HOSTING GROUPS FOR INTERNATIONAL MOBILITY

Pharmaceutical Technology Lab

The research is mainly focused on the following fields:

- Development of antioxidant high value-added excipients by green extraction of polyphenols from waste bentonites coming from must fining; development and characterization of cosmetics, pharmaceuticals and medical devices loaded with the extracts, specifically designed for oromucosal applications (e.g., oral thermosensitive spray, buccal film, oromucosal powder and tablets) and intended for daily oral care and/or as preventive or adjuvant strategies to manage oral oxidative-stress related pathologies
- Evaluation of skin and oral mucosae (buccal and sublingual) permeability of actives, contaminants and natural compounds by ex vivo studies conducted using Franz vertical diffusion cells and porcine tissues; evaluation of flux, permeability constant, entrapment into the tissue and accumulation factor
- Development and characterization of Drug Delivery Systems (e.g., matrix systems, tablets, films, spray-dried powders, polymeric and lipid nano- and microparticles, nano- and micro-composites) for oral, buccal, or sublingual administration of drugs and/or natural molecules, specifically engineered to achieve either systemic or topical effects
- Evaluation of actives release kinetic from the Drug Delivery Systems and curve-fitting studies: zero and first order, Higuchi, Korsmeyer-Peppas, Baker-Lonsdale
- Pre-formulation studies, development and characterization of mouthwashes and nasal irrigations intended for detoxification of oral and nasal mucosae from polycyclic aromatic hydrocarbons (PAH)



Team members: Prof. Viviana De Caro, PhD Dr. Giulia Di Prima, PhD Cecilia La Manta (PhD Student)

Selected publications:

- Hybrid Nanocomposite Mini-Tablet to Be Applied into the Post-Extraction Socket: Matching the Potentialities of Resveratrol-Loaded Lipid Nanoparticles and Hydroxyapatite to Promote Alveolar Wound Healing, Pharmaceutics, 17, 112 (2025) (https://doi.org/10.3390/pharmaceutics17010112)
- Characterization and Safety Assessment of a Novel Antioxidant Excipient from Sustainable Recovery of Grape Processing Waste Bentonite Designed to Develop a Thermosensitive Buccal Spray for Oral Cavity Wellness, Pharmaceutics, 16, 1612 (2024) (https://doi.org/10.3390/pharmaceutics16121612)

- 3. Improvement of resveratrol permeation through sublingual mucosa: Chemical permeation enhancers versus spray drying technique to obtain fast-disintegrating sublingual mini-tablets, **Pharmaceutics**, 13, 1370 (2021) (https://doi.org/10.3390/pharmaceutics13091370)
- 4. Solid and semisolid innovative formulations containing miconazole-loaded solid lipid microparticles to promote drug entrapment into the buccal mucosa, **Pharmaceutics**, 13, 1361 (2021) (https://doi.org/10.3390/pharmaceutics13091361)
- 5. Mucoadhesive Polymeric Films to Enhance Barbaloin Penetration Into Buccal Mucosa: a Novel Approach to Chemoprevention, AAPS PharmSciTech, 20, 18 (2019) (https://doi.org/10.1208/s12249-018-1202-1)