

10th International Conference & Exhibition onPHARMACEUTICS &
NOVEL DRUG DELIVERY SYSTEMS

March 13-15, 2017 London, UK

Nanoparticles for oral delivery of Insulin: Facts and safety concernsAntónio J Ribeiro^{1,2}¹University of Coimbra, Portugal²I3S Instituto de Investigação e Inovação em Saúde, Portugal

Nanotechnology-based approaches towards an oral delivery of macromolecules such as insulin are increasingly therapeutic approaches towards the prevention or treatment of diabetes. Nano encapsulation of insulin increases its protection against enzymatic degradation, and facilitates its absorption through intestinal membranes. However, the intestinal absorption of insulin nanoparticles may be related to a stimulatory reaction induced by the local mucosa immune system. Intestinal epithelium is an immune privileged organ capable of mediating immune reactions either by playing a local protective role or by triggering an inflammatory response to the presence of nanoparticles. Compromising safety of insulin delivered by nanoparticles, by inadequacy or insufficiency of studies, may lead to exacerbation of the inflammatory pathways conducive to unwanted local and other severe adverse effects. Therefore, it is imperative to include comprehensive safety assays in early pre-clinical studies in order to increase the representativeness of the results and strengthen the potential of oral delivery of insulin by means of nanoparticles. Herein, focus will be put on recent reports in oral delivery of insulin nanoparticles for diabetes as well as a critical analysis of the safety studies supporting their pre-clinical development. The improvement of early safety assessment by transitioning to quantitative, nanoparticle composition-immune performance relationship studies in representative models will also be elucidated. Thereby, the role and importance of rational optimization in the development of “safe by design” insulin nanoparticles will be contextualized in the field of diabetes.

Biography

António J Ribeiro is a Professor of Pharmaceutical Technology at University of Coimbra where he managed a high international reputed research group. He completed his PhD in Pharmaceutical Development and Bio-pharmacy and his research has been focused on “Design of delivery systems for peptidic and protein drugs”. He has published more than 60 peer-reviewed publications, and presented various talks all over the world. He serves as an Editorial Board Member of several publications and as a Consultant for several research agencies mostly related to diabetes and nanotechnology.

aribeiro@ff.uc.pt

Notes: