

Formulation and Evaluation of Microemulsion based vaginal gel

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Abstract

The present study was conducted to formulate and evaluate microemulsion based vaginal gel of Econazole nitrate. The solubility of Econazole nitrate in various oils, surfactants and co-surfactants was evaluated to identify components of microemulsion. Pseudoternary phase diagrams were constructed using oleic acid as the oil, Tween 80 as the surfactant and PEG 200 as the co-surfactant for the formulation of microemulsion. For optimization, 3^2 factorial design was applied to investigate the combine effect of dependant variables/factors as amount of oil concentration and Surfactant:Co-surfactant (S:CoS) concentration and globule size, % drug release and Zeta potential selected as dependant Variables/responses. The prepared batches of Microemulsion were evaluated for various parameters such as transparency, dilutability, pH, globule size, zeta potential, drug content and % drug release. Various gelling agents were evaluated for their gelling capacity to incorporate them into microemulsion. Carbopol 934 P was selected as gelling agent to formulate microemulsion based gel (MBG). MBG was evaluated by checking its pH, viscosity,

spreadability, gelling strength, and *in vitro* drug release studies. The Bioadhesive potential and antifungal activity of Econazole nitrate MBG was determined and compared with marketed cream. The vaginal irritation potential of Econazole nitrate MBG was evaluated in female rabbits. Econazole nitrate MBG showed good *in vitro* bioadhesion and antifungal activity. The Econazole nitrate MBG did not show any signs of vaginal irritation in rabbits. The MBG followed korsmeyer-peppas model for *in vitro* drug release and gave extended release from Econazole nitrate MBG.