

VPAP 2022 – lightning talk abstract

Volatolomics approach towards a better understanding of chronic lung inflammation

Pierre-Hugues Stefanuto & Jean-François Focant

Organic and Biological Analytical Chemistry Group, MolSys research unit, Liège University, Belgium

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. Our multi-samples design is providing fundamental understanding of the diseases at the molecular level, as well as emerging routes for better patient monitoring.

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. The challenges and next research lines will also be discussed.