



Ivana Mikulandra, PhD

Analytical chemist with a PhD in chemistry, combining a teaching and research background at the Faculty of Science with a strong industry background in pharmaceutical development in a GMP-regulated environment. Passionate about educating and mentoring students while advancing research in drug discovery and the development of bioactive compounds.

Details

Zagreb, Croatia, +38595 542 5856

mikulandra.ivana@gmail.com

Date / Place of birth

07.08.1993.

Šibenik, Croatia

Academic experience

Research Assistant, Analytical chemist at University of Zagreb, Faculty of Science, Department of Chemistry, Division of Analytical Chemistry, Zagreb

March 2019 — September 2022

Teaching assistant:

- Analytical Chemistry Laboratory II –laboratory exercises
- Spectroscopic Structural Analysis –seminars
- Responsibilities included supervision of laboratory work, mentoring students and evaluation of student performance.

Student Supervision:

- Supervisor of three diploma theses
- Mentoring students during experimental work, data analysis and thesis preparation
- One thesis awarded the Rector's Award

Research Projects:

- Analysis of impurities in drug substances and bioactive molecules, developing and implementing HPLC-SPE-NMR analytical methods (PLIVA)

2019 — 2021

- Macrozones, New Conjugates of Macrolide Antibiotics: Design, Synthesis and Interactions (IP-2018-01-8098, Croatian Science Foundation)

2019 – 2022

Research focused on the design, characterization and biological evaluation of novel azithromycin derivatives (macrozones)

Main activities:

- Design and development of novel macrolide derivatives
- Structure–activity relationship (SAR) studies
- Investigation of interactions with biological macromolecules
- Application of HPLC, LC-MS, NMR, fluorescence, and circular dichroism
- Interpretation of molecular modelling and docking results
- Structural characterization of bioactive compounds

Scientific output

Scientific papers:

1. I. Mikulandra, T. Jednačak, I. Habinovec, Macrolide Structure, Bioactivity and Interactions: a Mini Review – u postupku
2. T. Jednačak; V. Stepanić; I. Habinovec; I. Mikulandra; K. Smokrović; H. Čipčić Paljetak; M. Bukvić; J. Parlov Vuković; I. Grgičević; L. Divjak; K. Zangger; P. Novak, *ADMET & DMPK*, **14** (2026)
3. T. Jednačak; I. Mikulandra; K. Smokrović; A. Hloušek-Kasun; M. Kapustić; K. Delaš; I. Piantanida; M. Jurković; B. Bertoša; K. Zangger *et al.*, *Bioorg. Chem.*, **147** (2024), 107338
4. I. Habinovec; I. Mikulandra; P. Pranjić; S. Kazazić; H. Čipčić Paljetak; B. Bertoša; A. Barišić; M. Bukvić; P. Novak, *Antibiotics*, **11** (2022)
5. I. Mikulandra, T. Jednačak, B. Bertoša, J. Parlov Vuković, I. Kušec, P. Novak, *Materials*, **14** (2021), 5561.
6. I. Habinovec, I. Mikulandra, L. E. Sekula, J. Gašperov, S. Kazazić, P. Novak, *Molecules*, **26** (2021), 6316.
7. I. Grgičević, I. Mikulandra, M. Bukvić, M. Banjanac, V. Radovanovic, I. Habinovec, B. Bertoša, P. Novak, *Int. J. Antimicrob. Agents* **56**(5) (2020) 106147.
8. T. Jednačak, I. Mikulandra, P. Novak, *Int. J. Mol. Sci.* **21**(20) (2020) 7799.

9. J. P. Vuković, P. Novak, T. Jednačak, M. Kveštak, D. Kovačević, V. Smrečki, I. Mikulandra, M. D. Ibrahimpašić, S. Glanzer, K. Zangger, *J. Dispers. Sci. Technol.* **41** (2020) 179–187.
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Conference Activity

- 9 conference presentations (oral and poster presentations)
 - Active participation in national and international scientific meetings
 - Member of the organizing committee of several scientific conferences
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Science Outreach Activities

- **2014:** Open Day at the Department of Chemistry, Faculty of Science, University of Zagreb
 - **2018:** Open Day at the Department of Chemistry, Faculty of Science, University of Zagreb
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Industry experience

Senior Analyst, MS&T at PLIVA, TEVA API, Savski Marof, Croatia

September 2022 — Present

- Development, verification, validation and transfer of analytical methods for active pharmaceutical ingredients (APIs)
- Analytical testing and characterization of drug substances using HPLC, LC-MS, GC-MS, GC, NMR, IR, UV, KF and PSD techniques
- Impurity profiling and analysis of process-related and genotoxic impurities, including nitrosamines
- Work in a GMP-regulated pharmaceutical environment
- Evaluation and alignment of pharmacopoeial requirements (Ph. Eur., USP) with internal analytical specifications and requirements for different regulatory markets
- Analytical control of starting materials, intermediates and final APIs
- Preparation of technical responses to customer requests and analytical support during regulatory and quality-related activities
- Investigation of OOS/OOT results and implementation of CAPA measures and root cause analysis

- Preparation and review of analytical documentation, validation protocols and reports
 - Collaboration with Quality Control, Quality Assurance and Regulatory Affairs departments
 - Identification and characterization of new chemical entities and impurities
 - Continuous improvement of laboratory workflows and analytical procedures
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External Associate, PLIVA, TAPI, Analytical R&D, Zagreb

September 2017 — July 2018

- ICP laboratory (ICP-AES, ICP-MS techniques)
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Research Interests

- Design and development of bioactive small molecules and macrolide derivatives
 - Drug discovery and structure–activity relationship (SAR) studies
 - Interactions between small molecules and biological macromolecules
 - Biophysical and spectroscopic characterization of molecular interactions
 - Analytical chemistry in pharmaceutical research and development
 - Impurity profiling and characterization in drug substances
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Education

Doctor of Philosophy, University of Zagreb, Faculty of Science, Department of Chemistry, Zagreb

October 2019 — June 2022

Analytical chemistry

- PhD Thesis: Preparation, Characterization and Biological Activity of Macrozones, New Azithromycin Derivatives

mag. chem., University of Zagreb, Faculty of Science, Department of Chemistry, Zagreb

September 2016 — September 2018

Analytical chemistry and Organic chemistry

univ. bacc. chem., University of Zagreb, Faculty of Science, Department of Chemistry, Zagreb

September 2012 — September 2016

Courses

Advanced NMR methods, Bruker, Zürich, Switzerland

October 2021

Skills

Analytical and Research Techniques

- Chromatography: HPLC, LC-MS, GC-MS, GC
- Spectroscopy: NMR, Fluorescence, Circular Dichroism, UV-Vis, IR
- Inorganic/Elemental Analysis: ICP-AES, ICP-MS
- Other: Karl Fischer titration, Particle Size Distribution (PSD)

Professional/Soft Skills:

- Teaching and mentoring students
 - Academic research and project management
 - Critical thinking and problem-solving
 - Collaboration and teamwork in multidisciplinary and multinational pharmaceutical environments
 - Experience working in GMP-regulated laboratories
 - Scientific communication and presentation
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Languages

- Croatian—native
- English—fluent
- Italian — basic