

Formulation of optimized Dapsone skin cream for the use of *Acne vulgaris*

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Acne vulgaris is a major health issue among teenagers. Dapsone is used as a treatment option. Dapsone cream is not available in the local market. Objective of current research was to formulate Dapsone topical cream formulation to treat *Acne vulgaris*. Initially, virgin coconut oil base (VCO-base) was used to prepare cream formulations. Emulsion was prepared by magnetic stirring followed by high shear homogenizing. Formulations were tried with different recrystallized Dapsone concentrations (1%, 3%, 5%), co-solvents (1-Butanol, Ethanol, Acetic acid, 2-Propanol) and preservatives (methyl paraben, benzyl alcohol, phenoxy ethanol). Then, vanishing cream base (VC-base) was used. pH test, Viscosity test, microscopic analysis, organoleptic evaluation, particle size analysis and stability tests were performed for formulated creams. Formulated creams were oil in water emulsions. VCO-base formulations were less stable and crystals were observed. VC-base formulations of 1%, 3%, 5% were more stable but 5% formulation showed crystals. pH of VCO-base and VC-base formulations were skin compatible and were within the range of 4.95 - 5.10 and 6.06 - 6.21 respectively. Viscosity of VC-base formulations were within the range of 40 - 55. It was increased with the increased concentration of Dapsone. Among VC-base formulations viscosity of 5% formulation was the highest. Particle size of VC-base formulations (3900 - 4350 nm) were higher compared to VCO-base formulations (237 - 274 nm). It can be concluded that Dapsone can be formulated as oil in water creamy emulsion. Among formulated creams, best optimized formulas were 1% and 3% VC-based formulations considering pH, viscosity, stability and is suitable for topical application for *Acne vulgaris* with particle size reduction.

Keywords: *Dapsone, virgin coconut oil base, vanishing cream base*

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