Agilent 6495B Triple Quadrupole LC/MS System

EXPERIENCE THE HIGHEST LEVEL OF CONFIDENCE

Agilent Technologies

THE HIGHEST LEVEL OF CONFIDENCE

Your samples are precious and turnaround time is critical to the success of your organization. A sensitive, yet rugged instrument that provides day-in, day-out performance is cornerstone to your workflow. The Agilent 6495B Triple Quadrupole LC/MS system is at the forefront of robustness, reliability and accuracy, which makes it a perfect option for many applications, including; peptide quantitation, food safety, environmental, clinical research and forensics.

iFunnel

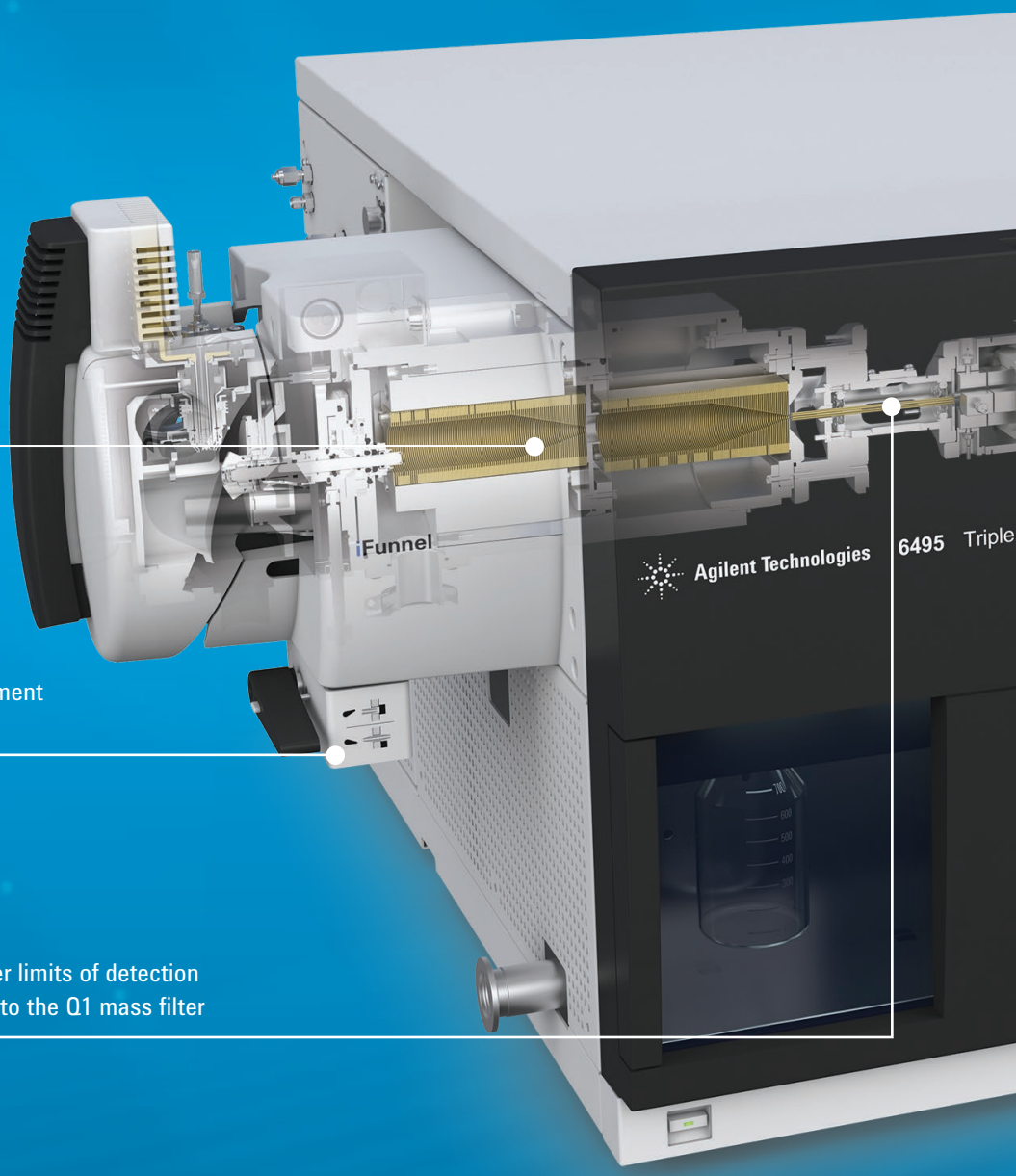
Provides unprecedented sensitivity by providing high ion acceptance and transmission with our proprietary technology

Gate valve

Enables higher uptime and increased productivity by allowing capillary replacement without having to vent the instrument

Q1 Ion optics

Reduces contamination and enables lower limits of detection by increasing ion transmission efficiency to the Q1 mass filter



Ion Detector

Increases sensitivity and quantitation across a wide mass range using a high energy conversion dynode with low noise characteristics

Curved Collision Cell

A tapered hexapole design with axial acceleration, facilitates efficient collection and transmission of fragment ions, while eliminating cross-talk

For more information, go to www.agilent.com/chem/6495B

ANALYTICAL CONFIDENCE

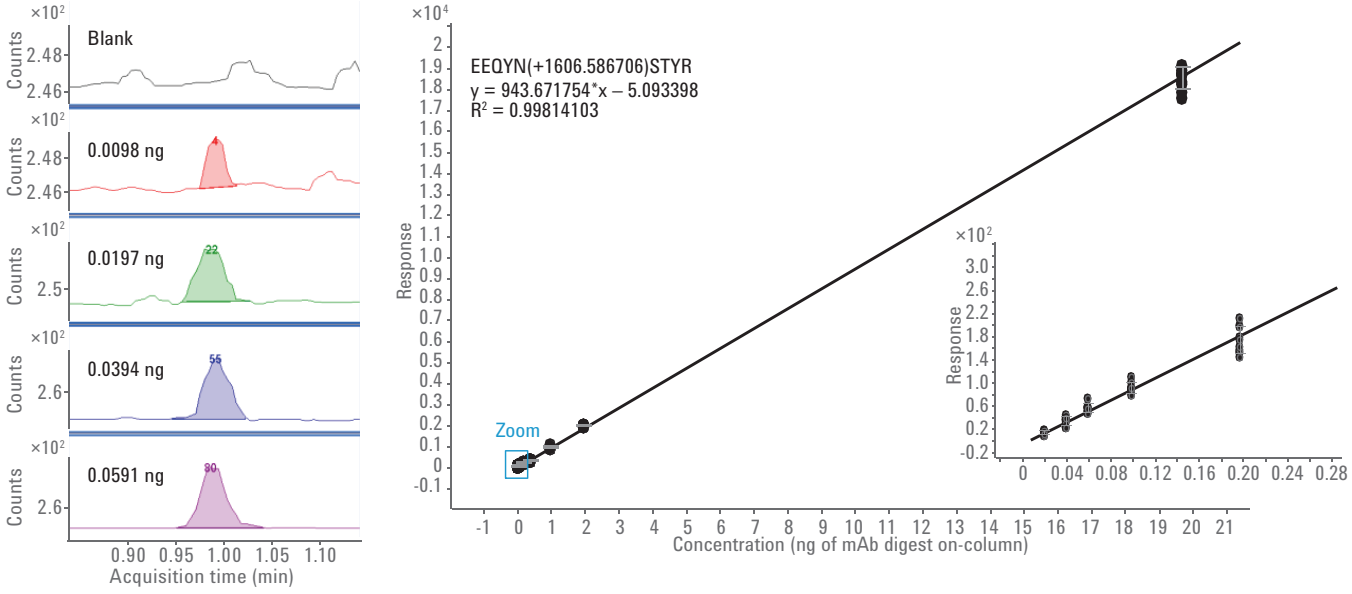
Targeted Proteomics

Peptide identification and quantification

High m/z peptide ions are extremely descriptive and provide important biological information concerning size and location of post-translational modifications (PTMs), for example glycosylation's.

The Agilent 6495B Triple Quadrupole LC/MS system mass range extends to m/z 3000, which is beneficial in detecting large peptide fragments. Here we demonstrate the utility of the 6495B for detecting fragment-ion signals arising from peptides, representing each of the targeted proteins. This approach is extremely sensitive, very reproducible and quantitatively precise.

Quantification for G1F glycopeptide EEQYN[+1606.6]STYR

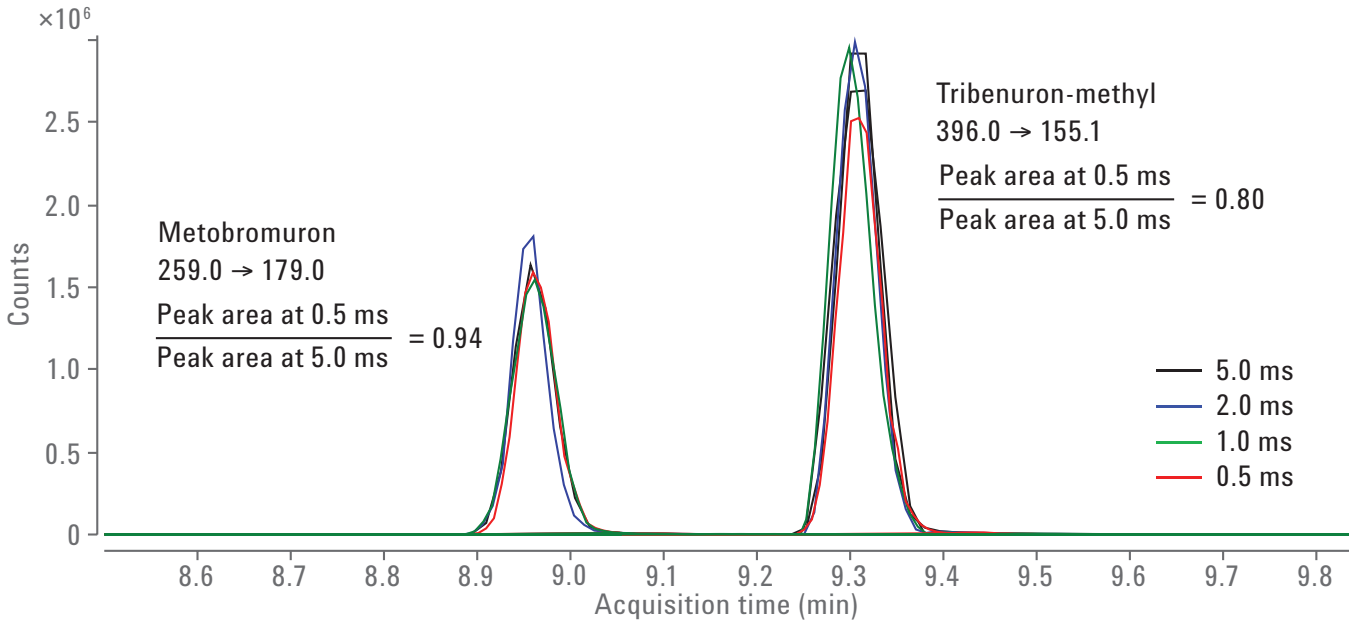


For Research Use Only. Not to be used in diagnostics procedures.

Evaluation of Optimized Inter-MRM Delay Times

The global nature of food commodities has prompted increased scrutiny concerning safety and origin. Recent contamination issues stemming from use of illegal pesticides and adulterants have negatively affected consumer confidence. To meet this challenge, Triple-Quadrupole LC/MS is used to simultaneously monitor hundreds of potential contaminants.

Here, an MRM method was developed targeting mycotoxins, illegal dyes and pesticides in spices. The exceptional sensitivity afforded by the Agilent 6495B Triple Quadrupole LC/MS system enabled precise and accurate quantitation of these excipients, with reduced matrix effects and improved method robustness.



Overlaid MRM chromatograms of metobromuron and tribenuron-methyl (100 ppb) at dwell times of 5.0, 2.0, 1.0, and 0.5 ms using optimized inter-MRM delay times.

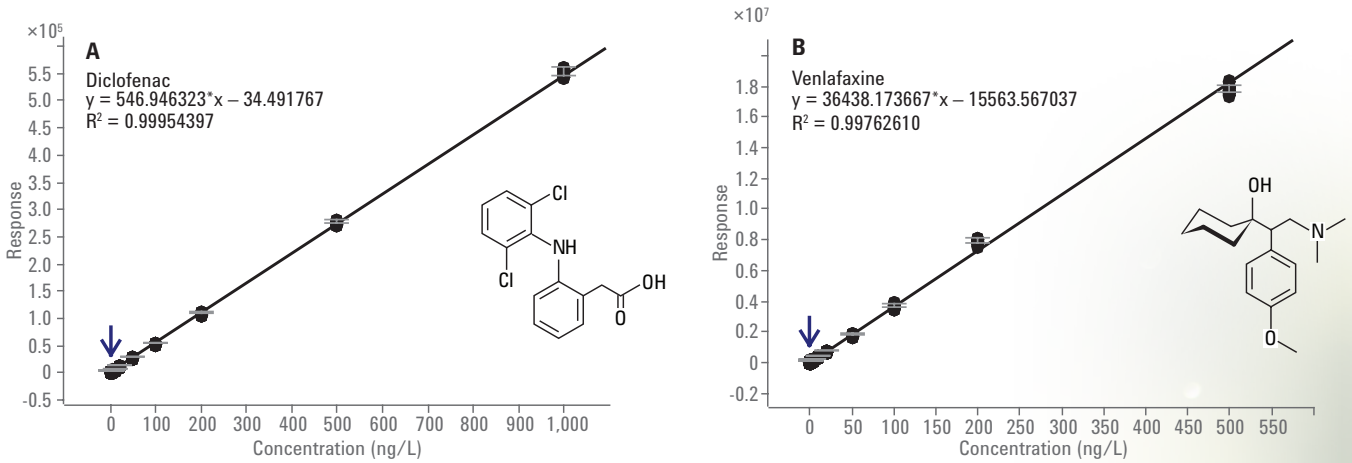
ANALYTICAL CONFIDENCE

Environmental Water Analysis

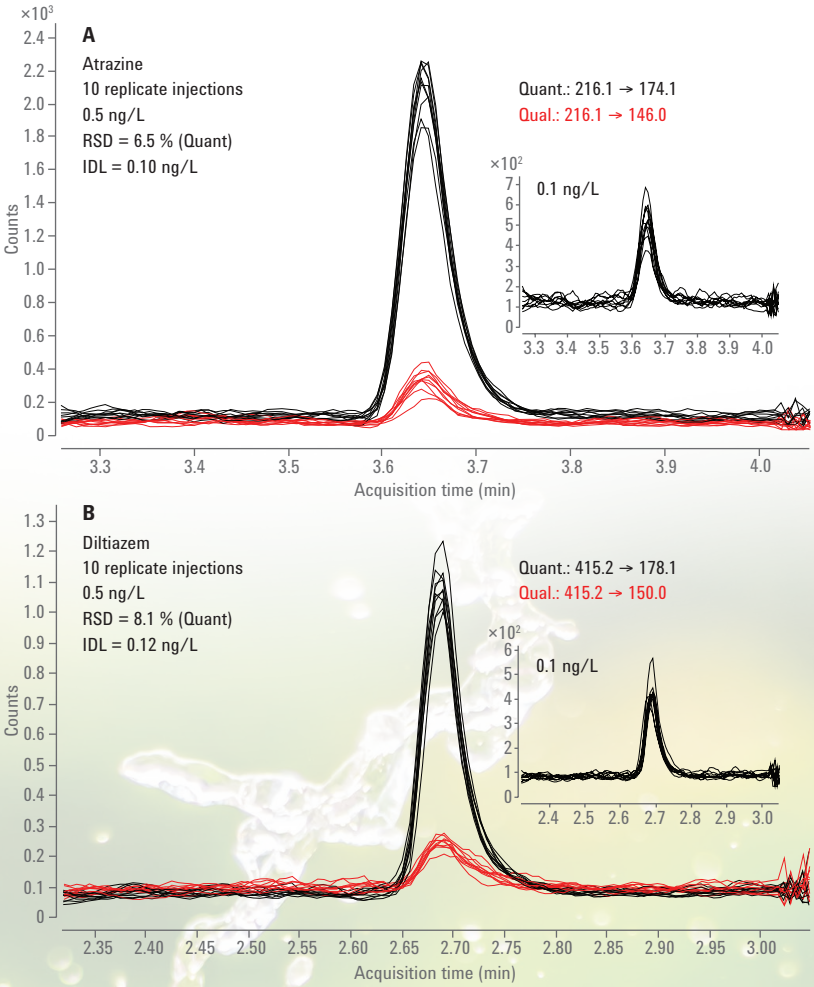
Accuracy and Precision for Analysis of PPCPs in Water

Worldwide, scientists are encountering trace amounts of Pharmaceuticals and Personal Care Products (PPCPs) in our drinking water. Typically, compounds found are extremely diverse, and may contain; drugs of abuse, spices, petrochemicals, active ingredients form pharmaceuticals and their metabolites. Each geographical region has a PPCP profile uniquely its own. These active ingredients, byproducts and metabolites are often not completely removed during the sewage-treatment process. That means the drug-tainted wastewater can enter groundwater and surface water, which are collectively the major sources of drinking water for a wide variety of species.

The high accuracy, precision and sensitivity of the Agilent 6495B Triple Quadrupole LC/MS system enabled direct injection of water samples without prior sample pre-concentration. The results show screening and quantitative analysis of 32 PPCPs in surface water samples at levels that extend to 0.5 ng/L.



Calibration plots for diclofenac (negative mode) and venlafaxine (positive mode) in water evaluated for quantitation accuracy and peak area RSD.



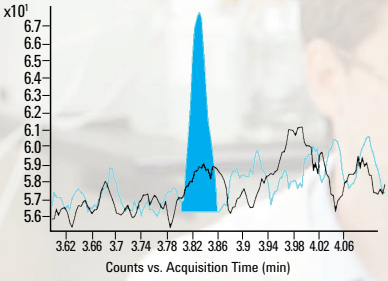
Overlaid MRM chromatograms for two example PPCPs evaluated in this study at 0.5 ng/L. Reproducible responses (RSD% <10 %) were observed for both quantifier and qualifier ions of atrazine (A) and diltiazem (B) at sub-ng/L concentrations.

PERFORMANCE SPOTLIGHTS

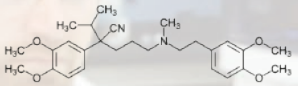
Ion optics and ion detector

Enhanced Sensitivity and Precision Yields the Lowest Limits of Detection and Quantitation

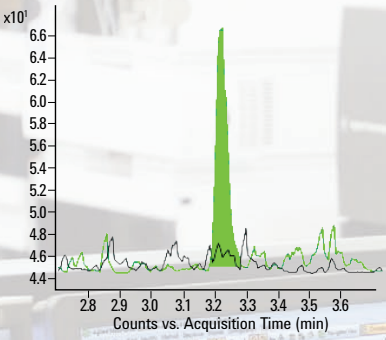
Greater ion sampling and ion transmission efficiency yields better assay performance. Superior ion optics design, along with enhanced detector electronics have drastically improved the sensitivity of the 6495B LC/TQ system. This means better detectability and improved precision at low analyte levels.



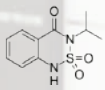
Area %RSD = 15.1
n = 10 injections
%Accuracy = 116



LLOQ of Verapamil
40 attogram on-column
Blank



Area %RSD = 12.4
n = 7 injections
%Accuracy = 85.1



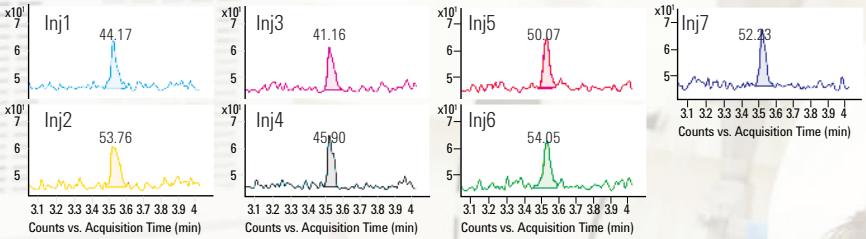
LLOQ of Bentazon
1 femtogram on-column
Blank

Instrument Detection Limit (IDL)

Today's "low-noise" mass spectrometry systems demand a statistical standard that measures the true sensitivity of the system; a specification proportional to ion count. Agilent is leading the way with an innovative method to effectively determine system performance – **Instrument Detection Limit (IDL)**

Estriol amount measured	Replicates	%RSD	t(99%)	Estriol IDL
5 pg/mL (LLOQ)	n = 7 injections	11.3	3.143	1.8 pg/mL

MDL = t x (%RSD/100) x Amount = 3.143 x (10.4/100) x 25 fg = 1.8 pg/mL



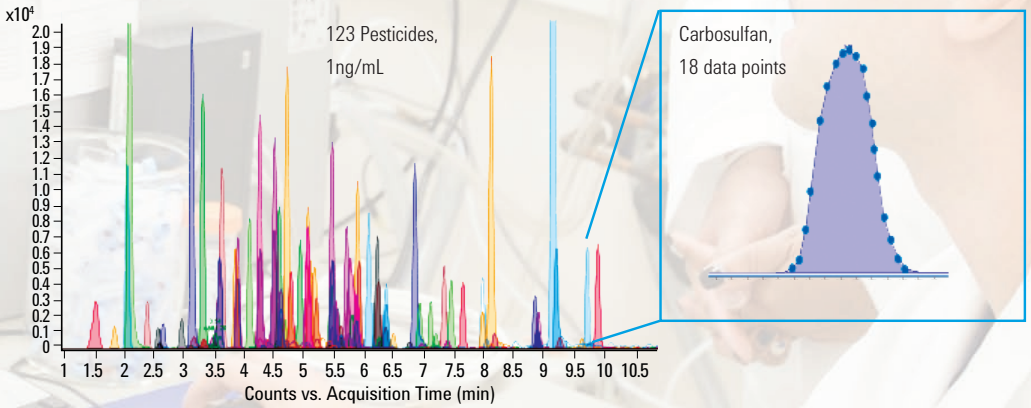
- IDL is a rigorous metric based on statistical analysis of precision (%RSD)
- Measured at or close to the detection limit (LOD)
- Provides an accurate assessment of the system's true detection limit and LLOQ
- A uniform and practical means of evaluating sensitivity performance

More Ions = Better Precision

MassHunter software

High Sensitivity MRM at the Fastest Analysis Times

The analysis of multiple compounds in targeted applications requires the ability to intelligently schedule multiple MRMs while maintaining high sensitivity at short MRM dwell times. Dynamic MRM sets optimal dwell times to allow confident analysis of a large panel of compounds with enough data points across the peak for precise and accurate quantitation.



COMPREHENSIVE SOLUTIONS

Where solutions come together

The best solutions don't come together by accident. Decades of experience designing mass spec systems gives us a clear advantage, but we refuse to rest on reputation. We continually engage in groundbreaking collaborations with thought leaders in chemistry and the life sciences, and we never stop learning from longstanding partnerships with analytical laboratories in every field.

Whatever you need to analyze, we have the know-how—and the connections—to direct you to the best approach and help you implement it.

1290 Infinity II LC system

A mass spec this powerful requires the best performing Liquid Chromatograph. Agilent offers the most comprehensive portfolio of analytical LC Systems optimized for unparalleled performance when interfaced to Mass Spec. The 1290 Infinity II LC represents the next generation LC for ultra-high performance liquid chromatography with superior reliability and is the perfect match for Agilent's LC/MS portfolio including the 6495B Triple Quadrupole LC/MS system.

Each 1290 Infinity II module is optimized to deliver the highest level of efficiency from sample introduction to separation and detection as well as maximizing sample capacity, fastest injection cycles and pump performance. The 1290 Infinity II LC coupled with Agilent's LC columns and supplies offers the most comprehensive solutions for LC/MS available today.

Efficient Sample Preparation and Columns

Agilent Bond Elut SPE and QuEChERS sample preparation provide rugged, reliable sample clean-up to minimize matrix interferences and reduce sample related system maintenance, improving system performance and analytical sensitivity. InfinityLab Poroshell 120 columns provide exceptional efficiency, speed and resolution for reliable, reproducible results. Twelve chemistries, including HPH-C18 for high pH applications, allow you to achieve the optimal separation for any sample.

High quality MS application solutions

Simplify your startup and quickly set up a method for your specific application

Veterinary drug tMRM database

Curated database with over 650 compounds, with up to 10 MRM transitions, fragmentor voltages, and collision energies for each compound. Instantly build methods for targeted screening and confident quantitation for hundreds of analytes in a single run.

Pesticides tMRM database for triple quadrupole LC/MS

Agilent's pesticide tMRM database for LC/TQ systems contains over 750 compounds, with up to 10 MRM transitions, fragmentor voltages, and collision energies for each. Instantly build methods for targeted screening and confident quantitation for hundreds of analytes in a single run.

MassHunter software

Agilent MassHunter Workstation software simplifies sample management, MS method optimization, data processing, and data reporting for quantitative analyses. An impressive suite of tools facilitates sample analysis, particularly for routine quantitation.

These tools include:

- Optimizer software—delivers automated determination of MRM transitions for quantitation and optimized collision energies for each analyte
- Dynamic MRM (dMRM)—ensures the best possible quantitative results for multi-analyte assays compatible with fast UHPLC separation, by specifying cycle times and allowing the software to determine the maximum dwell time for each MRM transition
- Triggered MRM (tMRM) data-dependent acquisition—allows fast analyte quantitation together with compound confirmation at the lowest assay levels

Agilent CrossLab

From Insight to Outcome

Agilent CrossLab

You can trust Agilent CrossLab service experts to deliver valuable insights and keep your instruments running at top performance. Our industry-leading services—tailored to meet your needs—include instrument transition, application consulting, repairs, preventive maintenance, compliance verification, and education. Ask us how we can support your laboratory today.

Any analyte. Any method. One partner: Only Agilent covers all your mass spec needs

Whatever you need to analyze, we are here to help you implement the ideal method to achieve your goals. Agilent has decades of experience designing and building chromatography and mass spectrometry systems. Our longstanding partnerships and collaborations span every field of application. This is what enables Agilent to provide you with the best solution for your analytical needs.

Learn more
www.agilent.com/chem/6495B

Buy online
www.agilent.com/chem/store

Find a local Agilent customer center
in your country
www.agilent.com/chem/contactus

USA and Canada
1-800-227-9770
agilent_inquiries@agilent.com

Europe
info_agilent@agilent.com

India
india-lsca_marketing@agilent.com

Asia Pacific
inquiry_lsca@agilent.com

Printed in the USA January 10, 2017
5991-4541EN

Agilent Technologies