Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense)*
Lat. Am. J. Pharm. **29** (8): 1296-302 (2010)

Original Article
Received: February 21, 2009
Revised version: March 21, 2010
Accepted: March 25, 2010

Chronomodulated Rupturable Pulsatile Drug Delivery of Theophylline: Preparation and *In Vitro* Characterization

Ashok N. MAHAJAN* [1] & Shyam S. PANCHOLI [2]

[1] *A.P.M.C. College of Pharmacy, College Campus, Himatnagar-383001, Gujarat, India*
[2] *S.K. Patel College of Pharmacy, Mehesana, Kherva-382711, Gujarat, India*

SUMMARY. The aim of the present study was to develop and evaluate chronomodulated rupturable pulsatile drug delivery of theophylline for the treatment of nocturnal asthma. Core tablets containing theophylline were coated with two consecutive layers, an inner swelling layer and an outer rupturable coating layer. The effect of formulation variables such as molecular weight of outer rupturable coating layer, type and amount of swelling layer, weight gain of coating film and influence of paddle speed on drug release were investigated. The drug release from the pulsatile tablets exhibited an initial lag period, followed by a stage of rapid drug release. The optimal level of swelling layer (crospovidone) to achieve a fast and complete release was 20 % w/w. The results indicated that lag time was prolonged with the increased weight gain of coating film. Also no significant difference in the drug release was observed for different rotational speeds. In accordance with the chronomodulated therapy of asthma, the lag time criterion of 5 hours was satisfied by formulation having 11 % weight gain of outer rupturable layer.

KEY WORDS: Chronotherapy, Lag time, Rupturable coating, Swelling materials, Theophylline.

*Author to whom correspondence should be addressed. *E-mail:* apmcashok@rediffmail.com

ISSN 0326-2383