**Formulation and Evaluation of Microemulsion Loaded Gel of Naproxen for Topical Delivery**

|  |  |
| --- | --- |
| Author:  | Chintan Aundhia, Jainab Patel, Snehal Patel, Ashim Kumar Sen, Avinash Seth  |
| Abstract:  | Naproxen is a non-steroidal anti-inflammatory drug (NSAID) of the propionic acid class and is commonly used for relief of a wide variety of pain, fever, swelling and stiffness caused by conditions including migraine, osteoarthritis, kidney stones, rheumatoid arthritis, psoriatic arthritis, gout, ankylosing spondylitis, menstrual cramps, tendinitis, and bursitis, among others. For the development of Naproxen loaded microemulsion, pseudoternary phase diagrams were prepared by using Capmul MCM as oil phase, Tween 20 as surfactant, PEG 400 as co-surfactant and water as aqueous phase. Different batches of Naproxen loaded microemulsion were prepared by phase titration method by using different concentration of oil, Smix and water. The optimized batch was selected on basis of parameters like %transmittance, dilution, clarity and centrifugation. F9 batch was selected as optimized batch. Optimized batch was characterized for various tests like globule size, zeta potential, viscosity, pH, drug content and conductivity and their results were found to be 100.2nm, -14.0mV, 469.9 cP, 6, 93.33% and 0.65 µS respectively. The gel was prepared by dispersing different concentration of carbopol934 in distilled water by continuous stirring and the pH was adjusted to 5.5 to 6.5 using Triethanolamine (TEA). The optimized batch contained 3% carbopol934. Optimized microemulsion gel was characterized for various tests like viscosity, pH, spreadability, drug content and the results were found to be 41897 cP, 6.5, uniform and better and 97.86% respectively. From the In-vitro diffusion study, percent cumulative drug release after 24 hours was found to be 97.645%. from the Ex-vivo permeation study percent cumulative drug release after 24 hours was found to be 94.51%. Stability of microemulsion and microemulsion gel were carried at room temperature (25 ± 2 °C and %RH 65 ± 2) and refrigerated temperature (2-8 °C) for three months. Stability study of microemulsion was carried out on the basis of various parameters like %transmittance, pH, drug content and centrifugation.  |
| Keyword:  | Naproxen, Microemulsion, Non-Steroidal Anti-Inflammatory Drug, Topical, Optimization.  |
| DOI:  | <https://doi.org/10.31838/ijpr/2019.11.02.222> |