FORMULATION AND *IN VITRO IN VIVO* EVALUATION OF ORAL FLOATING NICARDIPINE HYDROCHLORIDE TABLETS USING BEESWAX AND VARIOUS HPMC GRADES

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ABSTRACT

The purpose of this research was to formulate floating tablets of Nicardipine hydrochloride so as to prolong its gastric residence time and increase its bioavailability as it has good solubility at low pH values. Melt granulation technique using Beeswax as hydrophobic meltable material and different viscosity grades of direct compressible polymers, sodium bi carbonate as gas generating agent and ethyl cellulose as floating enhancer materials. Pre-compressional and post compressional parameters were evaluated. The mechanisms of drug release were analyzed using different kinetic models. Formulation C4 was selected as an optimum formulation as it showed more similarity (f2) in dissolution profile with theoretical profile. It was also observed that increase in viscosity of the HPMC grade resulted in increased floating lag time with simultaneous increase in floating duration. The *in vivo* studies in Albino rabbits showed good floating duration for the optimized formulation. The FTIR/DSC studies revealed no interaction between the drugs and excipients.

It can be concluded from this study that the combined matrix system containing hydrophobic and hydrophilic polymer minimized the burst release of drug from the tablet and achieved a controlled drug release which is otherwise difficult to achieve with only hydrophilic matrix.

KEYWORDS: Nicardipine HCl, Melt Granulation Technique, HPMC, Beeswax, *In vivo- In vitro* Buoyancy, Kinetic Models