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Design, Development and Characterization of Nanoemulsion Containing Posaconazole Drug

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Abstract : Nanoemulsion is one the most attracted formulation by researcher to treat fungal disease and to increase the solubility of low soluble drug in water. The objective of this research was to develop a topical nanoemulsion formulation of Posaconazole in an attempt to enhance its aqueous solubility. By employing High Pressure Homogenization (HPH) method, an oil in water nanoemulsion was formulated with 0.2% cinnamon oil as lipid phase, 0.4% tween-80 and poloxamer-188 as surfactants, 0.2% transcutol as a co-surfactant and distilled water. The physical characteristics of formulations were found to be stable after thermodynamic stability testing. *In-vitro* diffusion study for optimized nanoemulsion was performed using a dialysis bag method and cumulative % drug release was determined. Viscosity and percent drug content was observed to be 0.0593 cps and 90.21 ± 0.23% respectively. The improved nanoemulsion formulation (F8) was evaluated to be transparent and thermodynamically stable, with -9.46 zeta potential, 78.79 nm particle size, 0.315 polydispersity index. The optimized Nanoemulsion was stable for 3 month in three different temperature conditions. The result from the release study was indicative of improved solubility of Posaconazole, which may serve to boost up the bioavailability of the drug for the treatment of fungal diseases.

Key-words : Posaconazole, solubility, viscosity, particle size, poloxamer, fungal disease.

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