

# Chromatography

September 21-23, 2016 Amsterdam, Netherlands

## Multi-dimensional ion chromatography–mass spectrometry for simultaneous determination of extracellular metabolites in *Clostridium thermocellum*

Yun Fa and Fangfang Li

Chinese Academy of Sciences, China

In bio-energy and bioprocess research, quantitative understanding of bacterial metabolism and determination of metabolic flux data are necessary, especially for the strain improvement, gene function analysis, optimizing the cell system and the production process, fermentation experiment design. It takes long time for so many metabolites because different methods are needed for different types of metabolites. Although traditional reversed-phase liquid chromatography tandem mass spectrometry (RPLC-MS) covered a wide range of small molecule metabolites, but some ions and polar compounds in the conventional reversed-phase columns do not retain or keep very weak, such as organic acids, sugar, sugar phosphate, amino acids and other. These compounds are just one of the main objects in the analysis of metabolomics. We have built a multidimensional ion chromatography - mass spectrometry combined system, and achieved simultaneous analysis for the polar group of amino acids, sugars, alcohols, organic acids, some important cations. Further, the accuracy and precision of the method were investigated. And the new method was successfully used to determine the target metabolites in extracellular culture media of *Clostridium thermocellum* for not more than 2h. Using a combined system target to metabolomic analysis, we provided the more exact experimental data for designing control process. The establishment of multidimensional ion chromatography tandem mass spectrometry platform can be used for analysis of water soluble metabolites not only in bio-energy research, but also in the field of other areas, such as food, environment and life sciences applications.

### Biography

Yun Fa is an Associate Professor in key lab, Qingdao Institute of Bioenergy and Bioprocess Technology, Chinese Academy of Sciences. She worked on ion-chromatography analysis for 7 years. She has published more than 15 papers in reputed journals.

fayun@qibebt.ac.cn

### Notes: