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Agilent Technologies: Flexible Strategies for your Food Analysis
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GC/Q-TOF for Target, Non-target and Unknowns: The Benefits of High Resolution, Accurate Mass and Fast Acquisition Rates MS and MS/MS

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Although GC/TOF systems have been applied to a variety of quantitative and qualitative tasks for target analytes, non-targets and true unknowns (not included in spectral database), the majority of commercial GC/TOF systems are limited to nominal mass information (unit mass resolution) and do not have MS/MS capability. High resolution (R>10K), accurate mass (<1ppm) TOF significantly increases detection selectivity, eliminates many interferences seen with nominal mass data and allows rapid, high efficiency screening of target and non-target compounds. Additionally, accurate mass information on molecular ion and fragment ions greatly increases the qualitative power of the MS for confirming the identity of targets and non-targets. In Q-TOF mode, the application of high resolution and accurate mass to Product Ion spectra provides selectivity against matrix interferences that cannot be equaled by a tandem (triple) quadrupole MS. For the structural elucidation of unknowns, the combination of MS/MS dissociation studies and accurate mass data makes the Q-TOF MS a very useful tool with sensitivity that cannot be equaled by NMR. Although the high cost of Q-TOF technology will limit it use in many routine labs, Q-TOF GC/MS provides invaluable tools for R&D laboratories working in food safety, natural products, and flavor-fragrance.

New Solutions For Food Applications Using Atomic Spectroscopy

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How to choose best elemental analyses technique for food products. The potential implications of metals in foods are increasing interest, both from the point of view of nutritional and health benefits and from the point of view of potential toxicity. Regulated limits for many heavy metals are being reduced and it is now common for the chemical form of the element to be monitored, as well as the total concentration. Agilent's Atomic Spectroscopy instruments offer a solution for these measurement, providing sensitive and accurate trace metal analyses using AAS, ICP and ICP-MS.

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How LC and GC techniques enable Organic Mass Spectrometry in target analysis of food safety.

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From Mycotoxins to Pesticides and Vet Drugs to POP's, increases in the performance of organic mass spectrometry is enabling new approaches to be explored which increase the scope of what can be achieved with this technique. LCMS and GCMS techniques have always been powerful tools for analysts wanting to increase the amount of information resulting from one injection of a food extract. They also offer the potential to increase the confidence of identification and accuracy of quantification all at the same time. Agilent has some powerful new tools that can leverage these benefits and these will be discussed in the context of some novel food applications.

However in a complex food matrix, producing an extract which contains all targets that are of interest whilst at the same time ensuring that the rest of the matrix does not compromise the analysis, is challenging and the challenge increases as the analyst looks to add yet more targets to a single injection. Two things that can help are (a) expertise in sample prep strategies developed by leading labs around the world (b) new technology to drive sensitivity to new levels hence allowing the possibility to inject less matrix. This presentation will outline how Agilent's collaborations with key food labs and it's unrelenting product development in Chromatography and Mass Spectrometry combine to address these challenges and open up new possibilities for powerful food analysis.