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Development and *In Vitro* Evaluation of Propranolol Hydrochloride Controlled Release Tablets Using HPMC as Matrix Former

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SUMMARY. **The purpose of this paper was to produce controlled-release matrices with 120 mg of propranolol hydrochloride (PHCl) employing hydroxypropyl methylcellulose (HPMC, Methocel® K100) as the gel forming barrier. Although this class of polymers has been commonly used for direct compression, with the intent of use reduced polymer concentrations to achieve controlled drug release, in this study tablets were produced by the wet granulation process. HPMC percentages ranged from 15-34 % and both soluble and non soluble diluents were tested in the 10 proposed tablet compositions. Dissolution testing of matrices was performed over a 12 h period in 1.2 pH medium (the first 2 h) and in pH 6.8 (10 h). Dissolution kinetic analysis was performed by applying Zero-order, First-order and Higuchi models with the aim of elucidating the drug release mechanism. All physical-chemical characteristics such as average weight, friability, hardness, diameter, height, and drug content were in accordance to the pharmacopeial specifications. Taking into account that PHCl is a very soluble drug, low concentrations (15 %) of HPMC were sufficient to reduce the drug release and to promote controlled release of PHCl, presenting good dissolution efficiencies, between 50 % and 63 %. The Higuchi model has presented the best fit to the 15 % HPMC formulations, indicating that the main release mechanism was diffusion. It could be concluded that the application of the wet granulation method reduced matrices erosion and promoted controlled release of the drug at low HPMC percentages.**

KEY WORDS: Controlled-release, Matrices, Dissolution kinetics, Hydroxypropylmethyl cellulose, Propranolol hydrochloride.

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