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Formulation and Evaluation of Topical Emulgels

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Abstract: *The present study aimed to develop and evaluate Econazole emulgel formulations for enhanced topical delivery, combining the advantages of emulsions and gels to improve patient compliance and therapeutic efficacy. Nine formulations (F1–F9) were prepared using Econazole as the antifungal agent, Carbopol 934 as the gelling agent, and suitable emulsifiers and co-solvents. Preliminary characterization confirmed the purity and physicochemical suitability of Econazole, showing it as a white to off-white crystalline powder with a melting point of 142°C–146°C, slightly soluble in water but freely soluble in ethanol and methanol. The emulgels were prepared by incorporating an optimized oil-in-water emulsion into a Carbopol gel base neutralized with triethanolamine. Evaluation of the formulations revealed uniform yellowish white appearance, good homogeneity, absence of grittiness, pH compatible with skin, viscosities ranging from 4236 to 8536 cps, and satisfactory spreadability. Drug content analysis confirmed uniform distribution, while in vitro drug release studies demonstrated sustained release up to 240 minutes, with F5 exhibiting the most favorable profile. Stability studies over 30 days indicated no significant changes in physical and chemical properties, confirming formulation robustness. These findings support the potential of Econazole emulgel as a promising approach for effective topical antifungal therapy.*

Keywords: Econazole; Emulgel; Carbopol 934; Topical delivery; Antifungal; In vitro release; Stability

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