

Preparation and Evaluation of Gemifloxacin Mesylate Floating Matrix Tablets in Healthy Human Volunteers

D. V. R. N. Bhikshapathi^{1*}, B. Haarika², S. Jyothi Sri³ and K. Abbulu¹

¹CMR College Pharmacy, Kandlakoya, Medchal road, Hyderabad-501401, Telangana, India, ²Sarojini Naidu Vanitha Pharmacy Maha Vidyalaya, Tarnaka, Secunderabad-500001, Telangana, India, and ³MLR College of Pharmacy, Dundigal, Hyderabad-500043, Telangana, India.

Received November 15, 2016; accepted December 16, 2016

ABSTRACT

The purpose of present investigation was to develop floating matrix tablets of gemifloxacin mesylate, which after oral administration could prolong the gastric residence time, increase the drug bioavailability and diminish the side effects of irritating drugs. Tablets containing drug, various viscosity grades of hydroxypropyl methylcellulose such as HPMC K4M and HPMC K15M as matrix forming agent, Sodium bicarbonate as gas-forming agent and different additives were tested for their usefulness in formulating gastric floating tablets by direct compression method. The physical parameters, *in vitro* buoyancy, release characteristics and *in vivo* radiographic study were investigated in this study. The gemifloxacin mesylate floating tablets were prepared using HPMC K4M polymer giving more sustained drug release than the tablet

containing HPMC K15M. All these formulations showed floating lag time of 30 to 47 sec and total floating time more than 12 h. The drug release was decreased when polymer concentration increases and gas generating agent decreases. Formulation that contains maximum concentration of both HPMC K15M and sodium bicarbonate (F9) showing sufficiently sustained with 99.2% of drug release at 12 h. The drug release from optimized formulation follows Higuchi model that indicates the diffusion controlled release. The best formulation (F9) was selected based on *in vitro* characteristics and used *in vivo* radiographic studies by incorporating barium sulphate as a radio-opaque agent and the tablet remained in the stomach for about 6 h.

KEYWORDS: Gemifloxacin, HPMC, Higuchi model, Radiographic study, Buoyancy, floating drug delivery.