

Use of porous carrier for improvement of solubility and 32 factorial design for pulsatile release of nifedipine from calcium pectin beads: pharmacokinetic studies on Wistar rats

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Abstract

The objective of present investigation was to develop floating-pulsatile drug delivery system using porous calcium silicate (Florite RE®) and LM pectin, for engineered specific drug release of nifedipine (model drug). Florite RE was successfully investigated as dual acting agent for enhancement of solubility and to impart pulsatile release. Nifedipine was adsorbed on FLR by using chloroform and recovered adsorbed product was characterized by FTIR, DSC, PXRD and SEM, and evaluated for saturation solubility and *in-vitro* dissolution studies. FLR adsorbed product showed positive influence on the solubility of nifedipine due to increase in effective surface area. The pulsatile beads was optimized by 3² factorial design by considering concentration of FLR adsorbed nifedipine (X₁) and concentration LM pectin (X₂) as independent variables and lag time (R₁) and floating time (R₂) as responses which exert significant effect (P < 0.05). The prepared beads were evaluated for various parameters including, entrapment efficiency, average size, mechanical strength, floating time, *in-vitro* dissolution, *in-vivo* pharmacokinetic studies etc. The stability study indicated that the prepared beads were sufficiently stable under accelerated and controlled conditions. Thus simple manufacturing process with combined approach proves promising approach for the relief cardiac disorders which follows a circadian rhythm.

Biography:

Rajesh Jagtap has completed his M. Pharmacy from Department of Pharmaceutics, Poona District Education Association's, Seth Govind Raghunath Sable college of Pharmacy, Saswad Savitribai Phule University of Pune and submitted final copy of Ph. D in May 2019 at Shivaji University Kolhapur under faculty of Science and Technology (Pharmacy). He is working as an Assistant Professor at Annasaheb Dange college of B Pharmacy Ashta & he is having 11 year teaching experience. He has published more than 20 papers in reputed national & international journals and also presented more than 10 papers in national & international conference.



Speaker Publications:

1. "Adsorption of Nifedipine on Porous Calcium silicate for enhancement of solubility and dissolution rate"; Research journal of Pharmacy and technology; year 2019; vol-12;issue-3
2. " liquisolid compacts: a promising approach for solubility enhancement", Journal of Drug Delivery and Therapeutics Vol 7 No 4 (2017): Volume 7, Issue 4, July-August 2017
3. Meloxicam-pectin-β-cyclodextrin ternary complex by kneading for enhancement of solubility and dissolution rate"; Asian journal of Pharmaceutical and Clinical Research;vol 12;issue 4
4. "Adsorption of Nifedipine on Porous Calcium silicate for Enhancement of Solubility and Dissolution Rate" Research journal of Pharmacy and Technology; Volume - 12, Issue - 3, Year - 2019
5. Solubility enhancement technique: a review; Journal of Pharmaceutical Sciences and Research 10 (9), 2205-2211

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