

Polymer Chemistry

June 25-27, 2018 | Stockholm, Sweden

Polyethylenimine and chitosan polymer-based liquid crystalline platforms intended for vaginal drug delivery

Marlus Chorilli, Camila Fernanda Rodero, Patrícia Rocha Araújo and Giovana Maria Fioramonti Calixto
UNESP-Universidade Estadual Paulista, Brazil

The vaginal mucosa is accessible, has an excellent blood supply, and shows the absence of the first-pass effect, which makes it a very attractive drug delivery route. However, this route has limitations, mainly due to the difficulty of adherence of the formulation in the vaginal mucosa. Nanotechnology-based drug delivery systems, such as liquid crystalline systems (LCSs), can increase drug permeation through the mucosa and thereby improve drug delivery. The presence of mucoadhesive polymers in the aqueous phase of the platforms, such as polyethyleneimine and chitosan, can further increase the permanence of the formulation at the site of action. This study aimed at developing and characterizing the mechanical, rheological, and mucoadhesive properties of four liquid crystalline precursor systems (LCPSs) composed of four different aqueous phases: water, chitosan (FC), polyethyleneimine (FP) and both polymers (FPC); oleic acid was used as the oil phase, and ethoxylated and propoxylated cetyl alcohol was used as the surfactant. Polarized light microscopy and small-angle X-ray scattering indicated that all LCPSs formed liquid crystalline states after incorporation of vaginal mucus. Rheological, texture, and mucoadhesive assays showed that FPC had the most suitable characteristics for vaginal application. *In vitro* release study showed that FPC could act as a controlled drug delivery system. Finally, based on *in vitro* cytotoxicity data, FPC is a safe buccal drug delivery system for the treatment of several vaginal diseases.

Biography

Marlus Chorilli has completed his BSc degree in Pharmacy-Biochemistry (2002), MSc (2004) and PhD (2007) degrees in Pharmaceutical Sciences from São Paulo State University. He is presently an Assistant Professor at the School of Pharmaceutical Sciences of Araraquara—São Paulo State University, teaching Pharmacotechniques and Pharmaceutical Technology. He is Leader of the research group “Research and Development of Nanotechnology-based Drug Release Systems” (CNPq—Brazil). He also acts as reviewer of journals in the field of Pharmaceutical Sciences and as scientific adviser of Brazilian and international research funding agencies (CNPq—Brazil, FAPESP-Brazil and FONDECY-Chile).

mchorilli@gmail.com

Notes: