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Design, Development and Evaluation of Ketoconazole Loaded Nanosponges in Hydrogel for the Management of Topical Fungal Infections

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Abstract : This work aims at investigating the use of β-Cyclodextrin as a cross linker, in an attempt to formulate nanosponges containing ketoconazole. The nanosponges were prepared by cross-linking method. The excipients used in this study did not alter the physicochemical properties of a drug as revealed by FTIR spectroscopy. Studies on various formulation variables revealed that all the variables are inter-related with the formulation. The ideal batch among the formulation was selected based on the higher entrapment efficiency and drug loading. The in vitro release studies of ketoconazole nanosponges in hydrogel exhibited a sustained release over a period of 24 hours. Mathematical analysis of drug release from the formulation followed non-Fickian diffusion obeying first order kinetics. The anti-fungal activity of the formulation exhibited better zone of inhibition when compared to pure drug (ketoconazole) against Tinea corporis.

Keywords : nanosponges, beta-cyclodextrin, ketoconazole, tinea corporis
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