Preparation and Evaluation of Matrix Type Transdermal Patches of Domperidone Maleate: in vitro and ex vivo Characterization

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ABSTRACT

Objective :

Domperidone Maleate is a dopamine - receptor (D2) antagonist, widely used in the treatment of motion sickness and used as an antiemetic. The bioavailability of domperidone maleate when administered orally is low due to the first pass metabolism in liver, drug delivery through transdermal drug delivery has the ability to deliver the drug directly to systemic circulation by passing the liver and hence increase in bioavailability of the drug. The main aim of this investigation is to develop and evaluate matrix type transdermal drug delivery systems of domperidone maleate. Methods: The matrix type transdermal patches of Domperidone Maleate were prepared by solvent evaporation technique. The tensile strength and elongation break, in vitro drug release, in vitro drug permeation and Ex vivo permeation through rat abdominal skin were studied. The physicochemical interaction between domperidone maleate and polymer were examined by Fourier Transform Infrared Spectroscopy (FTIR). **Results**: All the formulations showed satisfactory physicochemical and mechanical characteristics. The optimized formulation F5 (drug: polymer ratio is 1:12.5 and 5% v/w eucalyptus oil) showed maximum cumulative percentage of drug release (1832.16±60.14 µg/ cm2), permeation (650.36±29.6µg/ cm2) in 10 hrs. Flux (20.462 µg/ hr/ cm2) and permeation coefficient of 0.204×10-2cm/ hr.Values of tensile strength (2.66±0.0026 kg/ mm2) and elongation at break (16.57±0.26% mm2) revealed that formulation F5 was strong but not brittle. FTIR studies showed no evidence of interaction between the drug and polymers. **Conclusion:** Domperidone maleate matrix type transdermal therapeutic systems could be prepared with the required flux and suitable mechanical properties.

Key words: Domperidone Maleate, Matrix type transdermal patches, Permeation enhancer, in vitro release, ex vivo permeation, Flux.