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Combination of Pulsatile and Sustained Effects in Multi-Layer TabletKirolos Raafat¹, Ragwa M Farid², Ehab R Bendas³ and Randa Latif⁴¹B.Sc.of pharmaceutical sciences, Faculty of Pharmacy & Drug Manufacturing, Pharos University in Alexandria, Egypt²Assoc. Prof. of pharmaceuticals, Faculty of Pharmacy & Drug Manufacturing, Pharos University in Alexandria, Egypt³Prof. of pharmaceuticals, Faculty of Pharmaceutical Sciences & Pharmaceutical Industries, Future University in Egypt, Egypt⁴Assoc. Prof. of pharmaceuticals, Faculty of pharmacy, Cairo University, Egypt

The main objective of the present study is to formulate and evaluate a multi-layer pulsatile drug delivery system (MPDDS) for time dependent release. Based on the utilization of different types of polymers in different ratios. The MPDDS was designed to deliver a rapid pulse of drug after a lag time when it is most needed to patients and another quantity of drug delivered over prolonged period for maintenance dose. The model drug, Etodolac, was incorporated in two separate layers. Sodium starch glycolate (SSG) polymer was incorporated in the fast release (FR) layer. Eudragit RSPO and HPMC K15M polymers were blended with the drug in the sustained release (SR) layer. The two layers were compressed into bilayer tablet using a single-punch tablet machine. Three successive polymer layers of OpadryII, HPMC E5/K4M and Surelease were spray coated using a conventional pan coating processes to provide a lag time before drug release. Bilayer tablets were evaluated for pre- and post-compression parameters. Tablet optimization was performed based on in-vitro dissolution behavior. Addition of 6.67% SSG polymer in the FR layer showed $85.02 \pm 0.50\%$ release in 10 min, which is beneficial in the manufacture of fast and pulsatile release tablets. Polymer mixture of Eudragit RSPO and HPMC K15M (2.5:1) resulted in $72.44 \pm 0.44\%$ in 12 hours which directly influence the prolongation of drug release. Accession of HPMC K4M to that of E5 (1:80) lengthens the lag time from 2 to 4 hours. Bilayer tablets of etodolac were successfully formulated which achieved a desirable lag time followed by controlled drug release.

Biography

Kirolos Raafat is researching in the field of modified drug delivery systems. He started his studies testing different techniques of drug delivery, then currently he is trying the combination of multiple techniques to reach optimized techniques for various drugs. He is currently working in medical healthcare institution and he is working on the enhancement of the clinical pharmacy practice in Egypt. He is targeting to enter the field of long-term treatment modification in his next researches.

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