

# 2<sup>nd</sup> International Conference on Pharmaceutics & Novel Drug Delivery Systems

20-22 February 2012 San Francisco Airport Marriott Waterfront, USA

## TITLE

### Locust Bean Gum Based Nanoparticles for Oral Antigen Delivery

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Polymeric nanoparticles have been presented as promising tools to successfully meet the challenge of delivering biopharmaceuticals by oral route. Natural polymers are frequently used in drug delivery systems, since they easily comply with the mandatory requisites of biocompatibility, biodegradability and non-toxicity. Nanoparticles can be obtained by different methods, although the most accepted are those avoiding the toxicity of organic solvents and aggressive preparation conditions, like ionic interaction.

Locust bean gum (LBG) is a neutral polysaccharide (galactomannan) very abundant in the Portuguese region of Algarve. Its content in mannose units makes it a very attractive material to specifically target intestinal M-cells, located in the Peyer's patches, which over-express mannose receptors, making LBG based nanoparticles a promising delivery system for oral immunization.

Since the objective of this work is to design a new nanometric drug delivery system containing LBG and these nanoparticles are to be obtained by a simple ionic interaction, synthesis of a LBG sulphate derivative (LBGS) was carried out. LBG-based nanoparticles were obtained by ionic complexation between LBGS and chitosan (CS) with a mass ratio of 2:1, and presented adequate physicochemical properties for drug delivery purposes ( $183 \pm 6$  nm;  $+14 \pm 1$  mV). An antigenic complex from Salmonella Enteritidis was used as model antigen, and was successfully associated to LBGS/CS nanoparticles with an efficacy of 41%.

Currently, different formulations are in study, in order to select the best for the subsequent in vitro and in vivo assays.

#### Acknowledgements:

**Fundação para a Ciência e Tecnologia; PTDC/SAU-FCF/100291/2008; PEst-OE/QB/LA0023/2011; Carlos Gamazo for antigen supply.**

#### Biography

Luis Braz has completed his MSc in Chemistry in 2006 at the University of Oporto. Since 2007 he is Assistant in Pharmaceutics at the University of Algarve and PhD student in University of Oporto since 2010. His research interests are focused on the synthesis of derivatives of natural polymers and their application in nanoparticle's production for oral immunization. In the past two years he contributed in two book chapters and is author of two papers.