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Rapid screening methods to ensure food safety and authencity by applying innovative technology solutions

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Ensuring food safety and tackling food fraud are issues that continually need to be addressed to safeguard the security of our food and to stay one step ahead of the fraudsters. Employing innovative technologiues and rapid analysis methodology answers can be provided in a matter to minutes. This presentation will demonstrate how the application of Fourier Transform Near-Infrared Spectroscopy (FT-NIR) in conjunction with the innovative Adulterant Screen™ software, and Direct Sample Analysis (DSA) coupled to Time of Flight (TOF) mass spectrometry offer fast, sensitive methodologies for the confirmation of authenticity and identification of unknown adulterants.

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Antioxidant capacity of blueberries: The diferences between hydrophilic and lipophilic extracts

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Antioxidants can be characterized in many different ways. Halliwell and Gutteridge (1989) consider a broad definition of antioxidants to be: "any substance that, when present at low concentrations compared with those of an oxidizable substrate, significantly delays or inhibits oxidation of that substrate". Many methods that are based on mechanisms, free radicals, or different reactive species can be used to determine and quantify the antioxidant capacity of fruits and vegetables. Of the various methods that are available, chemical approaches, in particular spectrophotometric methods, are most commonly used to determine the antioxidant capacity. These methods can be divided into two subdivisions: indirect and direct. Indirect approaches focus on examining the extent to which the antioxidant can scavenge free radicals, something that is not associated with oxidative degradation, or the effects of transient metals. However, H-donating capacity does correlate with antioxidant capacity. Examples of some of the indirect methods that are used to determine the antioxidant capacity of films are: ABTS, 2,2-Diphenyl-1-picrylhydrazyl Radical Scavenging Capacity Assay (DPPH), and Ferric Reducing Antioxidant Power (FRAP). Direct methods, such as β-carotene/linoleic acid model system and Oxygen Radical Absorbance Capacity Assay (ORAC), are typically associated with studies on chain peroxidation. Because of this hydrophilic and lipophilic extracts of 10 cultivars of Highbush and Rabbiteye Brazilian blueberries (*Vaccinium corymbosum L. and Vaccinium ashei Reade*, respectively) that are used for commercial production were analysed for antioxidant activity by the FRAP, ORAC, ABTS and b-carotene–linoleate methods. Results were correlated to the amounts of carotenoids, total phenolics and anthocyanins. Brazilian blueberries had relatively high concentration of total phenolics (1622-3457 mg gallic acid equivalents per 100 g DW) and total anthocyanins (140-318 mg cyanidin-3-glucoside equivalents per 100 g DW), as well as being a good source of carotenoids. There was a higher positive correlation between the amounts of these compounds and the antioxidant activity of hydrophilic compared to lipophilic extracts. There were also significant differences in the level of bioactive compounds and antioxidant activities between different cultivars, production location and year of cultivation.

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