

Understanding lung inflammation mechanisms using GC×GC-TOFMS

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Chronic respiratory diseases, such as asthma and obstructive disease (COPD), represent a major global health issue. The world health organization estimates that 235 million people suffer from asthma and 3 million people die from COPD every year. These diseases are complicated and not curable. Different inflammation phenotypes exist, and an accurate phenotyping is necessary to establish the proper treatment regime.

Our research is focusing on the development of metabolomics strategies to understand the different inflammation mechanisms taking place in chronic respiratory diseases. A better understanding of the processes taking place at the molecular level would help to develop new treatment routes and monitoring tools. To achieve this goal, we are applying multidimensional chromatography coupled to mass spectrometry for the characterization of various *ex vivo* lung samples, such as exhaled breath and bronchoalveolar lavages. We are also studying and developing various *in vitro* model of the diseases.

The objective of this presentation is to share the most recent developments on the metabolic understanding of chronic lung inflammation of the molecular level using a multidimensional and multi-matrix approach.