

Formulation and Evaluation of Topical Antifungal Emulgel

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Abstract

The present study was undertaken with an objective to provide more penetration in to the skin with the use of hydrophobic drug when applied topically. Econazole nitrate is an antifungal compound, used to treat fungal infections such as athlete's foot, ringworm, candidiasis, serious systemic infections such as cryptococcal meningitis, and others. A 3² full factorial design was applied to investigate combined effect of two independent formulation variables (factors) as concentration of polymer and concentration of emulsifier on dependent variables (responses) such as spreadability and % drug release. All the emulgel formulations were evaluated for appearance, pH, spreadability, drug content, *in vitro* drug release, zeta potential, viscosity, microbiological assay, particle size and size distribution, skin irritation and stability. The validation of the generated mathematical model for each response was checked by preparing three extra design check point batches and closeness of actual and predicted results validated the design. The drug release kinetics followed zero order release pattern indicating that the drug was released in a controlled manner and it was released up to 8 h. Stability testing (40 °C / 75 % RH for 1 month) and skin irritation studies on the final formulation were carried out and the results were found satisfactory. The emulgel was compared with commercial Econazole nitrate

cream for antimicrobial activity and the results were found comparable. In conclusion, the topical emulgel of Econazole nitrate was successfully prepared to treat fungal infections.