

SNAB - Bioactive Natural Substances



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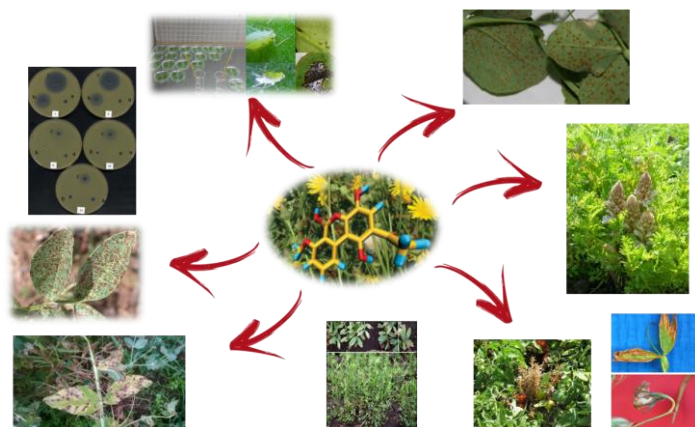
Research: At SNAB Lab the research activity is focused on organic chemistry, spectroscopy and hemisynthesis of bioactive metabolites produced by microorganisms and plants. In particular, the isolation and structural determination of low molecular weight compounds from natural sources are carried out using chromatographic techniques and spectroscopic and spectrometric methods.

Main research topics:

- 1) Isolation and characterization of bioactive natural compounds for the development of eco-sustainable biopesticides.
- 2) Research of bioactive natural substances for the cosmetic and pharmaceutical industry.

1) Isolation and characterization of bioactive natural compounds for the development of eco-sustainable biopesticides.

Pests management is a major concern in agriculture and it is still strongly dependent on the use of synthetic pesticides, which determined, in the last fifty years, the accumulation of the toxins in the ecosystem and the rapidly evolving resistance. The natural substances produced by plants and microorganisms is an important perspective for crop protection research. Natural products have had a substantial impact on pest control by providing inspiration/models for synthetic pesticides and effective pest control agents with new mode of actions. Our research activity is focused on the extraction, purification and chemical characterization of bioactive compounds produced by plants and microorganisms using chromatographic and spectroscopic methods. The overall aim is the selection of bioactive natural products for development of new eco-friendly biopesticides (bioherbicides, insecticides, fungicides and bactericides). Structure-activity correlation and mode of actions studies as well as suitable formulations are also performed to increase the efficacy of the isolated compounds for field application.

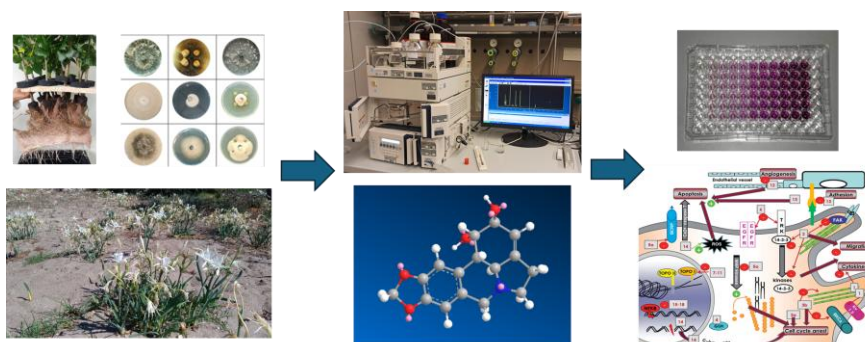


Main collaborations:

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- Claudio Valverde**, National University of Quilmes, Buenos Aires, Argentina.
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- Susan Meyer**, USDA-FS, Provo, Utah, USA.
- Sandra Savocchia**, Charles Sturt University, Wagga Wagga, Australia.
- Mustafa Bani**, Higher National School of Biotechnology Taoufik Khaznadar, Constantine, Algeria.
- Francisco Macias**, **Antonio Cala**, and **Jesus Zorrilla**, University of Cádiz, Cádiz, Spain.
- Gerardo Puopolo**, University of Trento, Trento, Italy.
- Antonia Carlucci**, University of Foggia, Foggia, Italy.
- Santa Olga Cacciola**, University of Catania, Catania, Italy.

2) Research of bioactive natural substances for the pharmaceutical and cosmetic industry.

Natural products represent an efficient solution in discovering and developing new drugs to overcome antimicrobial resistance and treat biofilm-related infections. In fact, they play a leading role in drug discovery resulting in a large number of clinically useful ingredients. Moreover, the preservation of skin microbiota, a living protective barrier actively participating in the health of the skin, represents a new challenge for cosmetic research. Thus, the investigation of bioactive extracts and metabolites able of protecting or maintaining the balance of skin microbiota is increasingly being explored. Our research activity is focused on the isolation and chemical characterization of bioactive compounds produced by microorganisms and plants to find natural substances with new modes of action for development of pharmaceutical and cosmetic agents.



Main collaborations:

- **Isabel Desgagne-Penix**, University of Quebec in Trois-Rivières, Trois-Rivières, Canada.
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