

# LA-REIMS as a Rapid Screening Metabolomics Approach

Created on: 28-10-2019 - Last modified on: 31-03-2022

## Contact person

Lynn Vanhaecke

## Organisation

**Name of the organisation** Ghent University (UGent)

**Department** Faculty of Veterinary Medicine, Department of Translational Physiology, Infectiology and Public Health

**Country** Belgium

**Geographical Area** Flemish Region

## SCOPE OF THE METHOD

<b>The Method relates to</b>	Animal health, Human health
<b>The Method is situated in</b>	Basic Research, Translational - Applied Research
<b>Type of method</b>	In chemico: Metabolomics

## DESCRIPTION

### Method keywords

metabolomics

screening

iknife

mass spectrometry

ms

ambient ionization  
lipidomics  
LA-REIMS

### **Scientific area keywords**

analytical chemistry

### **Method description**

This method provides a rapid untargeted screening metabolomics method, which can be used to evaluate whether or not metabolic changes can be appointed according to the metabolic state in your matrix of choice. It applies an ambient ionization technique in which a laser beam or diathermy probe is directed at a native (non-pretreated) *ex vivo* sample, whereupon the resulting aerosol is directed into the REIMS source for ionization. Finally, the resulting ions are measured using a Q-ToF mass spectrometer. The method has currently been optimized and successfully applied for muscle and adipose tissue, urine, blood plasma, saliva, and feces, but can be readily extrapolated to any other type of animal/human tissue or biofluid sample (CSF, bile, etc.). Following the analysis, univariate and/or multivariate statistical analysis is performed to determine if a generated metabolic fingerprint can be associated with a particular condition or metabolic state.

### **Lab equipment**

Q-ToF, REIMS source, laser equipment or iKNife diathermy probe.

### **Method status**

Internally validated

Published in peer reviewed journal

## **PROS, CONS & FUTURE POTENTIAL**

### **Advantages**

Rapid metabolomics screening, high throughput (500 samples in 2h), no sample preparation, suitable for a wide range of matrices.

### **Challenges**

Identification of compounds is challenging, number of detected metabolites is more limited as compared to UHPLC-HRMS.

## Modifications

The method is automated for the analysis of liquid samples and can be automated for solid matrices.

## Future & Other applications

Rapid detection method for boar taint, species identification, meat defects, etc. at the slaughter line

Rapid detection for fish species identification and fraud at the production line

Rapid metabolic screening to detect changes occurring in metabolic diseases or disorders (food allergy, obesity, diabetes type 2, etc.) in biofluids

## REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

### References

Verplanken et al (2017) Talanta, 169, 30-36

Van Meulebroek et al (2020) Talanta, 217

Wijnant et al (2020) Analytical Chemistry, 92(7)

Plekhova et al (2021) Nature Protocols, 16(9), 4327-4354

Van Meulebroek et al., Talanta, 2020.pdf

### Associated documents

[Verplanken et al, 2017.pdf](#)

[Plekhova et al. 2021.pdf](#)

[Wijnant et al., Analytical Chemistry, 2020.pdf](#)

[1. Van Meulebroek et al., Talanta, 2020.pdf](#)

Coordinated by



Financed by

