



Advanced skill course (hybrid) Secondary Metabolites: From Production to Utilization – Tools, Techniques, and Applications

Organizers: University of Basilicata, Department of Health Sciences;

Co-organizers: University of Sarajevo, Faculty of Science; University of Naples “Federico II”, Department of Pharmacy

Schedule:

Virtual session: 22nd – 23rd January

Day 1: 10:00-11:00 | Day 2: 10:00-11:00

In presence session: 2nd-4th February

Day 1: 10:00-16:00 | Day 2: 10:00-21:00 | Day 3: 10:00-16:00

Target audience:

PhD students or postdoctoral researchers in Biology, Biotechnology, Pharmacy, Agricultural Sciences, or related disciplines.

Objectives:

- Introduce fundamental and advanced concepts of secondary metabolite biosynthesis
- Demonstrate *in vitro* culture techniques for enhancing metabolite production
- Explore strategies for metabolite identification, quantification, and application
- Foster interdisciplinary skills and hands-on experience in the lab
- Stimulate regional networking and knowledge exchange

Expected Outcomes:

- Strengthened knowledge on secondary metabolite production
- Skills in *in vitro* culture and basic phytochemical techniques
- Awareness of translational applications of plant-derived compounds
- Workshop certificate and materials provided to participants

Contacts:

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SULIEIA website: <https://sulieia.it/>

PROGRAMME

Virtual sessions

Link: <https://meet.google.com/fue-hkcz-joh>

Thursday 22nd January 2026 - Introduction to Secondary Metabolites

10.00: Welcome and course overview

SULIEIA Team

10.15: Fundamentals and Relevance in Plant Science

Prof. dr. Saida Ibragić, University of Sarajevo

Wednesday 23rd January 2026 - Introduction to analysis of Secondary Metabolites

10.00: Methods for Secondary metabolite analysis and its use in plant stress research

Dr. Sanja Čavar Zeljković, Palacký University Olomouc

10.30: LC-MS analyses of plant metabolome

Dr. Germana Esposito, University of Naples Federico II

In-presence sessions

Amfiteatar three physis, University of Sarajevo, Faculty of Science,

[Zmaja od Bosne 33-35, Sarajevo, Bosnia and Herzegovina](#)

Monday 2nd February 2026 – Theoretical and Practical Foundation

09.00: Registration of participants

10.00: Opening session

- Welcome and presentation of SULIEIA Project

Prof. Valeria Costantino, University of Naples Federico II

- “Photography in Research”, an innovative course in the frame of SULIEIA

Salvatore Esposito, University of Naples Federico II

-BioFarmLab: Laboratory of Physiological and Pharmaceutical Biology

Prof. Luigi Milella, University of Basilicata

10.30: Session 1: Focus on Secondary Metabolites

- Importance in traditional medicine

Doc.dr Armin Macanović, University of Sarajevo, Faculty of Science

- Importance in pharmaceutical, nutraceutical, and agricultural sectors

Prof. dr Kemal Durić, University of Sarajevo, Faculty of Pharmacy

11.30 – 12.00: Coffee break

12.00: Session 2: Biosynthetic Pathways

- Phenolics, alkaloids, terpenoids – synthesis and regulation

Dr. Daniela Russo, University of Basilicata

- Role in plant physiology and stress response

Prof. dr. Saida Ibragić, University of Sarajevo, Faculty of Science

13.00 – 14.00: Lunch break

ROOM: Department for Biology

14.00: Session 3: *In vitro* Culture as a Tool

- Callus induction, suspension cultures, elicitation strategies

Prof. dr. Erna Karalija, University of Sarajevo, Faculty of Science

14.30 – 16.00: Session 4: Practical Laboratory Work

- Sterile techniques, media preparation, explant selection

- Initiation of callus and root cultures

Prof. dr. Erna Karalija, University of Sarajevo, Faculty of Science

Prof. dr. Sabina Dahija, University of Sarajevo, Faculty of Science

Arnela Demir, MA, University of Sarajevo, Faculty of Science

Tuesday 3rd February 2026 – Focus on Analytical and Applied Perspectives

10.00: Session 5: Extraction and Profiling of Metabolites

- Overview of analytical techniques: TLC, HPLC, UV-Vis, GC-MS

Prof. dr. Saida Ibragić, University of Sarajevo, Faculty of Science

- Hands-on demonstration: sample preparation, extraction

Prof. dr. Saida Ibragić, University of Sarajevo, Faculty of Science

11.00: Session 6: Voices of young researchers

- Presentations by participants

12.30 – 14.00: Lunch break

15.00: Visit of Sarajevo

19.00: Traditional dinner

Wednesday 4th February 2026 – Translational perspectives and final remarks

10.00: Session 7: From Lab to Industry

- Utilisation examples in agriculture

Prof. dr. Vasileios Fotopoulos, Cyprus University of Technology

- Bioactivity testing

Prof. dr. Anja Haverić, University of Sarajevo, Institute for Genetic Engineering and Biotechnology, INGEB

- Insight into the Interaction of Olive Oil's Key Metabolites and Monoamine Oxidase B: Neuroprotective Role of Phenolic Compounds

Nikolay T. Tzvetkov, Institute of Molecular Biology "Rumen Tsanev"

11.00 – 11.30: Coffee break

- *In vivo* models for evaluating metabolite efficacy

Dr. Ludovica Lela, University of Basilicata

- Optimisation of extraction processes and advanced metabolite delivery systems

Dr. Immacolata Faraone, University of Basilicata

- Utilisation of secondary metabolites - examples in pharmaceuticals and cosmetics

Prof. dr. Alisa Elezović, University of Sarajevo, Faculty of Pharmacy

12.30 – 14.00: Lunch break

14.30: Session 8: ASC Evaluation

- Interactive closing challenge

Dr. Vittorio Carlucci, University of Basilicata

Dr. Nadia Benedetto, University of Basilicata

15.30: Certificate ceremony and official closing