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Tandem mass spectrometry for the characterization of peptide adducts of electrophlic lipoxidation products

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We report on the characterization and quantification of peptide adducts of reactive lipid peroxidation products using tandem mass spectrometric approaches using advanced quadrupole time of flight mass spectrometry platforms. The post-translational modification (PTM) of proteins by electrophilic oxylipids is emerging as an important mechanism that contributes to the complexity of proteomes. Protein carbonyls are recognized indicators of diverse pathological conditions associated to redox inbalance and oxidative stress. We will discuss chemoselectives probes in conjunction with advanced tandem mass spectrometry approaches for the detection, characteization and quantification of this class of analytes. We will demonstrate the use of multiple tandem mass spectrometry approaches including travelling wave ion mobility-enhanced tandem mass spectrometry for characterizing of isomeric peptide adducts of electrophilic oxylipids. Overall, we provide an update on mass spectrometric methods for the in-depth analysis of protein carbonyls, recognized markers of oxidative stress related post-translational modifications.

Biography

Claudia S Maier, PhD, is currently a Professor in the Department of Chemistry at Oregon State University. She holds a PhD in Chemistry from the University of Konstanz, Germany. Her laboratory is concerned with the development and application of mass spectrometry for studying the response of biological systems to oxidative stress related to aging, chronic diseases and enviornmental exposures.

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