

**Poster Session**  
**6<sup>th</sup> EUROPEAN WORKSHOP ON LIPID MEDIATORS**  
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**Poster 5**

**LIQUID-CHROMATOGRAPHY-QUADRUPOLE TIME-OF-FLIGHT MASS SPECTROMETRY AS A TOOL FOR BIOMARKER RESEARCH IN LIPIDOMICS**

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Early diagnosis is very important for the treatment of several diseases. Thus, a way to identify diagnostic biomarkers is required. Our aim is to develop a qualitative untargeted lipidomic approach using reversed-phase liquid-chromatography coupled with quadrupole-time-of-flight mass spectrometry (QTOF) to search for potential biomarkers in complex biological samples. For this purpose, a simple and unspecific sample preparation procedure has been chosen. After liquid-liquid extraction of plasma or tissue, extracts are injected into the chromatographic system. In the case of complex biological samples larger chromatographic separations are often required to enhance resolution power and avoid missing analytes, decreasing ion suppression effects and coelution. Using ultrahigh-performance liquid chromatography with a C18 1.8  $\mu\text{m}$ , 2.1x50 mm column we are able to isolate with an adequate separation the most common lipid species in a 30 minute run. The QTOF analyser supplies the required mass resolution of less than 5 ppm and the fragmentation patterns necessary for the unequivocally identification of lipid species with the same molecular mass but different molecular structures. The robustness of the developed system with retention time shifts under 0.05 min and adequate mass calibration assure the low variability of the obtained information needed to successfully perform multivariate data analysis. Measurements in both positive and negative ionization modes combined with MS/MS information and high mass accuracy allow for identification of many lipid species belonging to several families including PC, LPC, SM, PE, LPE, PI, TG and Ceramides in biological samples. Hereby we present a widely applicable and consistent method for biomarker discovery research in the field of lipidomics.