



Keep up with **food safety**
challenges.

And stay a step ahead.

Our measure is your success.





Improving the reliability and throughput of food safety testing—from farm to fork.

Food safety is a critical global issue. Consumers want assurance that the food on their table is of the highest quality and free of contaminants. Regulatory bodies such as the European Union, the Japanese Ministry of Health, Labour and Welfare and the U.S. Food and Drug Administration are imposing increasingly stringent—and ever broadening—standards for imported, exported and domestic food products.

If you're feeling the pressure, you're not alone.

If you are in a testing lab or R&D group serving the food industry or regulatory agencies, you may need to detect, identify and quantify trace-level chemical and biochemical components in food products along the entire production chain. And with mandated levels being driven down and sample loads increasing every day, you're also being asked to improve the sensitivity, accuracy and speed of your analytical techniques.

Agilent can help.

In labs like yours, Agilent has earned a worldwide reputation for reliability and uptime under the most demanding operating conditions. With industry-leading Agilent reliable instrumentation, quality-certified columns and supplies and easy-to-use software solutions, we can give you greater confidence in your results, increase your productivity and lower your cost per analysis. We can also help you navigate the maze of regulatory issues and approved methods.

Flexible, easy-to-use software packages.

Agilent software ensures the highest level of performance and maximum productivity, while delivering the ease of use, flexibility and robustness required to meet the demands of a busy testing lab.

Applications support and deep regulatory knowledge.

Agilent's support scientists work closely with major food laboratories and regulatory agencies to anticipate the needs of a fast-changing marketplace. This in-depth experience can also be a valuable resource for your lab, helping you address today's most demanding analytical and productivity challenges.

A complete technology portfolio.

We offer today's widest range of solutions for food safety analysis, both for target and non-target compounds. With a full range of Agilent reliable instruments and high-productivity Mass Hunter Data analysis software, we can help you select the platform and the method that best meet your needs and your budget—and also offer the lab management benefits of a single trusted source of supply. Our technologies include:



GC, GC/MS and GC/MS/MS Faster oven cool down, exclusive Capillary Flow Technology, advanced automation features and faster GC/MS oven ramps let you get more done in less time, at the lowest possible cost per sample. Agilent's new 7000A Triple Quadrupole system brings unprecedented selectivity and exceptional limits of quantification in complex food extracts.



ICP-MS The new standard for high productivity elemental analysis. Rapid multi-element analysis at trace levels, with unmatched matrix tolerance and the ability to remove interferences.



LC, LC/MS and LC/MS/MS Speed, resolving power and simplified sample prep, for sensitive target compound analysis and better identification of unknowns. Agilent 1200 Rapid Resolution LC reduces run times to seconds; TOF, Q-TOF, QQQ and Ion Trap MS systems combine best-in-class performance with 24 hours a day, 7 days a week reliability.



2100 Bioanalyzer and Lab-on-a-Chip Bioassays

Accurately and reproducibly measures protein or nucleic acid contents of a 1 μ L sample for food speciation, authenticity, GMO testing and allergen testing.

Analytical solutions for the full spectrum of food safety issues.

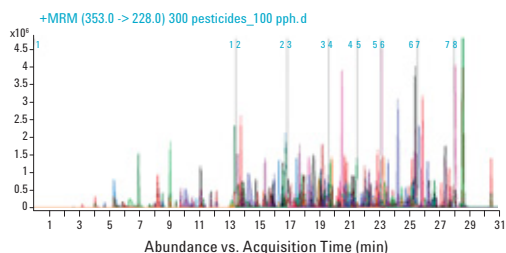


Pesticide Residues

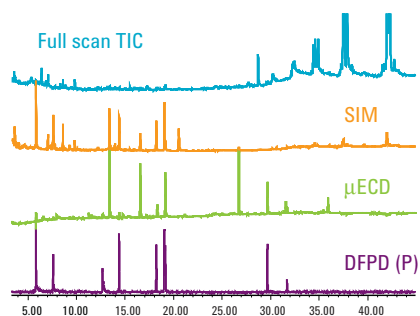
Most of the fruit and vegetables in our shopping bags are grown with the help of chemicals that protect crops from insects and weeds. For human safety, pesticide residues are routinely monitored in food and water samples.

Pesticides pose two analytical challenges: the screening and identification of target pesticides (more than 850 of them are in use worldwide) and the identification of non-targeted unknowns. No single technology can effectively monitor such a diverse assortment of compounds. But with Agilent's GC, GC/MS, LC and LC/MS systems, you can reliably and routinely screen, identify and quantify ultra-trace levels of all regulated pesticides. And with productivity enhancements such as our GC Capillary Flow Technology, time-saving software tools and ultra-fast, high resolution RRRC—you can do it faster and easier than ever.

Agilent's Triple Quadrupole GC/MS/MS or LC/MS/MS systems provide highly selective, sensitive detection and quantitation of targeted compounds. For the screening and identification of non-target or unknown pesticides, our LC/TOF has the capability and sensitivity to obtain full scan spectra with a mass accuracy better than 2 ppm; Q-TOF LC/MS offers MS/MS capability, adding selectivity and noise reduction for trace detection and identification of fragment ions with accurate mass.



LC/MS: Single-run screen of 300 pesticides using LC/MS/MS MRM method. MRM chromatogram of 300 pesticides spiked in a food extract with two transitions per compound demonstrates the capability of the Agilent LC/QQQ MS for screening and confirmation at trace levels.



GC/MS: One-run, multi-detector analysis of milk extract. Capillary Flow Device enhances productivity by splitting column effluent to multiple detectors: MSD, DFPD and μ ECD. Full-scan TIC provides quantitation and confirmation; element-specific GC signals highlight trace-level compounds to be identified by MSD.

Agilent's Capillary Flow device also provides backflush capability to significantly shorten cycle time, prevent carryover and increase column life.

MSD Deconvolution Report

Sample Name: Strawberry Extract
 Data File: C:\MSDCHEM\May 02_09\Labdata\Extracts\Jap Meth\Strawberry Extract 1.D
 Data Time: 05:06 PM Tuesday, Jun 5 2007

The NIST library was searched for the components that were found in the AMDIS target library.

RT	Case #	Compound Name	Agilent	AMDIS	Match	RT Diff	Sec	Percent	MS
01.4914	000022	Phorate		99	0.4			99	1
02.3620	13041789	Terbuthin		96	0.6			99	1
02.4632	000476	Triprozin		98	0.7			99	1
02.5796	1517222	Phenanthrene-9S		99	0.2			94	2
02.7125	000044	Carbendim		84	0.3			99	1
04.3919	002862	Methidath		93	0.6			97	1
04.4642	05389	Carbendim		97	0.4			99	1
06.0169	0220406	Parathion		92	0.7			92	1
02.582		Phenanthrene-9S	93						

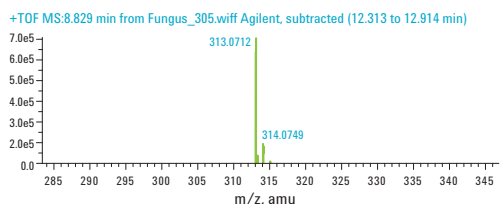
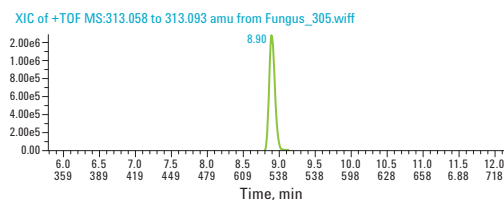
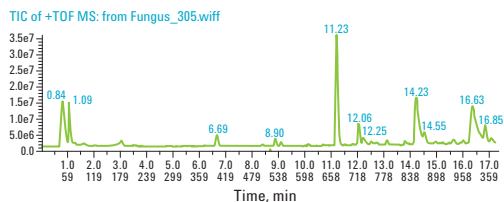
Seven pesticides in strawberry extract identified in two minutes data processing time using Agilent Deconvolution Reporting Software (DRS) Pesticide Library. Without DRS, it would take a skilled analyst about 30 minutes or more to find and confirm the identity of all the pesticides in the sample.



Mycotoxins

Mycotoxins are highly toxic compounds produced by fungi. They can contaminate food products when storage conditions are favorable to fungal growth.

Because more than 100 such compounds are known, the analysis of individual mycotoxins is difficult; any individual toxin is likely to be present in very low abundance in a highly complex organic matrix. The speed and high resolving power of Agilent RRHT columns, often combined with mass spectrometry, has proven to be a fast, reliable way to detect and quantitate these closely-regulated contaminants.

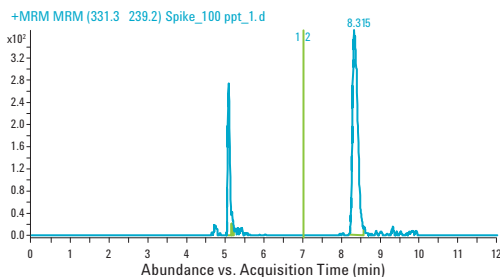


LC/MS: Rapid analysis of crude fungal extracts for secondary metabolites. Novel LC/TOF method allows non-targeted analysis and identification of secondary metabolites, mycotoxins and other compounds of interest isolated from agricultural products.

Veterinary Drugs

Animal diseases caused by viruses, bacteria, protozoa or fungi are prevented and treated with drugs, such as antibiotics. Livestock, poultry and farm-raised fish may also receive growth-enhancing drugs.

Because residues of these drugs may carry over into foods such as milk, eggs, fish, meat and honey, government agencies around the world implement strict surveillance and monitoring programs. Agilent's highly sensitive mass spectrometry solutions provide rapid, reliable analysis of drug residues or their metabolites in complex food matrices.



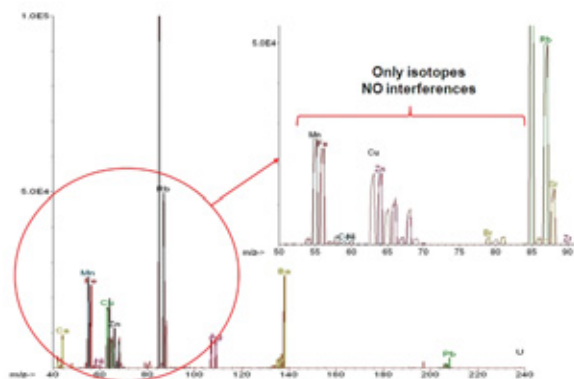
LC/MS: MRM analysis of malachite green and leucomalachite green in tilapia extract. Positive mode electrospray ionization (ESI+) and LC/MS/MS MRM method enables confirmation and quantitation without tedious PbO₂ oxidation. LOQ is 0.01 µg/Kg, easily meeting import requirement of 2 µg/Kg set by Japan and the EU.



Trace Metals

Certain trace elements play a major role in human nutrition; others may be highly toxic. For this reason, they are monitored at almost every stage of food production. Elemental content may also provide information about a food's geographical origin and authenticity.

Collision/reaction cell (CRC) technology eliminates many polyatomic interferences and widens the range of elements that ICP-MS can monitor. In addition, the use of inert He cell gas and Agilent's Octopole Reaction System (ORS) screen out polyatomic species such as ArC, OCl, ArCl and ArAr that can compromise trace measurements of elements such as Cr, V, As and Se.



ICP-MS: Mass spectrum of espresso coffee acquired using Octopole Reaction System (ORS). Operating the ORS in helium collision mode is a simple and effective means of removing polyatomic interferences on analyte ions. The result is a simplified mass spectrum that clearly shows various trace elements present in the coffee sample.

Biological Food Safety

Analysis of Biological molecules for food safety requires sensitive, specific, streamlined techniques.

Convenient, cost effective Lab-on-a-Chip technology for protein and DNA analysis integrates sample handling, mixing, dilution, electrophoresis, staining and detection on a single miniaturized system. The flexible Agilent 2100 Bioanalyzer platform, Stratagene Gradient Cycler thermal cycler & PCR reagents and Mx QPCR systems are ideally suited for a wide range of food safety, authenticity and traceability applications, including:

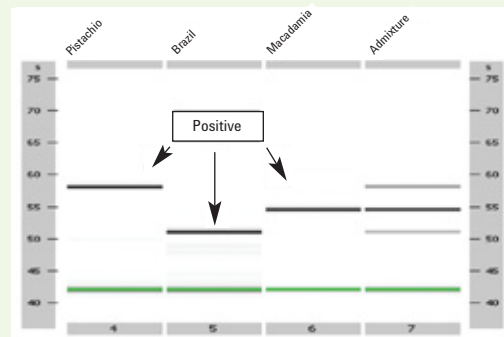
- Food allergens
- Meat and fish authenticity
- Multiplex screening of genetically modified organisms
- Milk protein quality and content
- Genetic identity of wheat varieties and wheat protein content
- Halal food testing rice authenticity



Allergens

Recent regulatory and policy changes in the U.S., E.U., Japan, Canada and Australia require labeling of multiple allergens in food products.

Because of the complexity of the matrices involved, currently available methods typically detect only a single allergen per test. The 2100 Bioanalyzer, together with standard multiplex PCR techniques, can cost-effectively screen for multiple allergens in a single run.



Simultaneous detection of three nut species in a single run.

The 2100 Bioanalyzer's gel-like digital output shows positive test results for pistachio (lane 4), Brazil nut (lane 5) and macadamia nut (lane 6), as well as for a mixture of these three nuts (lane 7) in wheat.

Source: Campden and Chorleywood Food Research Association Group, Gloucestershire, UK.



High performance columns and supplies for every food safety need.

For every analytical requirement—from leading-edge methods development to routine QA/QC—our full portfolio of Agilent J&W GC and ZORBAX HPLC columns give you the sensitivity, accuracy and reliability these demanding separations require.

Developed with the food safety industry in mind, our new Agilent SampliQ SPE products deliver the high quality and performance you expect from the industry leader. Whether you are testing tetracyclines in meat, nitrofurans in seafood or sulfa drugs in milk, Agilent has the products and expertise to help with your laboratory's applications.

Agilent continues to innovate with revolutionary SampliQ QuEChERS kits, providing simplified sample preparation following AOAC or EN methods for the analysis of more than 250 pesticide residues by LC/MS or GC/MS.

Improve uptime and throughput with Agilent Services and Support.

For 40 years, Agilent has been building and maintaining the instruments you count on for critical food safety testing. You can also depend on us to deliver the services and support you need to keep your food analysis lab up and running at full productivity.

Agilent Preventive Maintenance increases your uptime while assuring your systems continue to operate at peak performance. For your total peace of mind, we also offer a portfolio of comprehensive Agilent Advantage Service plans that cover maintenance, repair and remote monitoring and instrument diagnostics features—helping you to maximize instrument availability and optimize laboratory workflows.

Functional Verification and Compliance Services for the most stringent of standards.

In the Food industry where sensitivity, accuracy and precision is critical, you can count on Agilent to deliver proven instrument qualification and calibration services in support of regulatory or accreditation standards. In fact, Agilent has recently been ranked #1 in Compliance by independent survey for the third time. With over 100,000 successful qualification and calibration deliveries, industry-leading quality development processes and over a decade of practical compliance and calibration experience, Agilent helps assure confidence in your analytical results.

The Agilent Service Guarantee.

Should your instrument require service while covered by an Agilent service agreement, we guarantee repair or we will replace your instrument for free. No other company offers this level of commitment to keep your lab up and running at peak efficiency.



A standing commitment to the food safety industry.

With over 35 years of experience in food safety analysis, Agilent offers you uncompromising quality and reliability across the industry's most complete product portfolio. Our instruments, systems and supplies—used throughout the food production chain—help analysts solve problems more quickly, more confidently and with higher quality results than ever before. Our commitment extends to a comprehensive library of published food safety applications, as well as ongoing educational workshops, e-seminars and publications.

Whatever you're looking for in your food safety analysis, Agilent can help you find it.

Residues

Pesticides in fruits and vegetables
Veterinary drugs in meat and fish
Hormones in plants and meat
Residues in animal feed

Contaminants

Mycotoxins
Heavy metals
Food allergens
Acrylamide
PAHs
PFOA and PFOS
PCB's
Melamine and related compounds

Additives and Natural Products

Flavors
Colorants
Vitamins and minerals
Sugars
Fats and trans fats
Food supplements

Other Testing

Authenticity, origin and adulteration
Nutritional labeling accuracy
Bioactivity in functional foods
Food and feed QA/QC

**You can download information on these and other food safety applications at:
www.agilent.com/chem/FoodSafety**

The Agilent Value Promise—10 years of guaranteed value

In addition to continually evolving products, we offer something else unique to the industry—our 10-year value guarantee. The Agilent Value Promise guarantees you at least 10 years of instrument use from your date of purchase, or we will credit you with the residual value of that system toward an upgraded model.* Not only does Agilent ensure a safe purchase now, we help ensure your investment is as valuable to you in the long run.

To learn more about Agilent solutions for food safety testing, visit www.agilent.com/chem/FoodSafety

For more information

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*Excludes Agilent 2100 Bioanalyzer

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