Pharmaceutical and pharmacokinetic evaluation of a novel fast dissolving film formulation of flupentixol dihydrochloride

Ehab Rasmy ,Ahmed Abdelbary, Afaf A Ramadan, Dalia A Mostafa

Professor

Abstract

The objective of the present study was to develop fast dissolving oral film of the antipsychotic drug, flupentixol dihydrochloride, to enhance its bioavailability, optimize its therapeutic effect when used to treat depression with anxiety, and increase the convenience and compliance by the mentally ill, developmentally disable, elderly, and pediatric patients. Six formulae were prepared with different concentrations of water-soluble polymers vis. hydroxypropyl methylcellulose (HPMC E5) and carboxymethyl cellulose (CMC) by solvent casting technique. The prepared films were subjected to characterization for folding endurance, weight variations, thickness, disintegration time, drug release pattern, and drug content. Physical compatibility between the drug and excipients was guaranteed in the selected formulation (2% HPMC) by means of differential scanning calorimetry analysis and Fourier-transform infrared spectroscopy. This formulation revealed high stability after testing according to the International Conference on Harmonisation guidelines. In vivo studies based on single phase parallel design were carried out for the optimized formulation in healthy human volunteers. The concentration of flupentixol dihydrochloride in plasma samples was analyzed by a developed validated LC-MS/MS assay method and the pharmacokinetic parameters of the established formulation were compared with the commercially available oral tablets. Faster rate of absorption of flupentixol could be obtained from the oral film formulation and the relative bioavailability was found to be 151.06% compared to the marketed product.

AAPS PharmSciTech - 2014, December