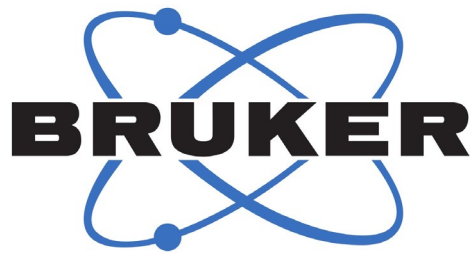VENDOR SEMINAR:

Paradigm shifts in food analysis: breakthrough solutions for allergies, authenticity and traceability

Moving towards the next generation of food allergen analysis

Jens Brockmeyer, Head of Department Food Chemistry, Institute of Biochemistry and Technical Biochemistry, University of Stuttgart, Germany

The AllergenScreener solution is an advanced mass spectrometry (MS)-based technology designed to detect a wide range of allergens across various matrices in a single analytical run. This innovative solution encompasses a comprehensive workflow that includes meticulous sample preparation, high-performance liquid chromatography-mass spectrometry (HPLC-MS) analysis, and sophisticated data analysis software. By integrating these components, the AllergenScreener streamlines laboratory workflows, making the process of detecting allergens in food products more efficient and reliable. This holistic approach not only enhances the accuracy of allergen detection but also significantly reduces the time and effort required for food product analysis, thereby offering a robust tool for ensuring food safety and compliance with regulatory standards.

Chromatography-free screening and quantification of saffron adulteration with safflower by DART-TQ

Linda Monaci, Research Director at Institute of Sciences of Food Production - National Research Council of Italy

The high price of saffron has made it a target product for adulteration with other species of lower value, such as safflower. The increasing number of samples to be monitored for authenticity assessment makes it necessary to have at disposal a rapid routine method to test the purity of saffron, thus confirming its value. Direct analysis in real time (DART), a plasma-based ambient ionization technique, permits the effective ionization of a broad range of compounds. It allows to identify, search and quantify the presence of any adulterant species in saffron as case study that will be described in the present communication. This chromatography-free technology allows a rapid automated analysis, perfect for efficient routine work.

This project involves a fast sample extraction without any sample-prep required, the identification and monitoring of potential markers of safflower as an adulterant added to saffron and the evaluation in real samples of the power of DART for quantification purposes. The work has been carried out by a simple fast workflow combining DART ionization coupled to triple quadrupole EVOQ DART-TQ[+].

Simultaneous EI and CI in single GC runs for confident unknowns identification in non-target analysis

Eliska Ceznerova, Application Specialist, Tofwerk Ag, Switzerland

Non-target analyses in GC-HRMS suffer from unambiguous or insufficient scores in NIST searches of EI data and are prone to false positives. Therefore, often additional GC runs are performed with a CI source to add the molecular ion information for filtering the NIST search results or when appropriate reference standards for compounds are not available. However, that requires mechanical source switching, separate GC runs and generates issues with peak alignments. Presented here is a novel GC-HRMS which simultaneously operates an electron ionization (EI) and a chemical ionization (CI) source. Structural as well as accurate mass molecular ion information are generated in a single GC run which highly improves the confidence for identifying unknown compounds. Various studies will be discussed to prove the potential for non-targeted and suspect screening approaches, including applications in fields such as environmental contaminants, material emissions, food flavor analysis and metabolomic research.