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Preparation of Modified-Release Tramadol Tablets and Drug Release Evaluation using Dependent and Independent Modeling Approaches

Zartasha ASLAM [1], Khalid P. AKHTER [1], Mahmood AHMAD [2],
Muhammad N. AAMIR [3]*, Muhammad NAEEM [1] & Muhammad Y. ALI [4]

[1] *Department of Mathematics, Faculty of Science, the Islamia University of Bahawalpur, Pakistan.*
[2] *Faculty of Pharmacy and Alternative Medicine, Department of Pharmacy, The Islamia University of Bahawalpur, Pakistan.*
[3] *Faculty of Pharmacy, University of Central Punjab, Lahore, Pakistan.*
[4] *College of Pharmacy, GC University, Faisalabad, Pakistan.*

***SUMMARY*. Many attempts have been done in the preparation of modified-release preparations of Tramadol Hydrochloride (TH) to reduce the dose and the frequency of the dose during therapy. Trials on different polymeric systems are going on to get the required results. In present study ethyl cellulose (EC) and hydroxypropyl methylcellulose (HPMC) were used for the preparation of matrix tablets of tramadol hydrochloride. Six different formulations were prepared using different concentrations of these polymers. Effect of varying concentrations of EC and HPMC were observed on the modified release pattern of the matrices. Dissolution was performed in distilled water at 37.0 ± 0.5 ºC, while the stirring speed was set at 50 rpm. It was pragmatic that the formulations having low concentrations of either EC (25 or 50 mg) or HMPC (20 or 40 mg), more than 90 % drug was released during 12 hr. But when the concentrations of these polymers were increased less than 80 % of the drug was released from the matrix tablets during the said time (12 hr). The drug release behavior from formulations was evaluated using different kinetic models. It was obvious from these models that the most of the formulations followed the Higuchi square root model and the drug release mechanism was diffusion erosion. FDA similarity factor f_2 was also calculated form which paramount difference was observed among the formulations.**

KEY WORDS: Model dependent and independent approaches, Modified release, Tramadol hydrochloride.

Author to whom correspondence should be addressed. *E-mail:* mna19bwp@yahoo.com