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Achievement of a chronological release profile of etodolac from coated bilayer tablets

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In latest years, excipient development has become an essential part of research in pharmaceutical drug delivery because it impacts the formulation development and drug delivery process. Repeated dose medication usually maximizes adverse effects, while sustained release systems did not offer a fast onset of action. The aim of this study is to formulate Etodolac to enable pulsatile and sustained drug release patterns, which was chronologically more suitable as an anti-inflammatory drug. Eudragit RSPO, Eudragit RLPO, and Hydroxypropyl Methylcellulose (HPMC K15M) were added in the sustained release layer and tried in different ratios. Croscarmellose sodium or sodium starch glycolate were used as superdisintegrants for the fast release layer offering the loading dose for rapid onset of drug action. Bilayer tablets were successively coated with Opadry II, HPMC K4M and HPMC E5 (1:40), and Surelease. All formulations complied with the Pharmacopeial standards for post-compression parameters. The coated bilayer tablet showed pulsatile and sustained release effects in rats. The licking time and swelling degree were tested and results demonstrated significant difference ($P < 0.05$) between the sustained anti-inflammatory action of formulation C1 compared to other groups. Therefore the new chronological design could provide a consistent drug release over 24 h with good protection against associated symptoms of gastric release.