Latin American Journal of Pharmacy
(formerly *Acta Farmacéutica Bonaerense)*
Lat. Am. J. Pharm. **29** (7): 1093-9 (2010)

Original Article
Received: January 4, 2010
Revised version: February 10, 2010
Accepted: February 11, 2010

Formulation development and Evaluation of Thermosensitive gel for Vaginal Drug Delivery

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SUMMARY. A new reversible thermosensitive drug delivery system was designed and prepared by using chitosan and glycerophosphate with or without poly (ethylene glycol) and used as an a carrier for the Miconazole nitrate, an antifungal agent used in the treatment of vaginal fungal infections. The optimum preparative condition was investigated and it was found that the formulation was solution below or at room temperature with low viscosity, and at 37 ºC, transformed to a non-flowing hydrogel. The formulation was evaluated for gelation temperature, gelation time, drug-polymer compatibility, drug content uniformity, viscosity, *in vitro* drug release profile and stability studies. The release of loaded Miconazole nitrate from the hydrogel was significantly sustained and the effect of PEG-4000 and Glycerophosphate concentration on release rate was observed. The results showed that the formed hydrogel is a controlled release carrier, which will favour its use as an improved vaginal drug delivery system.

KEY WORDS: Chitosan, Glycerophosphate, PEG-4000, Thermosensitive gel, Vaginal drug delivery

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