Conclusion
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Conventional controlled release formulations of sparingly soluble drugs having short half life pose problems in fluctuation of plasma concentration, frequent dosing and tolerance development on long term use. This can be overcome by OCCDS. The present study was undertaken to formulate various osmotic drug delivery systems by adopting the principle of osmotic pressure. Two sparingly soluble drugs were investigated in category of NSAIDs i.e. Flurbiprofen (FL), a non-steroidal anti-inflammatory drug, effectively used in the treatment of rheumatoid arthritis, osteoarthritis and ocular inflammatory conditions and calcium channel blocker i.e. Nicardipine Hydrochloride (NH), effective drug in the management of mild to moderate hypertension, angina pectoris and cerebral disease. The study proved that solubility of both drugs could be effectively improved by making an inclusion complex with β-CD using kneading method. The phase solubility study indicating a linear relationship between solubility of drug and amount of β-CD. Formation of inclusion complex was confirmed from FT-IR, DSC and XRD studies.

The attempts were made to formulate various dosage forms like Controlled porosity osmotic pump, elementary osmotic pump and push pull osmotic pump tablets. Formulations were developed using different osmotic agents, osmopolymers and different size of delivery orifice. The formulations were evaluated for various evaluation parameters with special emphasis on the %CDR at 120min and 540min.

The scientific approach like experimental design was employed for the optimization of osmotic formulations, by using various parameters to obtain the optimized formulation with desired characteristics.

All the formulations have represented similar drug release but CPOP of FL and NH was considered as optimized batch among all the optimized formulations. This could be attributed to the fact that CPOP utilizes a semipermeable membrane that incorporates water soluble materials that dissolve once ingested. The dissolution of these materials creates multiple orifices to release drug. This method is also described as a means to minimize stomach irritation due to the release from multiple orifices. Additionally, the manufacturing process can be simplified since complicated laser equipment is not necessary as required in EOP and PPOP tablets. The work was extended to in vivo pharmacokinetic study using albino rabbits. The in vivo experiments confirmed the controlled and zero order drug release from the selected optimized formulations of FL and NH.
In conclusion, by varying the excipients and their concentration used in the formulation of any of these systems, the desired zero order drug release upto 12 hrs could be obtained. However, CPOP is considered as better compared to EOP and PPOP method. The results obtained for both the selected drugs could be explored for other sparingly soluble drugs by considering its physicochemical properties. Use of Design of experiment approach helped in achieving the goal in shortest time, with minimum efforts. *In-vivo* study of optimized formulation of FL and NH indicated that developed formulation have high therapeutic potential and thus useful in various treatments.