# NOVEL NANOEMULGEL APPROACH FOR ACNE MANAGEMENT


## ABSTRACT

Acne is one of the most prevalent diseases in adolescents. Conventional treatment with antibiotics has several limitations such as resistance, low solubility and less penetrability. We developed a novel anti-acne and anti-marks nanoemulgel, incorporating oregano oil, cinnamon oil and liquorice root extract, as the active ingredients. Oregano oil, rich in thymol, is reported to exhibit antimicrobial activity against *Propionibacterium acnes*, the primary bacteria implicated in acne vulgaris. Cinnamon oil, which contains cinnamaldehyde, exhibits significant antibacterial activity and can effectively combat *P. acnes* and reduce sebum production, thereby preventing pore clogging and subsequent acne formation. Liquorice root extract, containing glabridin and reported for its anti-inflammatory effect, contributes to reduction in acne-related redness and swelling. Five formulations batches were prepared using Tween® 80 and Transcutol® as the surfactant and cosurfactant, and 0.5% Carbopol® 940 as the gelling agent. The physicochemical properties of the developed batches were evaluated for homogeneity, colour, texture, odour, grittiness, spreadability, extrudability, viscosity, pH and drug content. The antibacterial activity of the developed batches was evaluated against *S. aureus* and skin irritation study was conducted using HET CAM assay. The optimized batch was non-greasy, transparent and easily spreadable, exhibited good antibacterial activity and was non-irritant. This nanoemulgel delivery system offers a multifaceted triple punch approach for acne management, providing convenience of use translating to better consumer compliance.