



In Vitro Release Studies of Diclofenac Potassium Tablet from Pure and Blended Mixture of Hydrophilic and Hydrophobic Polymers

Imran TARIQ ^{1*}, Ahmad M. MUMTAZ ¹, Tariq SAEED ¹, Pervaiz A. SHAH ¹, Syed A. RAZA ¹,
Najam ul Hassan JAWA ¹, Muhammad Yasir ALI ² & Ghulam ABBAS ²

¹ University College of Pharmacy, University of the Punjab, Lahore-54000, Pakistan.

² College of Pharmacy, G.C University, Faisalabad.

SUMMARY. The purpose of the present study was to evaluate the effect of pure and blended mixtures, with different compositions of hydroxy propyl methyl cellulose (HPMC) and carnauba wax (CW) on the release of diclofenac potassium from matrix tablets. Fifteen different matrix tablet formulations were prepared by direct compression process by using Carver Hydraulic laboratory press having 13 mm flat dies set at constant pressure. The paddle dissolution apparatus II (Curio DL 2020) was used to assess the dissolution of drug in phosphate buffer, pH 7.4 for 8 h. The release data was fitted to different release models. Zoom stereo micrography was done to evaluate the release mechanism of drug from polymers. The interaction of polymer mixture and different ratios of drug in polymer mixture was determined by Fourier transform infrared spectroscopy (FTIR) and differential scanning calorimetry (DSC). The type and content of polymer in the matrix system influenced the release characteristics. Higher polymeric content in the matrix decreased the drug release rate because of increased tortuosity and decreased porosity. Retardation of drug release from pure carnauba was higher as compared to that with pure HPMC matrices. The polymers blends controlled drug release pattern effectively. The drug released showed better linearity with Higuchi release kinetics. The Korsmeyer equation revealed n value ranged from 0.388-0.627 or non-Fickian transport mechanism of drug release was predominant. The FTIR and DSC suggested that there were no chemical interaction between drug and polymers.

KEY WORDS: Carnuaba wax, Diclofenac potassium, DSC, FTIR, HPMC, Sustained release.

* Author to whom correspondence should be addressed. *E-mail:* imran_1982@hotmail.com