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Challenges and Strategies in the Formulation of Natural Bioactives from Plant Sources

The development of formulations based on bioactive compounds derived from plant extracts or powders of leaves, bark, or roots is increasingly employed to enhance the value of natural products. These bioactives, including polyphenols, flavonoids, terpenes, alkaloids, and saponins, exhibit a wide range of antioxidant, anti-inflammatory, and antimicrobial activities, but often present challenges such as poor solubility, instability, and low bioavailability. Depending on their physicochemical properties, stability, and intended route of administration, various dosage forms can be designed to preserve their functionality and optimize therapeutic efficacy. This presentation outlines the main formulation strategies adopted to overcome these limitations, with an emphasis on the selection of excipients, stabilization approaches, and delivery systems aimed at improving the performance and reproducibility of plant-derived bioactive formulations.

Keywords

nanoparticles, liposomes, Hard capsules, soft capsules, creams, gels

Biography

Dr. G. Degobert is an Associate Professor in Pharmaceutical Technology at the University of Lyon 1. She earned her Ph.D. in Pharmaceutical Technology from the University of Paris XI. Her research focuses on the design and development of innovative particulate delivery systems based on biodegradable polymers and native or modified cyclodextrins for drug delivery applications. She is also an expert in formulation and stabilization of advanced drug delivery systems, particularly through drying technologies such as freeze-drying and spray-drying. With over 20 years of experience in lyophilization processes, she has been continuously involved in collaborative projects with pharmaceutical companies, contributing her expertise to the development and optimization of novel formulation strategies.