

ECO-COMPATIBLE SYSTEMS FOR THE RELEASE OF NATURAL MOLECULES IN ORGANIC AGRICULTURE

The biological defence from parasites of bacterial nature of the crops can be faced and solved through innovative strategies that could induce a greater protection of the environment and a sustainable and eco-compatible agriculture. Among the different natural substances (animals, plants) known, only a few have been properly investigated about a possible use in the antiparasitic field and therefore their potential can be enormous. The high quality in plant products is linked to the development of cultivation techniques with a low environmental impact able to meet the hygiene requirements sought in food. With this intent, micro- and / or nanoparticulate systems based on biodegradable polymers and / or lipidic matrices containing natural molecules with antimicrobial or antioxidant activity (i.e. gallic acid, quercetin, resveratrol, ellagic acid, eugenol ...) will be produced and characterized.

GOALS

- Production and morphological-dimensional characterization of bioformulates containing model molecules
- Evaluation of the encapsulation yield
- In vitro determination of the release kinetics of the bioencapsulated molecules
- Chemical-physical stability studies of the systems obtained
- In vitro / in vivo studies of antimicrobial activity.

INSTRUMENTS AND METHODS

Different production and instrumental techniques will be used, such as HPLC chromatography, photo-correlation spectroscopy (PCS), Sedimentation Field Flow Fractionation (SDFFF), low-angle X-ray spectroscopy (SAXS), optical and electronic microscopy (SEM, TEM, cryo -TEM)

SUBJECTS

Pharmaceutical technology, analytical chemistry, physical chemistry, organic and inorganic chemistry

WORKING GROUP

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COLLABORATIONS

The research group collaborates within the Department of Chemical and Pharmaceutical Sciences (Prof. Gavioli, Prof. Contado), at the University of Ferrara (Department of Life Sciences and Biotechnologies: Prof. Sacchetti, Dott.ssa Guerrini, Prof. Valacchi) , with National Universities (Università della Tuscia, Viterbo, Department of Science and Technology for Agriculture, Forests, Nature and Energy, Marche Polytechnic University, Ancona, Department of Life and Environment Sciences, University of Catania, Department of Pharmacy) and international (Facultade de Farmacia, Universidade Estadual de Maringà, Paranà, Brasil, Institut Galien Paris-South Faculté de Pharmacie, Université Paris-Sud, France; Macromolecular Chemistry II, University of Bayreuth, Germany)