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Der Pharmacia Lettre

Abstract

[Formulation, characterization and optimization of oil entrapped](#)

calcium alginate and calcium pectinate beads for floating pulsatile delivery system of Ibuprofen

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The objective of the present work is to develop oil entrapped calcium alginate and calcium pectinate beads for floating pulsatile release of Ibuprofen intended for chronopharmacotherapy. Floating pulsatile concept was applied to increase the gastric residence of the dosage form having lag phase followed by a burst release in alkaline medium. Effects of different formulation variables, such as polymer type, sodium alginate : pectin ratio, pectin concentration, Sodium alginate concentration, and polymer : oil ratio were assessed. Formulations were studied for particle size, % entrapment efficiency, surface study by SEM, in vitro release characteristics and swelling–erosion properties. Upon increase in the concentration of pectin and decrease in concentration of sodium alginate, it was observed that beads sphericity, size distribution, mean particle size varies. The dissolution test was carried out in a USP paddle dissolution apparatus. The formulation was optimized by 32 factorial design. The optimized batch obtained had a floating time of > 20 h, % entrapment efficiency 89.85 ± 0.46 and highest % of drug release with 84.805 % in intestine with minimum % drug release with 9.854% in stomach. The floating beads showed a two-phase release pattern with initial lag phase during floating in an acidic medium followed by rapid pulse in phosphate buffer pH 6.8. The approach indicates the use of oil entrapped calcium alginate and calcium pectinate beads as a promising floating pulsatile drug delivery system for site- and time-specific release of drug acting as per chronotherapy.

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