FORMULATION AND EVALUATION OF MICROSPONGE BASED DRUG DELIVERY SYSTEM FOR TREATMENT OF FUNGAL INFECTION

By

VASHI KALPESHKUMAR SURENDRASINH
Enrollment No.: 142140808009

Under the supervision of
DR. DIPTI PATEL
Associate Professor
M.Pharm, Ph.D

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PARUL INSTITUTE OF PHARMACY AND RESEARCH
LIMDA, VADODARA.

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Submitted By

Vashi Kalpeshkumar Surendrasinh

Supervised By

Dr. Dipti Patel

M.Pharm, Ph.D

Associate Professor

Parul Institute of Pharmacy and Research

Limda, Vadodara.

Abstract:

Fungal infection is common skin disease caused by fungus. Bifonazole has antifungal activity which act on fungal cell membrane and kill the fungi. Bifonazole microsponges were prepared using quasi-emulsion solvent diffusion method. Eudragit RS 100 polymer was used for the microsponge preparation. Microsponge formulations were evaluated for production yield, particle size, loading efficiency and scanning electron microscopy. Production yield, particle size and loading efficiency of M17 formulation were found to be 84.43±0.32%, 41.1µm and 89.49±0.30% respectively. Gel was prepared using carbopol 934 and different permeation enhancers were taken. Microsponge loaded gels were evaluated for viscosity, gelling strength, In-vitro diffusion and Ex-vivo permeability studies. Microsponge loaded gel, G7 formulation shows viscosity 4280±0.254 cps, Spreadability 11.32±0.057 gm.cm/s and drug content 85.30±0.191%. In-vitro Permeation of G7 formulation and marketed cream were found to be 80.29±2.98 and 57.18±2.42 respectively. Ex-vivo permeability of G7 formulation and marketed cream were found to be 76.13±2.96% and 52.67±32.48% respectively. The drug release data of G7 formulation were fitted into different kinetic models, which show that the drug release follows first order release. G7 formulation was compared with the marketed cream for antifungal activity. The result shows that the G7 formulation having good antifungal activity

than the marketed formulation. Skin irritation studies and stability testing of G7 formulation were carried out and the results were found satisfactory. In conclusion, Microsponge loaded gel was gives higher permeability and sustained release of drug topically. Microsponge loaded gel was minimized the drawbacks associated with the marketed cream.

Keywords**:** Microsponge; Topical gel; Bifonazole**;** Quasi-emulsion solvent diffusion method; Eudragit RS 100; fungal infection.