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Formulation and Evaluation of TDDS for Sustained Release Ondansetron HCL Patches

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Abstract : The skin can be used as the site for drug administration for continuous transdermal drug infusion into the systemic circulation. For the continuous diffusion/penetration of the drugs through the intact skin surface membrane-moderated systems, matrix dispersion type systems, adhesive diffusion controlled systems and micro reservoir systems have been developed. Various penetration enhancers are used for the drug diffusion through skin. In matrix dispersion type systems, the drug is dispersed in the solvent along with the polymers and solvent allowed to evaporate forming a homogeneous drug-polymer matrix. Matrix type systems were developed in the present study. In the present work, an attempt has been made to develop a matrix-type transdermal therapeutic system comprising of ondansetron-HCl with different ratios of hydrophilic and hydrophobic polymeric combinations using solvent evaporation technique. The physicochemical compatibility of the drug and the polymers was studied by infrared spectroscopy. The results obtained showed no physical-chemical incompatibility between the drug and the polymers. The patches were further subjected to various physical evaluations along with the in-vitro permeation studies using rat skin. On the basis of results obtained form the in vitro study and physical evaluation, the patches containing hydrophilic polymers i.e. polyvinyl alcohol and poly vinyl pyrrolidone with oleic acid as the penetration enhancer(5%) were considered as suitable for large scale manufacturing with a backing layer and a suitable adhesive membrane.

Keywords : transdermal drug delivery, penetration enhancers, hydrophilic and hydrophobic polymers, ondansetron HCl
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