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## Chitosan-based particles as adjuvants for Hepatitis B needle-free vaccines?

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The development of oral and nasal formulations for under-utilized vaccines in order to simplify their transport, storage and administration in poor countries is considered a challenge [1]. In fact, for effective oral immunization, antigens must be protected from the acidic and proteolytic environment of the gastrointestinal tract, efficiently taken up by cells of the gut associated lymphoid tissue (GALT) and an appropriate immune response must be induced [2]. With this in mind we have been working on the design of chitosan-based particles as adjuvant for mucosal vaccination and recently a new delivery system was evaluated as adjuvant for oral administration of the recombinant hepatitis B antigen (HBsAg) [3]. In this previous work we obtained some promising results, like high titers of anti-HBsAg IgG in serum and anti-HBsAg sIgA in mice intestinal washings. However, a high percentage of non-responder mice were observed. Therefore, the main objective of the group is to develop more sophisticated chitosan-based delivery systems associating to the particles not only the antigens but also an immunopotentiator. Three different chitosan-based formulations were developed associating to them aluminum salts, a mast cell activator (c48/80 compound) and CpGODN. An overview of the work done by group on the development of a mucosal hepatitis B vaccine, as well as in vitro results of these new adjuvants will be present during the congress.

## Biography

Olga Borges is Assistant Professor at University of Coimbra, Faculty of Pharmacy, where she teaches "vaccine production technology and adjuvants". She graduated in 1992, at University of Coimbra as a pharmacist (specialize in Pharmaceutical Industry). After graduation, she obtained the Master degree in Food Sciences and Technology at the Technical University of Lisbon in 1996. From 1994-1999 she was the Technical Director of a Medicine wholesaler company and after she moves again to academia and in 2007 she received his PhD degree at the University of Coimbra with thesis entitled "Alginate coated chitosan nanoparticles as adjuvant for mucosal vaccination with hepatitis B antigen". From 2002-2003 she had a Ph.D. fellowship for doing a part of her Ph. D work at Leiden/Amsterdam Center for Drug Research, Division of Pharmaceutical Technology, Leiden University, Netherlands. At present, besides teaching, she is the principal investigator of "mucosal vaccine" projects running on "Vectors and Gene Therapy" group from the Center of Neurocience and Cell Biology of the University of Coimbra. Her research is focussed on the development of polymeric carriers as adjuvants for mucosal vaccination (protein and DNA) and examination of the interactions of delivery systems with biological targets in vitro and in vivo. Since 2007 she has been invited to review several (> 40) manuscripts by different reputed journals like Journal of Controlled Release, Pharmaceutical Research, Vaccine, International Journal of Pharmaceutics, Immunopharmacology, etc.