Pharmaceutical LC/MS Solutions from Agilent Technologies

Application Compendium

Overview

LC/MS plays a key role in the drug discovery and drug development process. Since the introduction of electrospray ionization a variety of LC/MS applications for the pharmaceutical industry have been developed for compound identification and quantification. Agilent Technologies provides well accepted proven solutions across all stages of the pharmaceutical drug development process.

This compendium gives an overview of pharmaceutical applications run on Agilent LC/MS equipment, highlighting the most important features that provide solutions for modern drug development labs.

Agilent Technologies

Walk Up Analysis—Compound Confirmation

The identification of potential drug molecules generated from medicinal and synthetic chemistry departments and screening of compound libraries place high productivity demands on analytical throughput and on the quality of generated compound information. Easy administration of samples and automated email reporting make it easy for non expert users to work with mass spectrometry.

Agilent Single Quadrupole and TOF with Easy Access software

Solution Benefits

- Easy Access software for Walk Up Analysis in drug discovery
- Data review with Analytical Studio Reviewer
- Agilent 6200 Accurate Mass TOF LC/MS systems
- Agilent 6100 Single Quadrupole LC/MS systems

Application Notes

LC walk-up system using the Agilent 1200 Series LC Method Development solution and Agilent Easy Access software	5990-3358EN
Analytical Studio Reviewer software for LC/MS	5989-8027EN
Agilent Multimode Source maximizes efficiency in early drug discovery	5989-4873EN

Visit our website to download the Application Notes
www.agilent.com/chem/lcmsapps

Compound Confirmation | High Throughput Screening | Metabolite Identification | Bioanalysis | Organic Impurities

High Throughput ADME

Agilent LC/MS instruments play a key analytical role in support of ADME assays for determination of metabolic stability, membrane transport properties, drug-drug interactions and initial toxicology screening of drug candidates.

All Agilent 1200 Infinity Series LCs compatible with Agilent MS systems

Solution Benefits

- Ultra high throughput using RapidFire
- Determination of metabolic stability, PAMPA
- Agilent 6400 Series Triple Quadrupole LC/MS systems
- Agilent 6200 TOF systems
- Agilent 1200 Series Rapid Resolution LC system
- Agilent MassHunter Optimizer software

Application Notes

Metabolic stability study using cassette analysis and polarity switching in an Ultra High Performance Liquid Chromatography (UHPLC)-Triple Quadrupole LC/MS system	5990-4469EN
Analysis of PAMPA samples using the Agilent 1200 Series RRLC system with an Agilent 6460 Triple Quadrupole LC/MS system	5990-4878EN
Extended ionization capability of thermal gradient focusing ESI in high-throughput invitro ADME assays	5990-4932EN
Agilent 1200 Series Rapid Resolution LC system and the Agilent 6210 TOF MS – Highest data content with highest throughput	5989-4505EN
High-throughput preparation and analysis of in vitro biological assays in pharmaceutical research Agilent 6410 Triple Quadrupole Mass Spectrometer with BioTrove's RapidFire system – A partner solution from Agilent Technologies and BioTrove (now Biocious Life Sciences)	5989-7707EN
Ultra-high throughput determination of CYP450 enzyme inhibition through mass spectrometry – Approaching the throughput of fluorescence-based assays by combining an Agilent 6410 Triple Quadrupole Mass Spectrometer with a RapidFire RF-MS inlet system for CYP450 inhibition assays using microsomal enzyme preparations	5989-7759EN
Automation increases throughput for InVitro ADME/Tox screens	5989-9779EN

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Compound Confirmation | **High Throughput Screening** | Metabolite Identification | Bioanalysis | Organic Impurities

Metabolite Identification

The rapid identification of metabolites allows for screening of a potential drug molecules with desirable metabolic properties and elimination of compounds with unfavorable metabolic stability and/or toxicity. Automated data acquisition and processing improves both the analysis and reporting of metabolism data. MassHunter Metabolite ID software utilizes multiple algorithms to increase confidence of metabolitic assignments.

New Agilent 6540 Ultra High Definition QTOF
20 spectra/s at 40,000 resolution

Solution Benefits

- High sensitivity
- High resolution accurate mass for structural elucidation
- Automated data processing to assist with metabolite identification
- Agilent 6500 Accurate Mass Q-TOF LC/MS systems
- Agilent 1290 Infinity LC system for UHPLC
- Metabolite Identification software

Application Notes

Software assisted identification of metabolites from pharmaceutical drugs Using the Agilent 1290 Infinity LC system with an Agilent 6530 Q-TOF MS System and the expert prediction system Meteor	5990-4583EN
Computer assisted identification of metabolites from pharmaceutical drugs	
Part 1: Identification of expected metabolites of Nefazodone	5990-3606EN
Part 2: Identification of non-expected metabolites of Nefazodone	5990-3607EN
Software assisted structure elucidation of complex pharmaceuticals and its metabolites	5989-9814EN

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Compound Confirmation | High Throughput Screening | **Metabolite Identification** | Bioanalysis | Organic Impurities

Bioanalysis

Quantitation of drug compounds in biological matrices require both productive LC/MS/MS method development and robust analysis of large numbers of samples with excellent linearity. Agilent 6400 Series Triple Quadrupole LC/MS systems in combination with MassHunter software support regulatory compliance and allows complete integration of LC/MS/MS instruments and IT infrastructure.

New Agilent 6490 QQQ
iFunnel technology for increased sensitivity

Solution Benefits

- Rapid LC/MS method development
- MassHunter Quantitative software
- High sensitivity
- Linearity
- Robustness
- Dried Blood Spot analysis
- Agilent 6400 Series Triple Quadrupole LC/MS systems

Application Notes

High-throughput bioanalytical method development using UHPLC/triple quadrupole mass spectrometry	5990-4933EN
Rapid method development to study plasma stability of diverse pharmaceutical compounds using Rapid Resolution LC and triple quadrupole MS	5990-4603EN
Quantification of lovastatin in human plasma by LC/ESI/MS/MS using the Agilent 6410 Triple Quadrupole LC/MS system	5990-3261EN
Determination of Fluvastatin in plasma using the Agilent 6410B Triple Quadrupole LC/MS system coupled with the Agilent 1200 Series Rapid Resolution LC system	5989-9751EN
HPLC-Chip/Triple-Quadrupole MS for quantification of pharmaceuticals in diminishing small volumes of blood	5989-9896EN
High speed, ultra-high sensitivity, and robustness needed for the quantitation of pharmaceuticals in blood plasma	5990-3823EN
Using Dried Blood Spots in combination with UHPLC and enhanced ion generation ESI to streamline pharmacokinetic assays	5990-4705EN

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Compound Confirmation | High Throughput Screening | Metabolite Identification | **Bioanalysis** | Organic Impurities

Impurity Analysis

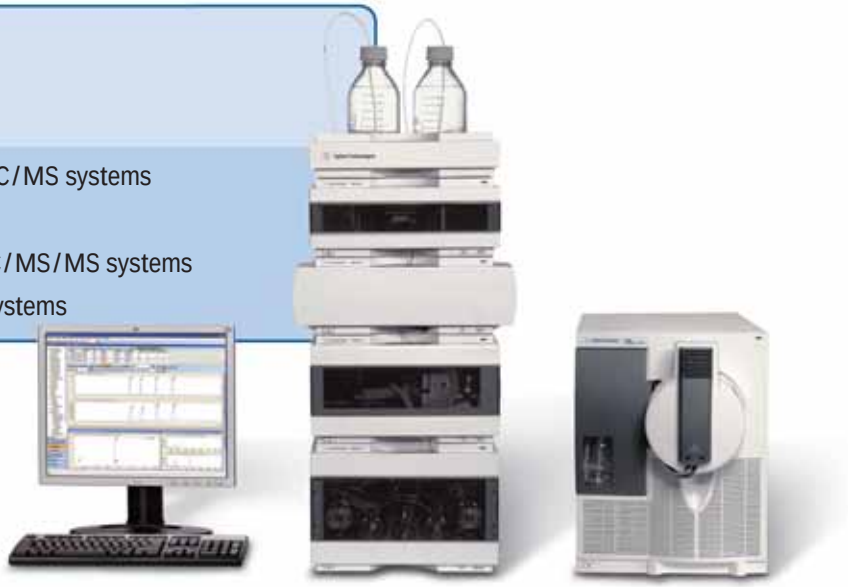
During the various stages of drug development, impurities need to be analyzed. They range from minor components in natural mixtures to degradation products from drug formulations. A variety of instruments are used for this purpose including single quadrupole LC/MS and high resolution accurate mass QTOF instruments.

Agilent 6150 Single Quadrupole
Flexibility, scan speed, fast polarity switching

Solution Benefits

- Impurity identification
- Structural elucidation
- High sensitivity

- Agilent 6100 Series Single Quadrupole LC/MS systems
- Agilent 6200 TOF systems
- Agilent 6400 Series Triple Quadrupole LC/MS/MS systems
- Agilent 6500 Series QTOF LC/MS/MS systems



Application Notes

RRLC impurity profiling to detect non-UV absorbing compounds using diode array detection, single quadrupole MS and evaporative light scattering detection	5990-4980EN
Quantification of genotoxic "Impurity D" in Atenolol by LC/ESI/MS/MS with Agilent 1200 Series RRLC and 6410B Triple Quadrupole LC/MS	5990-4460EN
Computer-assisted analysis of complex natural product extracts – Detection of known and identification of unknown compounds from Q-TOF mass spectrometry with the Agilent MassHunter Metabolite ID software	5990-3234EN
Screening and confirmation of adulterants in herbal weight-loss medicines using Rapid Resolution LC with UV and quadrupole MS detection	5989-9912EN

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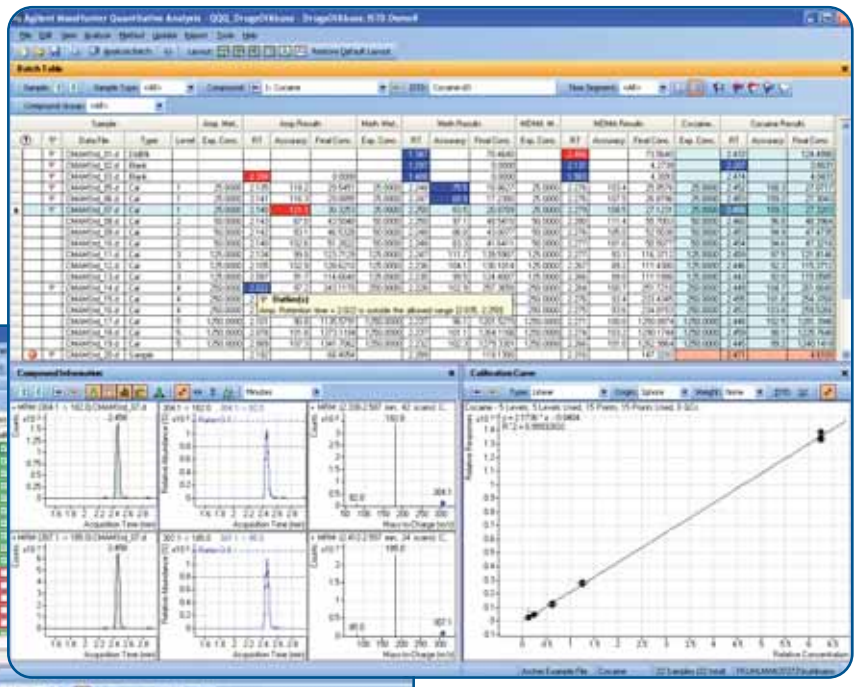
LC/MS Software—for Pharma Applications

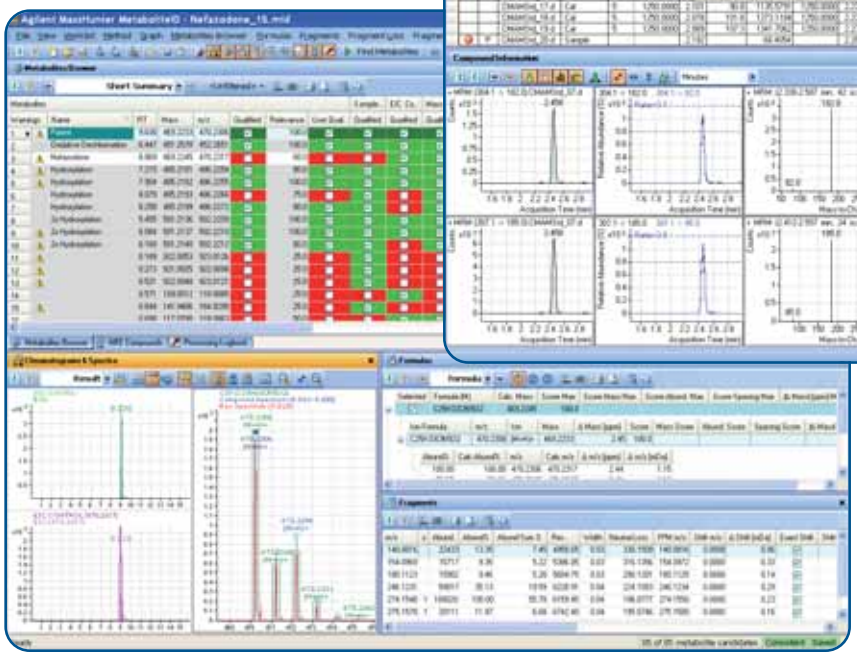
Agilent Technologies provides a portfolio of software tools to increase productivity along all stages of the drug development process. The straightforward design, rigorous testing and application focus of our software provides distinctive advantages for the users of Agilent LC/MS systems.

Broadest range of software products for pharmaceutical development

- **ChemStation software**—for single quadrupole data acquisition
- **Easy Access software**—for walk-up LC/MS access
- **Analytical Studio Reviewer software**—for results browsing
- **MassHunter Optimizer software**—for productive LC/MS method development
- **MassHunter Metabolite ID software**—for automated metabolite identification
- **MassHunter Compliance software**—for data aquisition and processing
- **MassHunter Quantitative Analysis software**—for productive quantitation
- **MassHunter Study Manager**—for workflow administration
- **MassHunter LIMS connectivity**—seamless LC/MS integration into Lab Informatics



MassHunter Quantitative Analysis software



MassHunter Metabolite ID software

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