



Improving the topical delivery of antifungals by using nano-vesicular drug delivery systems: the case of novasomes

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Abstract

Topical delivery of antifungal is widely used for treating superficial and deep skin mycosis. However, conventional formulations have some limitations, including low skin penetration, short retention times at the site of application, and reduced therapeutic efficacy, as well as topical adverse effects such as irritation, erythema, burning, itching, sensation, stinging, and dryness at the application site. Furthermore, prolonged application may lead to contact dermatitis, scaling, or peeling. To overcome these limitations, novel drug delivery systems like novasomes have gained increasing attention. Novasomes are multilamellar nano-vesicular systems that consist of non-ionic surfactants, free fatty acid, in addition to cholesterol as a membrane stabilizing agent. The presence of free fatty acids (FFAs), such as stearic acid or oleic acid, in their structure acts as a permeability enhancer agent, making the novasomes more flexible and tissue permeation compared to the older niosomes or liposomes. Furthermore, the novasomes have more drug loading and stability in contrast to other nanovesicles. These characteristics make the novasomes a target for improving the topical and transdermal delivery of antifungals. When applied topically, the novasomes can interact with the stratum corneum, enhancing the skin permeation and improving the topical delivery. Several studies demonstrate that the novasomes have a prolog drug release profile, a higher cumulative drug release percent compared to conventional creams or gels. Additionally, the novasomes are formulated from biocompatible and skin-friendly components. Overall, the novosomal drug delivery systems represent a promising strategy for topical antifungals, offering safe, effective, and more patient adherence.

Keywords. Skin mycosis, Topical antifungals, Novasomes, Skin permeation enhancers, and dermal targeting.