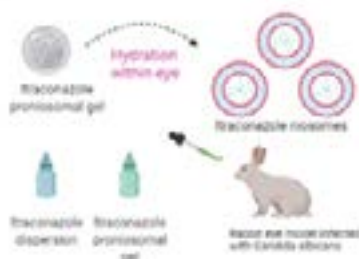


Ocular Delivery of Itraconazole-loaded Proniosomal Gels for Effective Control of Ocular Keratitis

Nermin E. Eleraky*, Ayat Allam, Hesham M. Tawfeek, Mohamed A. El-Mokhtar
Assiut University, Egypt

Fungal keratitis is the prime cause of ophthalmic mycosis that leads to corneal scarring and vision loss. The unique defensive mechanisms of the eye result in inadequate corneal permeability. Besides, frequent administration of conventional dosage forms may lead to patient non-compliance and failure of treatment. The current study focuses on the development of proniosomal gel formulation as a drug carrier to enhance the ocular availability and antimycotic activity of itraconazole for the management of keratitis. Proniosomal gels were prepared using the coacervation phase separation method according to a 3² factorial design. The formed gels were homogenous, mucoadhesive, and spreadable. After hydration of proniosomal gels, the resulting niosomes were evaluated in terms of vesicle size, size distribution, surface charge, and encapsulation efficiency. The optimized proniosomal gel comprised of Span® 40 (1800 mg), lecithin (900 mg), and cholesterol (280.7 mg), displayed particle size of 289.567 ± 5.1 nm, PDI of 0.5, the zeta potential of -22.033 ± 1.98 mV, and encapsulation efficiency of $96.9 \pm 1.5\%$. The *in vitro* antimycotic study revealed a significant increase in the zone of inhibition of *Candida albicans* culture for the optimized proniosomal gel relative to free itraconazole dispersion. The *in vivo* antifungal activity was evaluated using an animal model of rabbits' eyes infected with *Candida albicans*. Proniosomal gel-treated animals; showed a significant reduction in *Candida* counts at the days 8 and 12 post-infection compared to free drug dispersion. Hence, the developed proniosomal gel system might provide a promising carrier for ophthalmic drug delivery and improved management of ocular keratitis.



Biography

Nermin E. Eleraky has completed her PhD at the age of 33 years from Cincinnati University and postdoctoral studies from Assiut University School of Pharmacy. She is a lecturer in Faculty of Pharmacy, Assiut University, Egypt. She has published 12 papers in reputed journals and has been serving as a reviewer in respective journals.