

**FORMULATION AND EVALUTION OF MICROEMULSION BASED  
GEL FOR ACNE VULGARIS**

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**ABSTRACT**

The aim of the present investigation was to prepare and in vitro characterization of Adapalene and Nicotinamide topical microemulsion based Gel for treatment of acne vulgaris and to overcome the drawbacks associated with marketed formulation. Marketed combination of clindamycin and adapalene as well as clindamycin and nicotinamide in this propionibacterium acne gets resistance against clindamycin and also having side effects like skin irritation and dry skin. FTIR spectra indicate that, no interaction was found between drug and excipients. On the basis of solubility study, oleic acid, tween 80 and propylene glycol (PG) were selected as oil, surfactant and co-surfactant respectively for preparation of microemulsion. Pseudoternary phase diagrams were constructed at various tween 80 and PG ratios. The 3:1 ratio represented greater area of microemulsification. The optimized microemulsion was also evaluated for % transmittance, dilutability, pH, viscosity, drug content, drug release and stability study. The carbopol 934(2%) was selected for preparation of microemulsion based gel. The developed microemulsion based gel contained adapalene (0.1%), oleic acid (0.25%w/w), tween 80 and PG(60%w/w, 3:1), Water (37.5%w/w) Nicotinamide (4%) and carbopol 934 (2%) and it was evaluated for

viscosity, spreadability, drug content, drug release and skin irritancy. The mechanism of drug release of Adapalene and Nicotinamide from microemulsion based gel was observed to follow zero order kinetics.

**Key words:** Adapalene, Nicotinamide, Acne, microemulsion, microemulsion based gel of carbopol 934.