

Novel approaches in Mass Spectrometry-based Food Analysis: Targeted Proteomics, High Resolution MS, and MS³

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Mass spectrometry as a central method in food analysis has dramatically changed in the last two decades. Novel developments in high resolution mass spectrometry (HRMS) or significant improvements in sensitivity and speed of MS instrumentation now allow for rapid multiplexing as well as in-depth analysis of complex food samples. Food proteomics is such an emerging novel field in food analysis that is driven by developments in MS instrumentation. In this tutorial, we will exemplify novel approaches to investigate authenticity and safety of food using food proteomics. The identification of biomarker peptides for authenticity or the detection of food allergen trace contaminations is discussed as well as possibilities for the detailed characterization of bioactive food proteins (allergens, celiac disease). From the methodological point of view, the potential and pitfalls of targeted and untargeted methods is discussed as well as the use of novel MS setups such as MRM³. The use of these techniques for non-protein analytes is also a topic of this tutorial.