PRODUCTION AND CHARACTERIZATION OF FORMULATIONS FOR TOPICAL USE FOR THE TRASNPORT OF MOLECULES OF PLANT ORIGIN

The skin and mucous membranes are subject to many disorders and pathological conditions. Nature offers a wide range of molecules with antioxidant activity able to neutralize, at least in part, the formation of free radicals and therefore to counteract the phenomena of cellular aging. Since synthetic drugs for the treatment of skin diseases can induce resistance, it is particularly interesting to use compounds of plant origin, transporting them in pharmaceutical forms capable of controlling their release and absorption. For this purpose, different types of bioadhesive gels (based on poloxamers, glyceryl monoolein or lecithin) for the transport of molecules with antioxidant activity will be produced.

GOALS

- Production and characterization of thermoreversible gels based on poloxamers, cubic crystalline phases based on glycerylmonoolein and organisms based on lecithin.
- Inclusion of molecules of plant origin (eg gallic acid and caffeic acid) and study of the yields of incorporation.
- Study of viscosity, splamability and bioadhesiveness of the gels obtained.
- Determination of diffusion kinetics by the use of Franz cells associated with natural or synthetic membranes.
- Chemical-physical stability studies of the systems obtained.
- Determination of the eventual healing power of the gels produced, through studies of wound healing on cell lines of keratinocytes

INSTRUMENTS AND METHODS

To achieve the objectives of this research different instrumental techniques will be used, such as HPLC chromatographic analysis and gas chromatography, low-angle x-ray spectroscopic analysis (SAXS), polarized light microscopy and rotational rheological analysis with cone-flat geometry.

SUBJECTS

Pharmaceutical technology, Food chemistry, Analytical chemistry, Biology, Physics.

WORKING GROUP

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COLLABORATIONS

The research group makes use of collaborations within the Department and the University (Prof. Valacchi), and collaborations with national Universities (Department of Life and Environmental Sciences, Università Politecnica delle Marche, Department of Pharmaceutical Sciences, University of Catania) and international Universities (Institut Galien Paris-South Faculty of Pharmacy, Université Paris-Sud, France; Macromolecular Chemistry II, University of Bayreuth, Germany)