
Laboratory of Bioanalytical Methods

"Our mission is to develop fast, sensitive and simple bioanalytical LC methods with the main emphasis on simple sample preparation procedure and all pre-analysis."

Offer

- Development of modern bioanalytical methods made to order
- Determination of vitamins in various biological matrices
- Determination of pharmaceuticals in human fluids
- Determination of important biomarkers
- Handling and pretreatment of various biofluids as breast milk, erythrocytes, lipoproteins, serum, plasma, whole blood, wounds liquids, exudates, ascites, urine, amniotic fluid etc.
- Stability studies
- Method validation (FDA, ICH, PhEu, USP)
- Development of modern sample preparation techniques suitable for large sequences
- Sample storage

Expertise

Chromatography in Bioanalysis

Research team guarantees:

- correct sampling and proper storage, modern sample preparation techniques
- perfect processing of biological materials, such as urine serum, plasma, erythrocytes, breast milk, wound exudates, lipoproteins etc.
- highly qualified application of bioanalytical separation methods (HPLC, UHPLC, ultracentrifugation)
- proper composition of validation protocol and implementation of new methods into the practice, stability studies, laboratory methods investigation
- the obtained results publishing at the local and international level

Research Area & Excellence

High Performance Liquid Chromatography (HPLC) and Ultra High Performance Liquid Chromatography (UHPLC) are modern separation techniques, which found their important role in bioanalysis. Studies in clinical research usually contain many samples and new fast LC techniques in combination with simple pre-analysis could be the solution.

Key Research Equipment

- UFLC Nexera system equipped with the autosampler for microtitration plates and with UV-VIS detector, fluorescence detector and ultra-fast mass spectrometry LCMS 80-30 detector (Shimadzu, Japan)
- HPLC set Prominence LC20 with DAD and fluorescence detector (Shimadzu, Japan)
- Ultracentrifuge Optima Max-XP (Beckman Coulter, USA)
- Sample preparation equipment: manifolds for solid phase extraction (SPE) cartridges and SPE sets using microtitration plates, concentrators, hood, refrigerated centrifuges, two microcentrifuges, freezers at -86°C (long-term sample storage)

Main Projects

Analytes

- Vitamins (A, D, E, B) and its metabolites, neopterin, kynurenine, tryptophan, creatinine, 8-hydroxy-2-deoxyguanosine, 8-hydroxyguanosine, arginine, ornithine, citruline, vancomycine

Matrices

- Serum, plasma, whole blood, saliva, erythrocytes, cell lines, lipoproteins, urine, breast milk, wounds liquids, exudates, pleural effusions, amniotic fluid

Patients

- Suffering from various types of cancer, after surgeries, gerontological and gynecological patients, infants, patients with metabolic diseases etc.

Partnerships & Collaborations

International collaborations

- University of Coimbra – Portugal
- University of Porto – Portugal
- University of Tasmania – Australia
- University Las Palmas – Spain
- Cardiff University – Great Britain
- The University St. Andrews – Great Britain
- Stockholm University – Sweden

National Collaborations

- Palacký University and University Hospital – Olomouc
- Inst Hematol & Blood Transfus – Prague
- Contipro group Ltd. – Dolní Dobrouč
- St. Ann Hospital – Brno

Achievements

Publications

More than 200 publications in international journals with impact factors in the field of analytical chemistry and medicine

Cooperating Laboratory

Research laboratory at Department of Clinical Biochemistry and Diagnostic

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Zajímá vás tato expertíza?

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Naši experti a jejich pracoviště:

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