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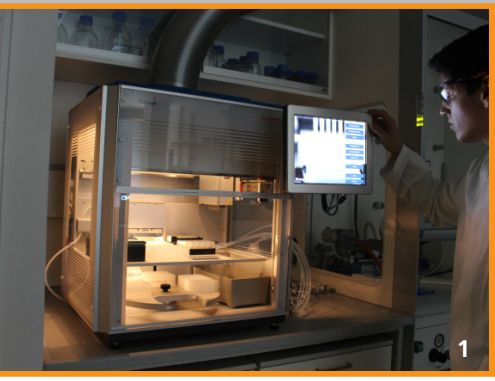
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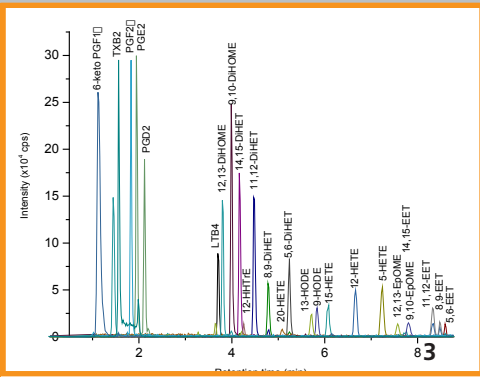

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1 *Automated sample preparation system (Biotage) for SPE, SLE, and PPT methods in 96-array format.*

2 *Tandem mass spectrometry system (Sciex) coupled to an UHPLC (Agilent).*

3 *UHPLC-MS/MS chromatogram of multi-method with 25 eicosanoids.*

Fraunhofer Insitute for Molecular Biology and Applied Ecology IME
Project Group for Translational Medicine and Pharmacology TMP

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BIOMEDICAL ANALYSIS

Aim

We use modern analytical technology to measure endogenous and exogenous small molecules in complex biological matrices. Our goal is to quantify compounds, such as drugs or signal molecules, to study them in the context of pharmacokinetic studies or to discern their role in the development, course or treatment of diseases.

Techniques and Methods

We design, develop and validate analytical methods using different sample preparation techniques (liquid-liquid (LLE), supported liquid (SLE), solid phase (SPE) extraction, protein precipitation (PPT)) and liquid chromatography (ultra high and high pressure, nano flow) coupled with tandem mass spectrometry (triple quadrupole, ion trap, QTOF).

Indications

- Inflammatory diseases.
- Pain and analgesia.
- Lipid signaling.
- Pharmacokinetic studies (preclinical and clinical studies).

Applications

- Highly sensitive and (stereo)selective quantification of lipid mediators such as sphingolipids, eicosanoids, endocannabinoids, pro-resolving lipid mediators, lysophospholipids, etc. in biological samples (targeted lipidomics).
- Identification of lipid mediators as biomarkers for diseases or during pharmacological or therapeutic intervention (untargeted lipidomics).
- Pharmacokinetic studies of drugs in preclinical and clinical studies.
- Validation of analytical methods according to EMA and FDA guidelines, applying certified quality systems.

Selected Publications

1. Thomas D et al. (2015) Quantitation of endogenous nucleoside triphosphates and nucleosides in human cells by liquid chromatography tandem mass spectrometry. Anal Bioanal Chem. 407(13):3693-704.

2. Homann J et al. (2015) In Vivo Availability of Pro-Resolving Lipid Mediators in Oxazolone Induced Dermal Inflammation in the Mouse. PLoS One. 10(11):e0143141.

3. Thomas D et al. (2014) Nano-LC-MS/MS for the quantitation of prostanoids in immune cells. Anal Bioanal Chem. 406(28):7103-16.