DEVELOPMENT OF TIME DELAYED CAPSULE DEVICE FOR CHRONOPHARMACEUTICAL DRUG DELIVERY SYSTEM OF DILTIAZEM HYDROCHLORIDE

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Abstract:

This study has investigated on oral colon specific, pulsincap device to achieve time and/or site specific release of Diltiazem Hydrochloride based on chronopharmaceutical consideration. The basic design consists of an insoluble hard gelatin capsule body filled with Polymethacrylates Polymers containing microspheres of Diltiazem Hydrochloride and sealed with a hydrogel plug. The entire device was enteric coated, so that the variability in gastric emptying time can be overcome and a colon-specific release can be achieved. The Diltiazem microspheres were prepared by solvent evaporation method with EudragitL-100, S-100, RLPO, RSPO, RL100, RS100, Ethyl cellulose, PVP-K-90 (1:1,1:2) by varying drug to polymer ratio and evaluated for the FTIR ,DSC, particle size, percentage yield, drug content, SEM, and *in-vitro* release study. The drug content was in the range of 85.21±0.071to 98.935±0.137%. The *in-vitro*, drug release studies were carried out using pH 6.8 phosphate buffer for 12 hrs. At the end of 12^{th} hour the drugs release in the range of 54.29±0.86% to98.96±0.86 % and from the obtained results; FM13 was selected as an optimized formulation for designing pulsincap device. Different hydrogel polymers (HPMC, Guar gum, Sodium alginate) were used as plugs in different ratios, to maintain a suitable lag period. The entire device was coated with 5% CAP. The formulated pulsatile device was evaluated weight variation, thickness of CAP, FTIR, and *in-vitro* release study. The *in-vitro* release study was carried out using pH 1.2 buffer for a period of 2 hrs then pH7.4 phosphate buffer for a period of 3hrs then pH6.8 phosphate

buffer for a period of 24 hrs. From obtained results, it was found that the order of sustaining capacity of pulsincap device is HPMC > Guar gum >Sodium alginate. The study demonstrates that Dlz HCl microspheres could be successfully targeted to colon by design of time & pH dependent modified chronopharmaceutical formulation. In conclusion drug release over a period of 6-8 hours, can be achieved from insoluble gelatin capsule in which microspheres were sealed by means of a hydrogel plug.

Biography:

I Dr.V.Kamalakkannan, Professor, Department of Pharmaceutics and to establish myself in the pharmaceutical profession where I can utilize my acquired knowledge in pharmacy and skills in the field of pharmaceutical teaching. I Published more than 20 National and international Papers, I guided more than 35 M.Pharm Projects and attended various national and international conferences.