

Formulation of Domperidone in Gastro-Retentive Floating Tablets

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Abstract:

Purpose: Domperidone (Dp) is a dopamine (D₂) receptor antagonist widely used as gastrointestinal prokinetic and antiemetic drug. It is practically insoluble in water and it is also a weak base having poor dissolution rates at relatively high pH values.

The objective of this study is to enhance its dissolution *via* formulation in gastro-retentive floating tablets. While the system is floating on the gastric contents, the drug is released slowly at a desirable rate imparting a sustained-release effect.

Methods: Several hydrophilic and hydrophobic polymers were used in the preparation of tablets matrices. Tablets were evaluated for their physical properties including weight uniformity, drug content, friability, hardness, thickness, floating time as well as the *in vitro* drug release. **Results:** The order of sustaining Dp release was exhibited by carbopol 934P > Eudragit RLPO > Eudragit RS100 > Eudragit RL100 > ethyl cellulose > hydroxypropylmethyl cellulose 15000 > sodium alginate. Increasing the polymer/Dp ratio in the tablets increased the sustaining effect. Tablets containing 30% and 40 % (w/w) of either HPMC 15000 or sodium alginate showed the best floating properties and release profiles. Analysis of release data revealed that formulae containing cabopol 934P showed zero-order kinetics while the other formulae showed Higuchi model kinetics. All formulae showed non-fickian release pattern.

Conclusion: formulation of floating tablets has successfully improved and sustained domperidone release over a time period of 12 hours. This may be beneficial in prolonging the prophylaxis against nausea and vomiting for a longer time eliminating the need for multiple dosing which also improves the patient compliance. Future work includes adding an immediate release component for instant prokinetic effect and *in vivo* comparative studies.