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Nanotechnology design & development of antimicrobial ingredients for deep skin acne treatment

Camila Folle, Ana Cristina Calpena Campmany, Maria Luisa Garcia Lopez and **Ana Maria Marques Villavecchia**
University of Barcelona, Spain

Antimicrobial nanotechnology show promising activity for topical delivery on dermatologic acne treatment due to its potential of being mainly retained in the deeper layers of the skin, where acne develops. The acne evolution occurs by excessive sebum production at the hair follicle proximities, which leads to *Propionibacterium acnes* proliferation and a resulting inflammation. It is relevant that nanotechnology has several advantages such as, small particle diameter to penetrate inside skin tissues, sustained drug withdrawn and lower doses required for its efficacy. Moreover, the skin fat tissues are likely to behave as a deep hosting compartment for the nanoparticles. This research relies primarily on optimization and characterization of the desired formulation, then determining the efficacy of the drug nanosystem against *P. acne* by its minimal inhibitory concentration (MIC). Thus, *in vitro* release profiles of the drug nanoparticles and the free drug are compared under kinetic models, determining its biopharmaceutical transmembrane behavior using Franz diffusion cell. The skin permeability parameters are studied in ex vivo models, determining the amounts of drug retained inside the skin, using skin extraction and tape stripping techniques. *P. acnes* is also hosted by deep skin tissues, therefore, the amount of drug found retained in the deeper layers of the skin is then calculated towards the MIC value of the antimicrobial agent and further classified its efficiency for acne treatment. Nevertheless, this advanced methodology exempts the use of animal test, being suitable for cosmetic industries.

Biography

Camila Folle was graduated in Pharmaceutical Science from London Metropolitan University in 2011 and has completed Masters degree in Cosmetics & Dermopharmacy by CESIF Barcelona, including a year Internship at ISDIN S.A., and recently completed second Master's degree in Nanoscience & Nanotechnology (2015) from the University of Barcelona. Presently, she is researching dermatological active ingredients applied nanotechnology.

fol.camil@gmail.com

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