

November 8, 2017 (13:30-14:15)



VENDOR SEMINAR:

Maximizing Laboratory Productivity in Routine Food Analysis (1)

Elemental Profiling of Whiskey, Wine and Beer by Microwave Plasma Atomic Emission Spectroscopy (MP-AES), Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES), and Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

Jenny Nelson¹⁻³, Helene Hopfer^{1-2,4}, Greg Gilleland³ and Susan E. Ebeler¹⁻²

¹ *Department of Viticulture & Enology, University of California, Davis, CA, USA*

² *Food Safety & Measurement Facility, University of California, Davis, CA, USA*

³ *Agilent Technologies, Inc., Santa Clara, CA, USA;*

⁴ *Department of Food Science, The Pennsylvania State University, University Park, PA, USA;*

The elemental composition of beverage products (Whiskey, Wine and Beer) can provide vital information about potential contaminants, product authenticity and origin, quality, and nutritional content. Also, testing throughout the manufacturing and production process can help to identify the source of the elements.

In this study we compare the elemental fingerprints of 68 commercial whiskeys for differentiation due to type (Bourbon, Tennessee, Scotch, Irish, Japanese) and region. In this study we used MP-AES, ICP-OES, ICP-MS and used in subsequent statistical analyses by Mass Profiler Professional (MPP).

Authentication of food products of specific geographic origin, such as wine, has garnered interest in consumers, growers and producers, because wine is often associated with qualities only found in certain regions. In this study, possibly the first of its kind, we measured elemental profiles to distinguish mono-varietal pinot noir wines in their region from six different sub-appellations within a single American Viticultural Area (AVA) in Northern California.

Trace metals in beer can also originate from environmental contamination, including fertilizers and pesticides. Also, metals may be introduced by the brewers in the form of salts (e.g., calcium salt, calcium chloride, magnesium sulfate, and zinc sulfate) prior to fermentation. Metal pick-up can come from copper piping and the filtration process through diatomaceous earth. The mineral content in water is a contributor to the overall flavor of beer, which historically led to different beer brewing styles throughout the world.

Application of new, miniaturized triple quadrupole LC/MS system for robust, trace level quantitation of pesticides and mycotoxins in food

Terri Sosienski, Ph.D., LC/MS Applications Scientist, Agilent Technologies, Santa Clara, CA, USA

The new Agilent Ultivo Triple Quadrupole LC/MS is designed to address the challenges and changing needs faced by routine production laboratories, especially those performing high-throughput food safety analysis. In this seminar, we will present, two fast, robust, and precise methods for quantifying trace levels of mycotoxins and pesticide residues in various food matrices

developed with Ultivo. Advanced technological innovations within Ultivo allow the instrument to have a dramatically reduced footprint such that it can be housed within our Infinity II HPLC/UHPLC stacks whilst maintaining all the power and sensitivity of much larger triple quadrupole LC/MS instruments. In addition to hardware innovations, smart diagnostics and customizable user interfaces both allow Ultivo to be operated by a novice LC/MS user. MassHunter software simplifies method setup, data analysis and reporting, resulting in the fastest acquisition-to-reporting time possible, increasing lab productivity and confidence in results. This seminar will highlight the innovations of Ultivo, and demonstrate the sustained power of Ultivo for these two common, high-throughput trace level analyses in complex food matrices.