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TITLE

Polysaccharides as Flexible Materials for Nanoparticles Formulation Aimed at Mucosal Protein Delivery

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Systemic mucosal delivery of protein-based drugs represents a great challenge that has been addressed by the development of efficacious drug delivery carriers. Nanoparticles have been considered promising tools in this context, due to their high surface-to-volume ratio, which permits high loadings, and the capacity to improve mucosal contact, while providing the protection of the encapsulated bioactive materials from in vivo degradation. Polysaccharides have shown to be particularly suited for the preparation of these carriers, offering advantages that include high flexibility and the fact that they comply more easily with the mandatory requisites of biocompatibility, biodegradability and non-toxicity. In fact, in many cases polysaccharides are Generally Recognised as Safe (GRAS) materials.

In this talk, several polysaccharide-based nanocarrier formulations will be presented that provide suitable physicochemical characteristics for mucosal administration and high protein loadings, while evidencing biocompatibility in mucosal cell lines. Tested polysaccharides include chitosan, carrageenan, pullulan, fucoidan and locust bean gum. The selected methodology for nanoparticle preparation is polyelectrolyte complexation, a mild technique that avoids using aggressive preparation conditions like organic solvents or high shear forces. Whenever necessary, polysaccharides underwent chemical modifications (amination, sulfonation, carboxylation, phosphorylation) to provide charged derivatives of the referred materials.

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Biography

At the age of 26, Ana Grenha has concluded her PhD in Pharmaceutical Technology in 2007, at the University of Santiago de Compostela (Spain). Since 2007, she is Assistant Professor in Pharmaceutics at the University of Algarve and Group Leader at the Centre for Molecular and Structural Biomedicine in the same University. Her research is focused on bioencapsulation strategies, namely on the development of natural polymeric nanoparticles for systemic delivery of protein-based drugs through mucosal routes, such as the pulmonary, nasal and oral. Ana Grenha has published more than 25 papers/book chapters in reputed journals and is a Section Editor in an International Journal. In addition, she has integrated the organizing committee of scientific meetings, further being supervisor of Master and PhD students.