

# Polymer Chemistry

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## Triblock copolymer-based liquid crystalline systems for intravaginal drug delivery

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This study aimed to develop an *in-situ* gelling nanostructured liquid crystalline system composed of an oil-water-nonionic surfactant-nonionic triblock copolymer mixture for intravaginal administration. Oleic acid and cholesterol (oily phase), water (aqueous phase), Poloxamer 407 (nonionic triblock copolymer), ethoxylated propoxylated cetyl alcohol (nonionic surfactant), were used as components of the systems. After examining the phase behavior of the mixtures, we chose an isotropic system for further studies due to its greater stability and transparency. Different amounts of artificial vaginal mucus (30, 50, 100 % w/w) were added to the chosen formulation in order to mimic the possible interactions between them into the vaginal cavity. The physico-chemical properties of the obtained systems were evaluated by polarized light microscopy, small angle X-ray scattering (SAXS), rheology, texture profile and mucoadhesion analyses. Polarized light microscopy, SAXS confirmed the transition from a microemulsion to liquid crystalline mesophases after adding artificial vaginal mucus. Liquid crystalline mesophases presented a highly ordered microstructure that provides a controlled release of drugs. In addition, rheological, texture profile and mucoadhesive analysis indicated that the lyotropic liquid crystals could enhance time of treatment due to its greater viscosity and interactions with the components of the mucus. The results obtained suggest that triblock copolymer-based liquid crystalline systems have potential for intravaginal drug delivery.

### Biography

Marlus Chorilli has a BSc degree in Pharmacy-Biochemistry (2002), MSc (2004) and PhD (2007) degrees in Pharmaceutical Sciences from São Paulo State University. He is presently working as 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).

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