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पेटेंट कार्यालय का एक प्रकाशन
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(54) Title of the invention : DESIGN AND CHARACTERIZATION OF AMOROLFINE-LOADED NANOEMULSIONS FOR TRANSUNGUAL PENETRATION

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(57) Abstract :

The present invention relates to a nanoemulsion-based formulation containing amorolfine hydrochloride (0.5 percent w/w) for enhanced transungual delivery in onychomycosis treatment. The nanoemulsion comprises isopropyl myristate as oil phase, Tween 80 as surfactant, and Transcutol P as cosurfactant. The optimized formulation (NE5) exhibits a mean droplet size of 68.4 nanometers, polydispersity index of 0.182, zeta potential of minus 24.6 millivolts, and encapsulation efficiency of 93.7 percent. Ex vivo permeation studies show a 3.1-fold increase in steady-state drug flux compared to marketed amorolfine nail lacquer. In vitro antifungal studies demonstrate strong activity against *Trichophyton rubrum* and *Trichophyton mentagrophytes*, with minimum inhibitory concentrations of 0.125 and 0.0625 micrograms per milliliter, respectively. Prepared by low-energy spontaneous emulsification, the formulation exhibits long-term stability and overcomes poor nail plate penetration, providing an improved topical antifungal therapy.

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