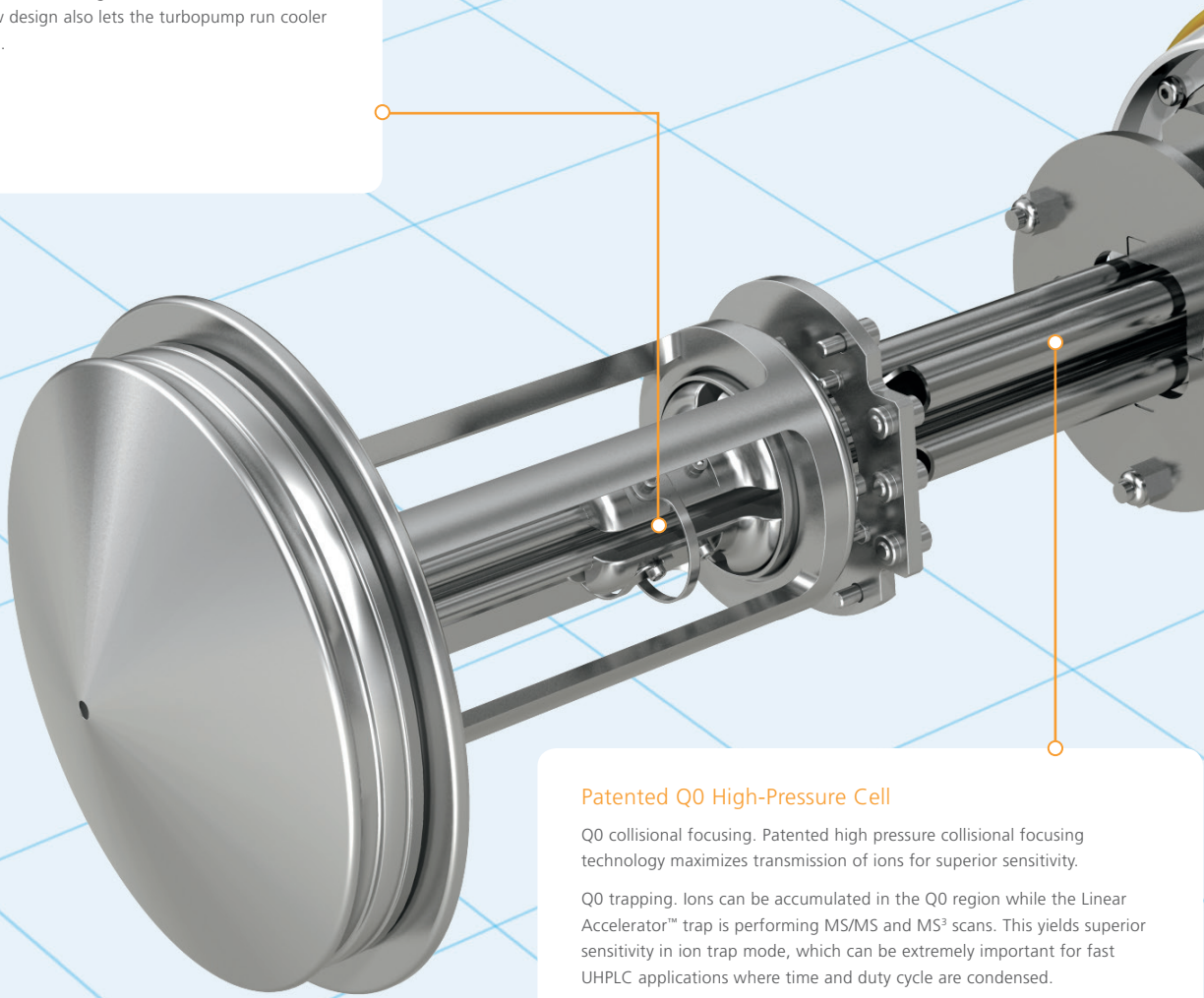
Patented Linear Accelerator™ Trap

Bringing LINAC® technology to the Q3 linear ion trap greatly improves the extraction efficiency to yield up to a 100 x gain in sensitivity in ion trap scan modes. Now take full advantage of the 20,000 Da/s scan speeds without worrying if enough sensitivity is on board to generate incomparable results. Improved excitation efficiencies and reduced ion cooling and fragmentation times produce superior MS^3 qualitative results and provide unprecedented selectivity for the most challenging analytical assays.

Patented Qurved LINAC® Collision Cell

The newly designed Qurved LINAC® high-pressure collision cell accelerates ions through the collision cell, increases speed of analysis and eliminates cross-talk. Improving on the performance of the legendary LINAC collision cell results in shorter transit times across the collision cell, making the Qurved LINAC cell an ideal match for UHPLC and high throughput analysis focused on hundreds of compounds. With true collision-induced fragmentation, the new Qurved LINAC collision cell generates reliable, information-rich, library-searchable MS/MS spectra time after time.

Fast eQ™ Electronics for Fast LC

Next-generation eQ™ electronics means polarity switching in 50 ms and scan speeds of 20,000 Da/s. Now, compounds with vastly different functional groups can be measured in a single pass. The new electronics also provide improved ion containment for better sensitivity and superior detector performance. Ultra-fast and ultra-stable instrumentation means you get the most out of your standard or fast LC to save time and accelerate your research.

Reproducible, Robust and Easy to Use

SelexION™ technology supports highly selective quantitative and qualitative LC/MS/MS workflows with the SCIEX Triple Quad™ 5500 and QTRAP® 5500 Systems.

- Performs a gas phase differential ion mobility separation within the planar ion mobility cell based on the size and shape of the compound prior to entering the mass analyzer

- Reproducibility & robustness suitable to regulated bioanalysis standards

- Enhanced separation power with use of integrated chemical modifiers such as IPA

- On demand operation, can be turned off and on as needed without removing hardware

- Can be setup or removed by the user within 2 minutes

- Cycle times compatible with multi component analysis and UHPLC run times
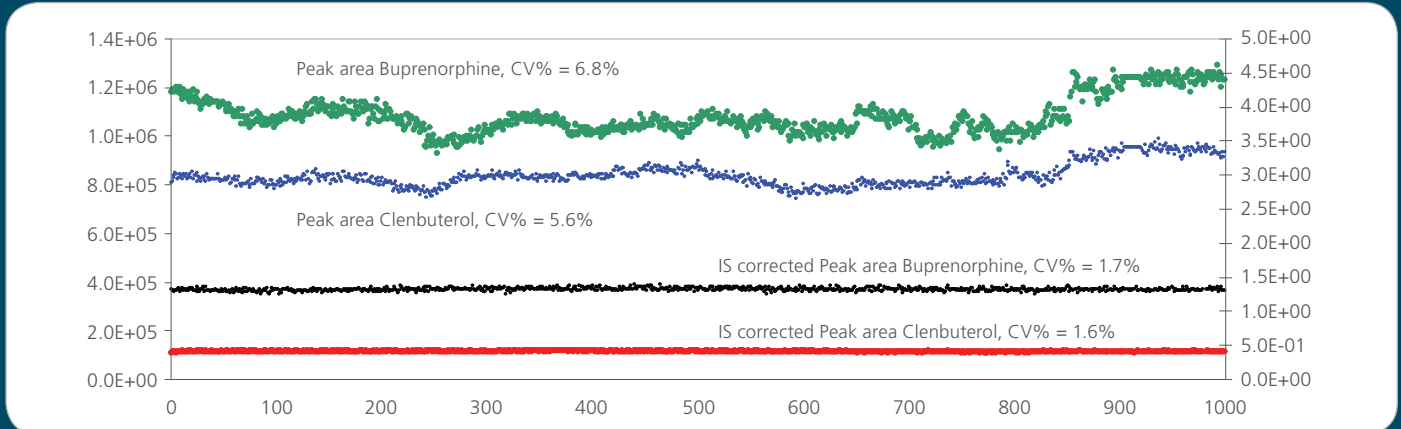
The above figure of 1000 injections of spiked Buprenorphine and Clenbuterol in protein precipitated human plasma demonstrates the unique reproducibility, robustness and stability of the SelexION™ technology in combination with the SCIEX QTRAP® 5500 System. A total of 66 hours of consecutive analysis produced a % CV of less than 7% in the peak area for both Buprenorphine and Clenbuterol.
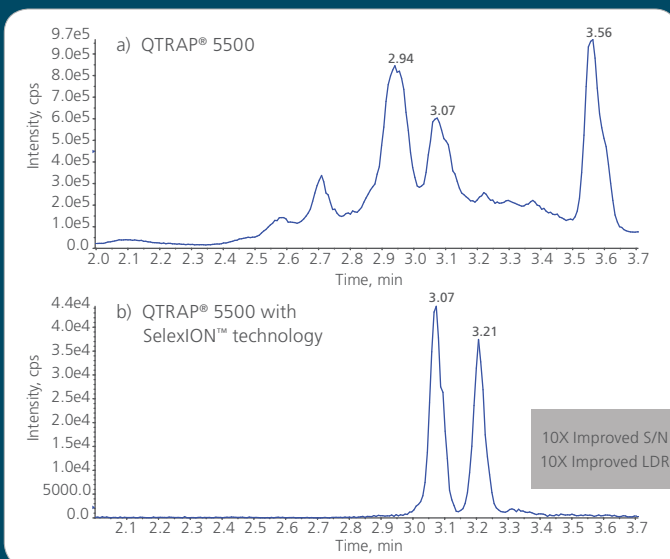
Injection of clenbuterol at 5 pg/uL in urine: (a) High chemical noise makes the detection impossible. (b) Differential ion mobility separation (DMS) increases selectivity and eliminates the high background producing a 10X improvement in signal-to-noise.
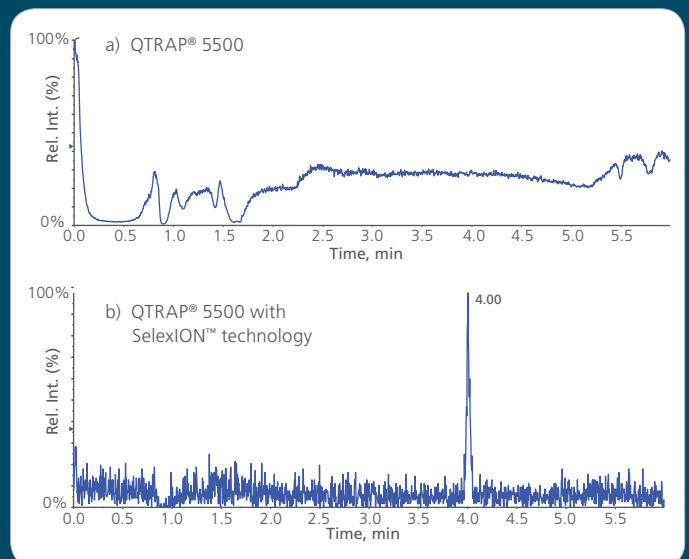

1pg/uL injection of Pentoxifylline in plasma: (a) High chemical noise makes the detection impossible. (b) Differential mobilirt separation (DMS) increases selectivity and eliminates the background.

SCIEX SelexION™ Technology

Differential ion mobility separation technology – a new dimension in selectivity

SelexION™ takes the worlds most sensitive QTRAP® System and adds a new Dimension of Selectivity and Sensitivity for enhanced quantitative and qualitative performance.
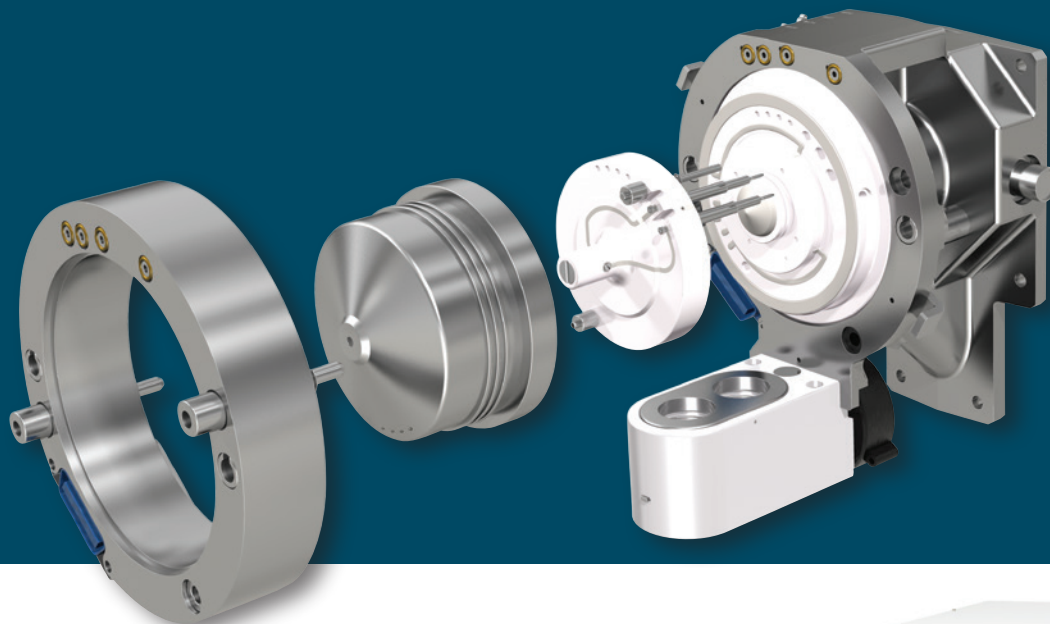
SCIEX SelexION™ Technology on the QTRAP® 5500 System represents an innovation in ion mobility separation for improving data quality and enhancing selectivity for challenging samples requiring advanced analytical separations. SelexION™ technology compliments and extends the levels of selectivity offered by the MRM³ workflow, by removing interferences at the structural level. The ideal development suite for any application requiring the separation of isobaric species, isolation of challenging co-eluting contaminants and reduction of high background noise.

One Touch Productivity

Powerful, workflow-driven software ties everything together to deliver a new benchmark in efficiency, throughput, and productivity to let you take full advantage of all the speed and power that the QTRAP® 5500 System puts at your fingertips. And the latest version of industry-standard Analyst® software utilizes the intelligent Scheduled MRM™ algorithm to make the method setup of over 1000 analytes in a single LC analysis straightforward and simple while still generating exceptional quantitative results and brilliant qualitative results.

ONE TOUCH PRODUCTIVITY SOLUTIONS

MultiQuant™ Software

MultiQuant™ Software is a powerful and easy-to-use quantitation package that processes MRM data for quantitative information. The software easily handles large data sets consisting of both large numbers of MRM transitions and study samples, with an emphasis on the requirements for processing protein/peptide quantitative workflows. Results can easily be exported to other software packages, or use the software's flexible reporting features to generate custom reports.

MRMPilot™ Software

MRMPilot™ Software automates the iterative process of developing a robust MRM assay for peptides and proteins. By using the MIDAS™ workflow that takes full advantage of the QTRAP® system capabilities, developing MRM assays takes only days, not weeks, and no peptide or protein standards are needed.

Cliquid® Software

Cliquid® Software's pre-configured iMethod™ tests and simplified user interface make it easier to perform routine Food, Environmental, Forensics and Clinical Research testing. With a simple four-step workflow, pre-configured methods, built-in system suitability tests, and automatic reports generated according to regulatory requirements, Cliquid software both simplifies the use and accelerates the adoption of LC/MS/MS for routine testing. The available MRM catalogues, containing the optimized instrument parameters for thousands of compounds, can also be used to save the time and cost associated with method development.

"We designed the QTRAP® 5500 System from the ground up in response to customer feedback on ideal attributes from a quantitative and qualitative point of view. Researchers wanted to combine these two elements to solve problems and save time and money."

DR. JIM HAGER, PRINCIPAL RESEARCH SCIENTIST
MDS ANALYTICAL TECHNOLOGIES

LightSight® Software

LightSight® Software simplifies analysis of complete metabolite coverage. Create expert-level acquisition methods in just a few simple steps using the automated method development tool or take advantage of the customized Glutathione screening ability that quickly identifies potential reactive metabolites and significantly increases metabolite detection with pMRM methods.

Analyst® Software

As the world's most commonly used LC/MS/MS instrument control software platform, Analyst® Software provides state of the art functionality for instrument control, data analysis and reporting. The latest version builds on this legacy by providing new features that enhance both performance and ease of use.

Your Success is Our Success
We take it personally

As a SCIEX customer you have access to a world-class customer support organization. Wherever you are, we're there with you as a trusted partner to answer questions, provide solutions, and maximize lab productivity.

Our customer support organization has access to the latest product updates, software revisions, methods and repair procedures to make sure that you stay on top of your game.

When you have questions, we have answers.

Learn more at **sciex.com/customersupport**, or locate your local account representative at **sciex.com/contactus**