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Formulation, development and characterization of Ornidazole loaded hydrogel for vaginal delivery

Makwana Rajeshree
Sardar Patel College of Pharmacy, India

Abstract:
The objective of the present study was to prepare and evaluate Ornidazole microsponge loaded hydrogel for topical delivery to control the action of the drug. Ornidazole is a wide spectrum antifungal drug. Oral administration of Ornidazole often produce gastric disturbance, nausea and vomiting resulting in a less patient compliance with long term therapy. Microsponge formulation has ability to improve stability and reduce the irritation without reducing their efficacy. The Miconazole nitrate microsponge were prepared by quasi-emulsion diffusion method using Ethyl cellulose and eudragit RS-100 as a polymer, polyvinyl alcohol as an emulsifying agent, triethanolamine as a plasticizer, ethanol and methanol used as solvent. For the optimization of Ornidazole loaded microsponge Box bahenken Factorial design was employed. The weight of polymer (X1) and concentration of PVA (X2) were selected as independent variables. Where as particle size (Y1) and % loading efficiency (Y2) were selected as dependent variables. The optimized batch of Ornidazole loaded microsponge was evaluated by particles size, shape and internal structure by SEM. Compatibility was evaluated by DSC and FTIR of optimized batch. There was no interaction between drug and polymer molecules. The drug release data of optimized batch were fitted into different kinetic models which show that the drug release from gel formulations follows higuchi model. In vitro diffusion study of Miconazole nitrate microsponge confirmed that it gives sustained release effect up to 12 hour.
Keywords: Microsponge, Topical delivery, Quasi- emulsion solvent diffusion, In-Vitro release.
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