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## Injectable thermosensitive hydrogel based on the physical mixing of chitosan/pluronic F127 as intraarticular drug delivery system

Jomarién García<sup>1</sup>, Miriela Tomás, Gastón Fuentes<sup>3</sup>, Amisel Almirall<sup>3</sup> and Luis J Cruz<sup>1,2</sup><sup>1</sup>Leiden University Medical Center, The Netherlands<sup>2</sup>Stanford University School of Medicine, USA<sup>3</sup>BIOMAT- University of Havana, Cuba

Knee osteoarthritis (OA) is a disease characterized mainly by cartilage degradation, which produce pain, stiffness, and loss of motion in the joint. Pharmacological therapy of this disorder is directed towards pain and inflammation. Non-steroidal and steroidal anti-inflammatory substances are the most frequently used agents. Nevertheless, the oral or systemic administration of such drugs is hindered by numerous side effects, which could overcome by their intra-articular (IA) administration. The aim of this work was to evaluate the behavior of dexamethasone sodium phosphate (DMT) release from thermosensitive hydrogels based on the physical mixing of chitosan/pluronic F127 (CS/PF) as an IA drug delivery system. For the preparation of hydrogels, chitosan (1% w/v) and pluronic (20, 25, 30% w/v) were mixed. Formulation with 25% of pluronic (CS/PF-25) was selected for several assays. Scanning electron microscopy analysis indicated that the CS/PF-25 hydrogels exhibited a low porous structures. Infrared spectroscopy analysis indicated the main functional groups of each component of the hydrogel. The cytotoxicity and cell viability of the hydrogels were assessed by MTS and LIVE/DEAD® assays, where the results demonstrated non-cytotoxic effect of the hydrogel on the human chondrocyte cell culture (C-28). DMT was mixed with CS/PF-25 hydrogel at the concentration of 2 mg/mL concentration, *in vitro* release study showed that there is no initial burst of drug and 50% of DP was delivered in 72 hours. This study suggests the potential of CS/PF-25 gel as an injectable carrier for future applications of delivering therapeutics for the knee osteoarthritis treatment.

### Biography

Jomarién García has completed her Bachelor's degree in Pharmaceutical Sciences at the University of Havana in 2006 and her Master's degree in Chemistry in the Faculty of Chemistry of the same university in 2011. She is an Assistant Researcher in the Polymeric Biomaterials, Department at the Biomaterials Center. She is doing her PhD in translational nanobiomaterials and imaging group, Radiology department at the Leiden University Medical Center (LUMC). She has presented more than 20 communications in international scientific congresses and has published more than 5 scientific articles.

jgcouce@gmail.com

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