Laboratorul Multidisciplinar al Facultății de Farmacie

Multidisciplinary Laboratory of Faculty of Pharmacy

About us:

The Multidisciplinary Laboratory at the Faculty of Pharmacy is a facility where various scientific fields intersect, allowing for collaborative research and teaching. Our research focuses on the analysis of pharmaceutical substances, food matrices, and chiral analytes, employing cutting-edge techniques such as capillary electrophoresis and high-performance liquid chromatography for the separation and quantification of chiral and achiral impurities.

Team:

Professor Gabriel Hancu, PhD

Associate Professor Zoltán - István Szabó, PhD

Lecturer Blanka Székely-Szentmiklósi, PhD

pharmacist Adriana Modroiu, PhD student

pharmacist Daniela Lupu (Andrei), PhD student

pharmacist Alexandra Ionuța Uilăcan, PhD student

Services:

Qualitative and quantitative analysis of pharmaceutical substances, food matrices, and impurities, with a particular emphasis on chiral separations. Application of advanced design of experiment (DoE) strategies for the development of capillary electrophoresis (CE) techniques for precise and efficient pharmaceutical analysis.

Research activity:

analysis of pharmaceutical substances, analysis of food matrices, chiral analysis, chiral separation of pharmaceuticals, development of analytical methods using design of experiment strategies, applications of capillary electrophoresis in the analysis of pharmaceuticals, analysis of chiral and achiral impurities of pharmaceutical substances

1. Research Projects (fără granturi private):

1. Postdoctoral research grant PD 2021 - "Development of methods for the analysis of some chiral and achiral impurities in the dipeptidyl peptidase-4 inhibitor antidiabetic class", Project code: PN-III-P1-1.1-PD-2021-0117. Competition: Postdoctoral research projects (PD), funding contract no. PD 30/2022, contract duration 24 months - Lajos Attila Papp – project manager, Gabriel Hancu - mentor.

2. Internal grant for scientific research UMF Tîrgu Mures 2021 - research collectives - "Development of high-performance analytical methods for the screening of adulterants in intended food supplements weight loss and potency increase", financing contract no. 511/3/17.01.2022, contract duration 24 months, - Gabriel Hancu - project manager.

3. Internal grant for scientific research UMF Tîrgu Mures 2023 – individual grant – "Determination of pesticide residues by LC-MS technique", financing contract no. 164/18/10.01.2022, contract duration 12 months, - Daniela Lupu, PhD student - project manager.

4. Internal grant for scientific research UMF Tîrgu Mures 2021 – individual grant – "Stereoselective determination of some modern antidepressants and their active metabolites from biological matrices", financing contract no. 1027/8/17.12.2020, contract duration 12 months, - Adriana Modroiu, PhD student - project manager.

2. Publications (ISI - toate domeniile, ISI Proceedings - ST, Erih Plus, Ebsco - Științe umaniste):

1. Papp L.A. Szabó Z.I. Hancu G. Farczádi L. Mircia E. Comprehensive review on chiral stationary phases in single-column simultaneous chiral–achiral HPLC separation methods, Molecules, 2024, 29, 1346; doi: 10.3390/molecules29061346, eISSN 1420-3049, FI: 4,20, Q2.

2. Papp L.A. Hancu G. Szabó Z.I. Székely-Szentmiklósi B. Gáti T. Fiser B. Kraszni M. Tóth G. Chiral separation of vildagliptin by capillary electrophoresis – the study of enantiomeric complexation, Symmetry, 2024, 16: 17; doi: 10.3390/sym16010017, eISSN 2073-8994, FI: 2,20, Q1.

3. Papp L.A. Hancu G. Szabó Z.I. Simultaneous determination of enantiomeric and organic impurities of vildagliptin on a cellulose coloumn under reversed-phase conditions, Journal of Pharmaceutical and Biomedical Analysis, 2023, 234: 115945; doi: 10.1016/j.jpba.2023.115495, ISSSN 0731-7085, eISSN 1873-264X, FI: 3,40, Q2.

4. Cârcu-Dobrin M. Hancu G. Papp L.A. Fülöp I. Chiral discrimination of mexiletine enantiomers by capillary electrophoresis using cyclodextrins as chiral selectors and experimental design method optimization, Molecules, 2022, 27(17): 5603; doi: 10.3390/molecules27175603, eISSN 1420-3049, FI: 4,60, Q2.

5. Papp L.A. Krizbai S. Dobó M. Hancu G. Szabó Z.I. Tóth G. Determination of chiral impurity of naproxen in different pharmaceutical formulations using polysaccharide-based stationary phases in reversed-phased mode, Molecules, 2022, 27(11): 2986; doi: doi.org/10.3390/molecules27092986, eISSN 1420-3049, FI: 4,60, Q2.

6. Cârcu-Dobrin M. Hancu G. Papp L.A. Fülöp I. Kelemen H. Development of a chiral capillary electrophoresis method for the enantioseparation of verapamil using cyclodextrins as chiral selectors and experimental design optimization, Symmetry, 2021, 13(11): 2186; doi: 10.3390/sym13112186; eISSN 2073-8994, FI: 2,94, Q2.

7. Milan A. Hancu G. Lupu D. Budău M. Garaj V. Kelemen H. Venlafaxine chiral separation by capillary electrophoresis using cyclodextrin derivatives as chiral selector and experimental design method optimization. Symmetry, 2020, 12(5): 849; doi: 10.3390/sym12050849, eISSN 2073-8994, FI: 2,713, Q2.

8. Budău M. Hancu G. Muntean D.L. Papp L.A. Cârje A. Garaj V. Enantioseparation of citalopram enantiomers by capillary electrophoresis: method development through experimental design and computational modelling. Chirality, 2020, 32(8): 1119-1128; doi: 10.1002/chir.23255, ISSN 0899-0042, eISSN 1520-636X, FI: 2,437, Q2.

9. Cârcu-Dobrin M. Sabău AS. Hancu G. Gyéresi Á. Rusu A. Kelemen H. Papp LA. Cârje A. Chiral discrimination of amlodipine from pharmaceutical products using capillary electrophoresis. Brazilian Journal of Pharmaceutical Sciences, 2020, 56: e18259; doi: 10.1590/s2175-97902019000318259, ISSN 1984-8250, eISSN 2175-9790, FI: 1,321, Q4.

10. Papp LA. Hancu G. Gyéresi Á. Kelemen H. Szabó Z.I. Noszál B. Dubský P. Tóth G. Chiral separation of lansoprazole and rabeprazole by capillary electrophoresis using dual cyclodextrin systems. Electrophoresis, 2019, 40: 2799-2805; doi: 10.1002/elps.201900107, ISSN 0173-0835, eISSN 1522-2683, FI: 3,081, Q2.

3. Patents

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