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Design of modified release multi particulate drug delivery system for anti Parkinson's drugst

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The present work aimed to design gastroretentive modified release multi-particulate system for Levodopa and Carbidopa for better therapeutic outcome and bioavailability. Multiparticulate system was designed wherein drug loaded Levodopa and Carbidopa pellets, manufactured using extrusion spheronization technique, were coated with four successive coatings: the protective layer (ethyl cellulose), two effervescent layers (tartaric acid layer and sodium bicarbonate layer) and polymeric layer (Eudragit® RL 100) for entrapping the gas evolved. The impact of composition and manufacturing parameters of pellets on their micromeritic properties, floating characteristic and *in vitro* dissolution properties were studied. The designed pellets showed excellent floating ability (more than 24 h) and physical characteristics. Amount of sodium bicarbonate and Eudragit® RL 100 layered onto pellets influenced floating ability and *in vitro* drug release rate. Pellets coated with protective layer [weight gain: 3% (w/w)], effervescent layers [weight gain of tartaric acid and sodium bicarbonate layer was 8% (w/w) and 12% (w/w) respectively] and gas-entrapped polymeric membrane [Eudragit® RL 100, weight gain: 20% (w/w)] showed sustained drug release up to 24 hrs. Both the drugs showed similar release profile which was confirmed by calculation of similarity factor. The designed pellets followed zero-order drug release kinetics. The floating characteristics and *in vitro* release depends on amount of sodium bicarbonate layered on pellets and coating level of ethyl cellulose and Eudragit® RL 100. Floating pellet using multilayer approach is a feasible approach for the controlled delivery of Levodopa and Carbidopa combination. These results need to be further confirmed by *in vivo* techniques.

Biography

Prashant P Raut is a research scholar at Department of Pharmacy, BITS Pilani, India, one of the country's most reputed technical university. He is currently a Senior Research Fellow under the UGC-BSR scheme of Government of India. He is currently working on a research project entitled "Design and Development of Multiple Unit Drug Delivery Systems for Combination of Drugs".

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