

Lipid Nanoparticle technology for formulation of cosmetics

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Lipid nanoparticles with a solid matrix can be composed either from a solid lipid (SLN), or from a blend of a solid lipid with a liquid lipid (oil) (NLC). Both NLC and SLN have many features that are advantageous for dermal application. They are colloidal carriers providing controlled release profiles for many substances. They are composed of physiological and biodegradable lipids exhibiting low toxicity and low cytotoxicity, rendering them an excellent tolerability. The small size ensures a close contact to the *stratum corneum* and can increase the amount of drug penetrated into the skin. Due to the occlusive properties of lipid nanoparticles, an increased skin hydration effect is also possible. Furthermore, lipid nanoparticles are able to enhance the chemical stability of compounds sensitive to light, oxidation and hydrolysis. Nanostructured Lipid Carriers (NLC) encapsulating a ternary mixture of sunscreens viz. Parsol MCX, Uvinul T 150, Tinosorb S were formulated with the aim of enhancing the UV blocking efficacy of the mixture. This NLC dispersion was evaluated for particle size analysis by photon correlation spectroscopy (PCS), and sunscreen efficacy testing employing beta carotene solution in comparison to nanoemulsion. Results indicate enhanced UV blocking efficacy compared to the conventional nanoemulsion formulation.

Biography

Medha Joshi, Ph.D. in pharmaceuticals from Institute of Chemical Technology, Mumbai, India. She has post doctoral experience for more than four years from Free University of Berlin, Germany and Utrecht University, The Netherlands. She has worked for Ocean Nanotech, AR for production and development of lipid based nanoparticle systems for diagnostics purpose. Currently she is Assistant Professor in the Pharmaceutical Sciences department at Midwestern University's Chicago College of Pharmacy, IL. She has expertise in lipid based drug delivery systems including micro emulsions, liposome technology and targeted drug delivery. She holds intramural grants and a grant from Alzheimer's disease foundation to support her research. Apart from research, she is the course director and instructor for pharmaceuticals course of the Doctor of Pharmacy curriculum at Chicago College of Pharmacy. She has been awarded for the best poster presentation couple of times at drug delivery symposiums and conferences. She is the reviewer of many international drug delivery journals. She holds more than 15 publications in top drug delivery international journals. She is the member of various drug delivery and pharmaceutical organizations and associations.

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