



Call for Incentive Research Collaboration 2024

Project VALOR-LIGHT

Valorization of Light-Activated Medicinal Plant By-Products for
Novel Biotechnologies and Edible Crop Production

AURORA



Co-funded by
the European Union



PROJECT IDENTIFICATION

Project title:

Valorization of Light-Activated Medicinal Plant By-Products for Novel Biotechnologies and Edible Crop Production

Project acronym: VALOR-LIGHT

COORDINATOR



Principal researchers:

PD Dr. Bianka Siewert and Prof. Simone Moser

University:

University of Innsbruck
Pharmacy/Pharmacognosy

Email: bianka.siewert@uibk.ac.at /
simone.moser@uibk.ac.at

PARTNERS

Principal researcher:

Jun. Prof Anzhela Galstyan

University:

University of Duisburg-Essen
Faculty of Chemistry
Center for Nanointegration Duisburg-Essen
Center for Water and Environmental Research
Center of Medical Biotechnology

Principal researcher:

Dr. Lukáš Spíchal

University:

Palacký University Olomouc
Czech Advanced Technology and Research Institute
(CATRIN)/Research Division CATRIN-CRH

Principal researcher:

Prof. Sheridan Lois Woo

University:

University of Naples Federico II
Department of Pharmacy

Principal researcher:

RNDr. Veronika Huntošová, PhD.

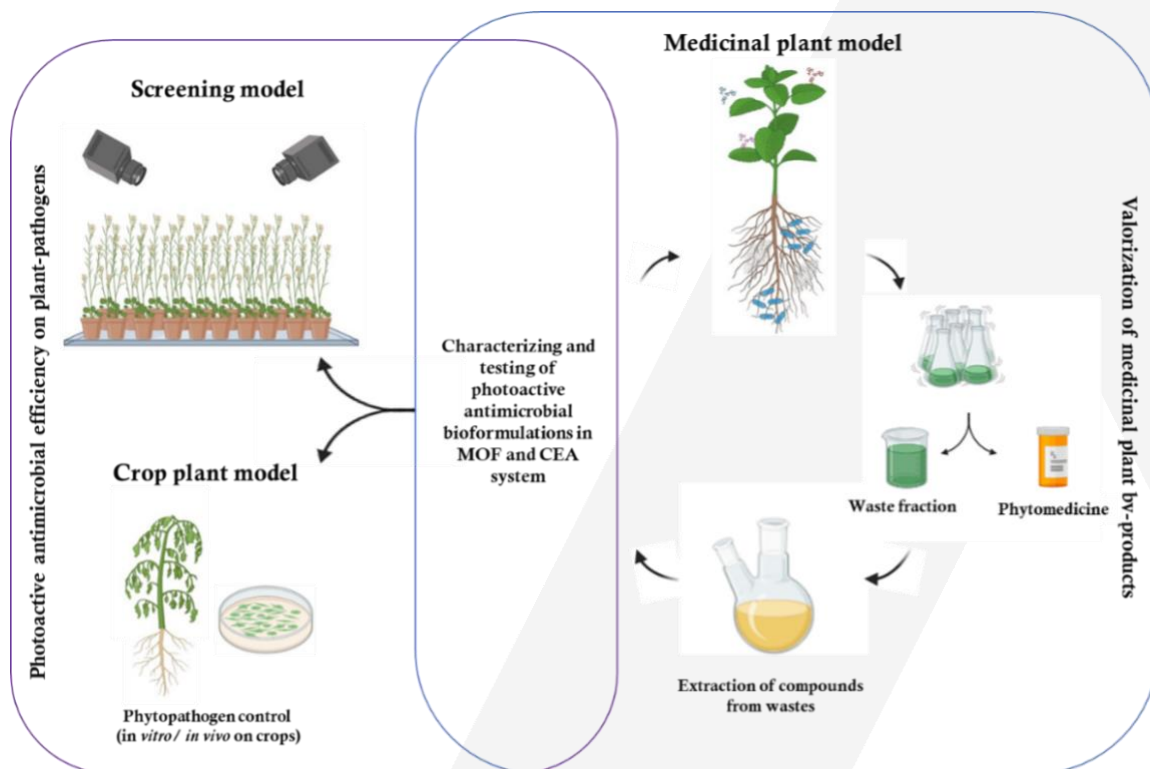
University:

Pavol Jozef Safarik University in Kosice
Center for Interdisciplinary Biosciences

OBJECTIVE

The use of fertilizers and pesticides in the cultivation of medicinal plants can have unintended adverse effects on herbal products and extracts. Eco-friendly formulations that safeguard consumer health are urgently needed, as underscored by existing standards for Good Agricultural Practices and increasing number of antimicrobial resistant pathogens, which are in the focus of the One-Health initiative. Moreover, the cultivation of medicinal plants produces a large amount of plant biomass waste. VALOR-LIGHT wants to tackle these problems by offering organic, self-sustaining agricultural methods that enhance product quality.

ILLUSTRATION OF THE PROJECT



SOCIAL IMPACTS AND TARGETED SDG

To attain climate neutrality and circularity, it is imperative to develop new circular strategies that effectively address future challenges while prioritizing safety by design. VALOR-LIGHT aims to explore the implementation of decentralized modular water treatment systems powered by solar energy. Our focus will be on assessing the feasibility of utilizing predominantly biobased nanomaterials, such as plant fibers, agricultural waste, algae, etc., and leveraging state-of-the-art sustainable manufacturing techniques to fabricate these systems. VALOR-LIGHT will make impact as it aims for enhanced medicinal plant production by using innovative technologies to recuperate phytochemicals from their by-products via: (1) plant-specific beneficial microbes to stimulate production, (2) complementing light-activated compounds obtained from recycled plant wastes, and (3) nanomaterials encapsulating MOFs (Metal-Organic Frameworks) to develop bio-based products for plant growth and microorganism control addressing SDG3 (good health and well-being) and SDG6 (clean water and sanitation).

AURORA ADDED VALUE

VALOR-LIGHT involves four of the eight partners within the AURORA Alliance and offers significant onboarding potential for the associated partner UPJS. The involved entities possess highly complementary expertise and scientific interests spanning biology, chemistry, agriculture, biophysics, plant physiology, biotechnology, and pharmacognosy. Already existing collaborative efforts, predominantly bilateral up to now, will be expanded through this project, offering the basis for forming a network with a high potential of securing further funding. The seed funding provided will facilitate the integration of all partners and support the establishment of a robust and competitive consortium through the proof-of-concept project.