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Drug loaded in situ hydrogels for rheumatoid arthritis treatment

N Storozhylova[1, 2], **J Crecente-Campo**[1], **C Grandjean**[2] and **M J Alonso**[1]
[1]University of Santiago de Compostela, Spain
[2]Université de Nantes, France

Galectin-3 (Gal-3) is a human protein able to bind sugar β-galactoside motifs and devoid of enzymatic activity. Extracellular Gal-3 was found to control and participate in immune and inflammatory responses, favouring macrophage pro-inflammatory cytokine secretion and involved in cartilage remodeling and bone erosion. It is believed that extracellular Gal-3 inhibition is a potential strategy for rheumatoid arthritis (RA) treatment and it can present a platform for the development of a new therapy approach. Previously, we reported the synthesis of Gal-3 inhibitors as anti-RA drugs. Here, we describe the formulation of this potential drug in a delivery system that is adequate for intra-articular injection. The delivery system consist of hyaluronic acid (HA) constructs containing Gal-3 inhibitor, dispersed in a modified HA hydrogel. The constructs' parameters allow them to stay invisible for macrophages and target specifically extracellular Gal-3. Hydrogels form *in situ* after the injection of components solution and have well defined and controlled gellation time of 2 min. Their porous structure is sufficient for maintaining the Gal-3 inhibitor constructs. Maximal loading of them to in situ hydrogels is 30% with the gellation time of 20 min.

Biography

N Storozhylova is an Erasmus Mundus NanoFar PhD student at University of Nantes and University of Santiago de Compostela, 2013-2016.

Nstorozhylova@gmail.com

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