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Carrier-mediated dermal delivery for prevention or treatment of skin disorders

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Abstract

Dermal delivery after topical application of actives has gained increased interest and development due to the lower risk of systemic side effects. In particular, for antioxidants skin delivery, the search for a new delivery system that, simultaneously, preserves the antioxidant stability and enhances its deposition on the skin, opened a new chapter in drug delivery design. Since epidermal lipids are predominantly found within the penetration skin barrier (*stratum corneum*), topically applied lipid nanocarriers, allowing lipid interaction between the skin outermost layer and the carrier, appear promising. Nanocarriers, such as liposomes and cyclodextrins, have successfully enhanced the clinical efficiency of several drugs. More recently, specially designed carriers have claimed the ability to cross the skin intact and deliver the loaded drugs into the systemic circulation, being at the same time responsible for the percutaneous absorption of the drug within the skin. These carriers were firstly introduced as transfersomes®, and this denomination as well as deformable vesicles, were used to differentiate them from the conventional liposomes. The highly flexible membranes are the result of combining into a single structure phospholipids and an edge-active component in order to give to transfersomes the necessary deformability to move spontaneously into the skin, delivering the associated drugs dermal or systemically. Cyclodextrins are cyclic water-soluble, non-reducing and macrocycle carbohydrate polymers. Some derivatives, such as methylated-β-cyclodextrins are usually used for topical formulations.

The aim of the research work was to use cyclodextrins and transfersomes, or their combination, as delivery systems for tretinoin and lycopene, and further investigate the resulting systems behavior in *in vitro* and *in vivo* conditions.

Biography

Ascenso has completed her Master (with final classification: Very Good), and will complete her PhD at July 22, 2013 from Lisbon University. She is a Professor of Pharmaceutics in Lisbon University School of Pharmacy. She has published 7 papers in reputed international journals, 15 posters (including one prizewinner), and participated in 7 national and international oral communications. She has been invited to review 9 manuscripts in reputed international journals.