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Thesis Abstract

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ADSORPTION, PARTITION, FORMULATION AND *In-vitro* RELEASE STUDY OF FLUCONAZOLE

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ABSTRACT

In this study the adsorption, partition, formulation and In vitro Release Study of Fluconazole have been studied. The adsorption isotherms of antifungal drug Fluconazole, on the base of its adsorption from aqueous solutions on the surface of activated charcoal and talc, were obtained in the temperature range of 25 to 45 °C used UV VIS spectrophotometric method. The experimental data have been analyzed by Freundlich equation to obtain parameters describing properly this adsorption process. The partition coefficient of Fluconazole in the system organic phase/water phase with different organic phases (dichloromethane, dichloroethane, hexanol and n-octanol) using the "shake flask" method have been studied. The experimental partition coefficient of Fluconazole increased from dichloromethane to n-octanol in the partitioning system. Partition coefficient values are very close to 1, suggesting easy permeation through biological membrane of the microorganism. Based on FT-IR spectra, Fluconazole does not interact with C 934P and C 940P polymers hence it was suitable for preparation of hydrogel formulations. Drug content of all batches of formulation was closer to 100% and pH in between 7.2 to 7.5, which may not produce any skin irritation, and thus formulations are suitable for skin application. The viscosity was found to be between 1593 (cps) to 1982 (cps), which shows non-newtonian behavior. In vitro drug release profile of formulation for a fixed period (180 min) using cellophane membrane and hair less rat skin was found to be increased with increasing the concentration of polymers (C 934P and C 940P). Formulation-containing (F9) Fluconazole to polymers like C 934P and C 940P (0.5:1:1) gives maximum release, hence it was selected to use it for skin irritation and short term stability testing. The result of iontophoretic indicates that the intensity of current increases, drug permeation also increases. The skin irritation study indicates that the polymers (C 934P and C 940P) and drug have no potential for irritating effect on the skin. Both the concentrations of polymer and the drug had influence on the release process.

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