

The effect of different grades of HPMC and ethyl cellulose on the buoyancy and release behavior of buspirone floating tablets

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Background and Aims: The purpose of this study was to investigate the effect of using the different grades of Hydroxy Propyl Methyl Cellulose (HPMC) and Ethyl Cellulose (EC) on floating and release behavior of Buspirone HCL (BUS) tablet in the gastric simulated medium.

Methods: The method used in this study to float the tablets has been based on gas generating reaction between Sodium Bicarbonate (NaHCO₃) part of tablets formulation and HCL in the medium. The CO₂ that is generated in this reaction trapped in the matrix of tablets. Then, the tablets become porous and less denser than medium until they become floated. Two grades of HPMC i.e. K4M, K15M and a grade of EC is used to extend the release of BUS and to help the buoyancy of formulations in different weights ratios. Weight of filler (Avicel) and lubricant (Magnesium stearate) is constant in all formulations.

Results: By combination of HPMC K15M and EC in 2:1 ratio and using NaHCO₃ in minimum ratio of total tablets weight (2.5% of formulation), the drug release extends at least for 10 hours. Therefore, the length of buoyancy extends to more than 10 hours.

Conclusions: This study shows that the proposed formulation to extend the release of BUS that is freely soluble in aqueous medium, should consist of a high viscosity grade of HPMC in combination with EC that is a hydrophobic polymer to reduce the rate of the drug release.

Keywords: Buspirone; HCL; HPMC; EC; Floating formulation tablet