Nano Innovation 2022 Rome, 19-23 September Conference & Exhibition

UMG Dubium sapientiae initium

ADDLab Advanced Drug Delivery Lab

POTENTIAL APPLICATION OF LYOTROPIC LIQUID CRYSTALS GEL FOR VAGINAL ADMINISTRATION OF DRUGS

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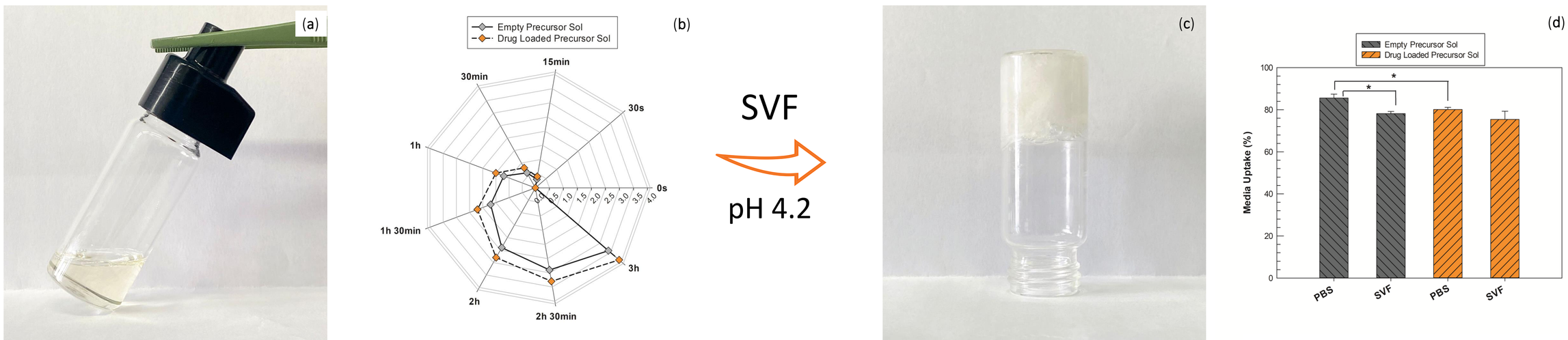
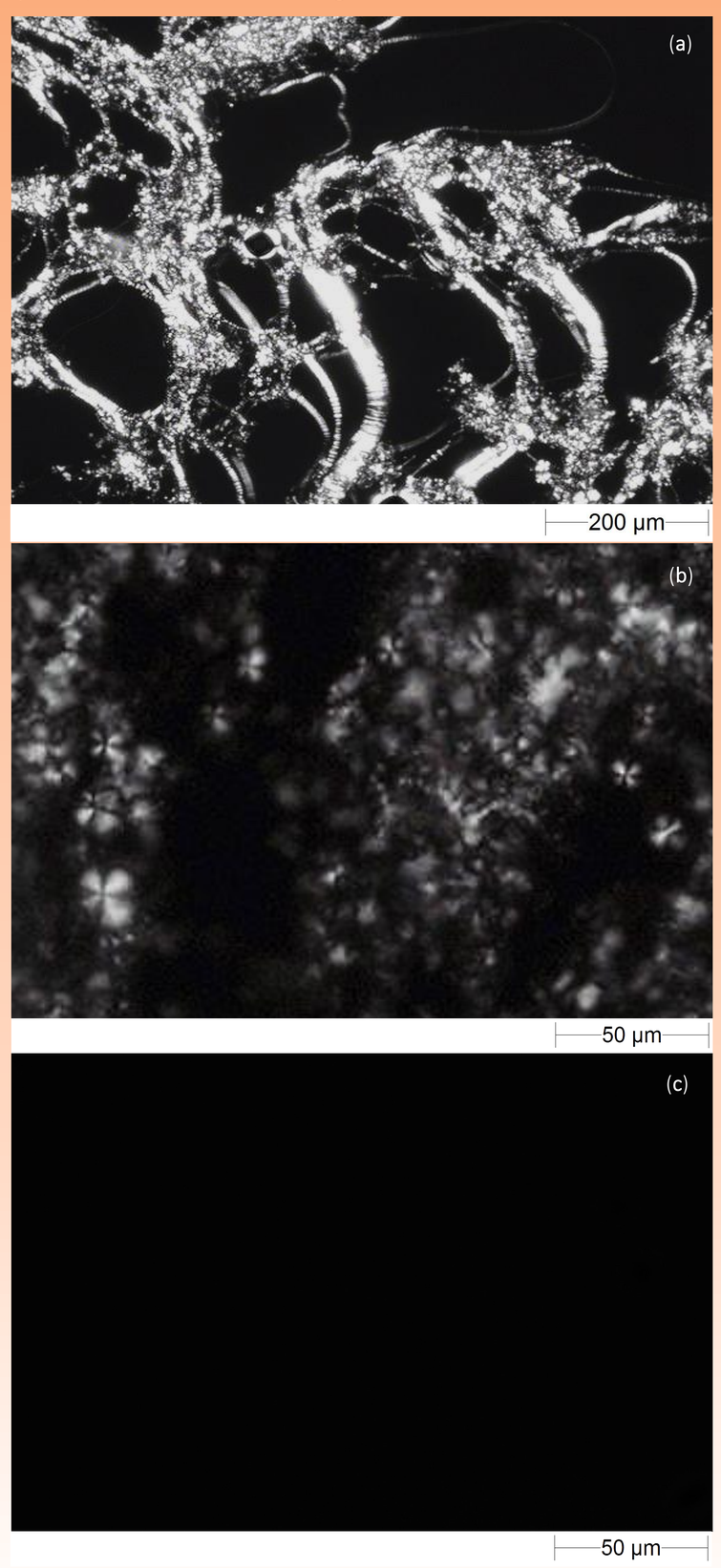
We propose an in situ-forming gel, based on lyotropic liquid crystals, derived from Glycerol Monooleate (GMO), a cheap and GRAS (generally recognized as safe) ingredient, as intravaginal delivery system. The system consists in a precursor solution (**a**), loaded with Sertaconazole nitrate as a model drug, which was able to swell in as stable gel (**c**) easily by absorbing simulated vaginal fluid (SVF). (**b**) Turbiscan Stability Analysis carried out on both empty and drug loaded precursors solutions confirmed the absence of instability phenomena. (**d**) Percentages of PBS pH 7.4 and SVF pH 4.2 uptake by the precursor solutions during their swelling to cubic phases. The results are expressed as mean values of three independent experiments ± standard deviation, *p < 0.05.



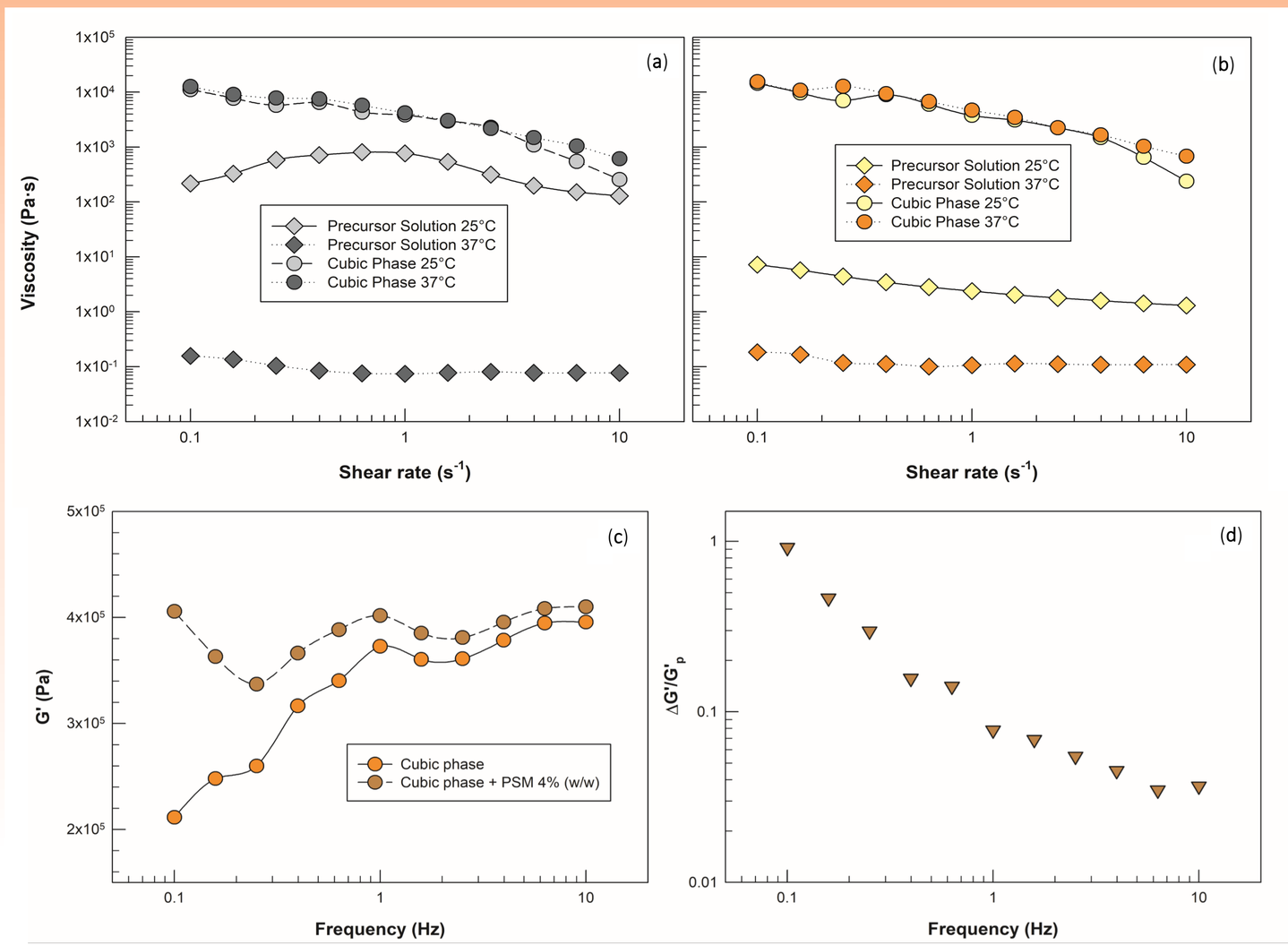
Crossed Polarized Light Microscopy

CPLM analysis of the drug loaded precursor solution at (**a**) 5× and (**b**) 20× magnifications respectively, and the corresponding cubic phase (**c**) obtained after swelling in SVF.



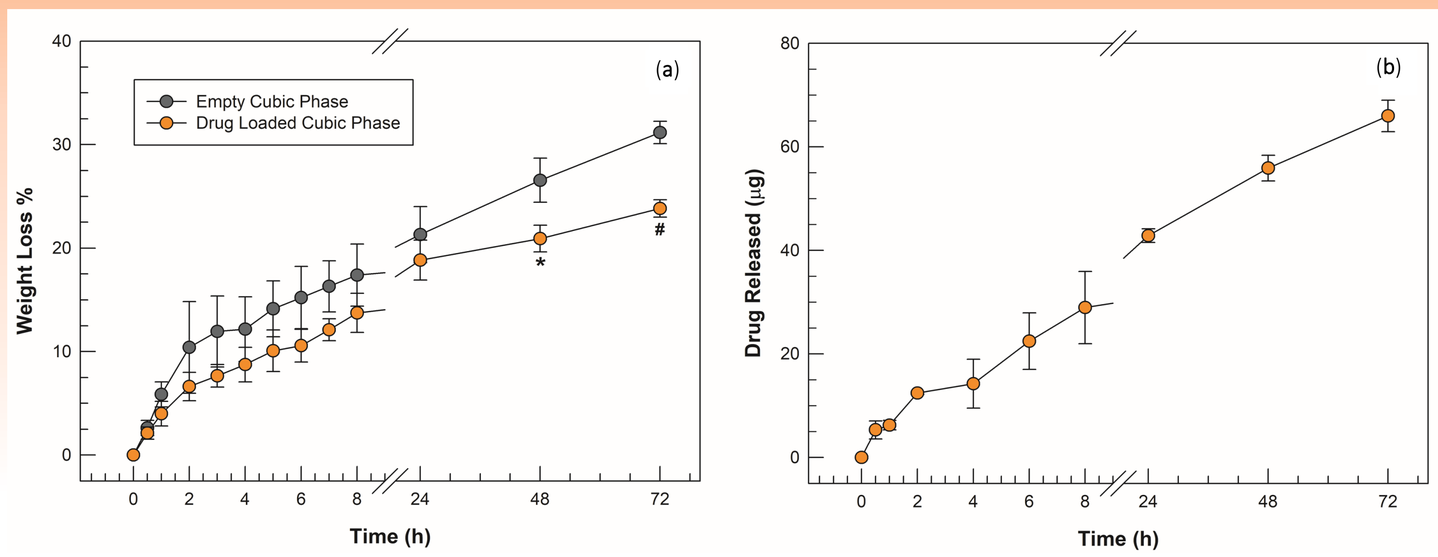
Rheological Behaviors and Mucoadhesion Potential

Viscosity profiles of (**a**) empty precursor solution and cubic phase, and (**b**) drug-loaded precursor solution and cubic phase. The analyzes were carried out at 25±0.5° C and 37±0.5° C. (**c**) Frequency dependence of the elastic modulus (G') for the drug-loaded cubic phase alone and for the mixture with Porcine Stomach Mucin (PSM) 4%. (**d**) Frequency dependence of the calculated interaction term (ΔG'/ G') for the mixture of drug loaded cubic phase with PSM.



Spontaneous Degradation and Drug Release Studies

Degradation studies in SVF (**a**) obtained from empty cubic phase and drug-loaded cubic phase; (**b**) amount of drug released from cubic phase vs. time. The results are expressed as mean values of three independent experiments ± standard deviation, *p < 0.05, #p < 0.001.



Scan for References!