Chitosan as a mucosal adjuvant

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One of the most important strategies for the development of effective new vaccines is the selection and use of a suitable adjuvant. A wide variety of natural and/or synthetic molecules and delivery systems have been investigated as adjuvants/delivery systems to enhance the immune responses of subunit vaccines. They act by improving pathogen recognition and elicit a response similar to the natural innate immune response. A better understanding of the mechanism of action of these adjuvants is crucial to obtain efficient immune responses and appropriate memory. Composition of the adjuvant as well as its physical parameters such as particle size surface charge has significant impact on the overall performance of that adjuvant and the potency of the vaccine. Furthermore, knowledge on adjuvants in regard to regulatory requirements for quality, safety and efficacy needs to be expanded. Chitosan, which is a cationic polymer derived from chitin obtained from crustacean and insect skeletons, is a very promising biopolymer both as an adjuvant and delivery vehicle for antigens, especially for mucosal immunization in human and animals. Due to its properties such as bioadhesivity, biocompatibility, biodegradability and mucosal penetration enhancing effect, chitosan offers an advantage over other systems which are under investigation for mucosal delivery of antigens. In this presentation, after addressing the importance of adjuvants in vaccine development, the recent studies of our group as well as other groups on application of chitosan as adjuvant will be reviewed.

Biography

Sevda Senel is a Professor of Pharmaceutical Technology. Her current research area involves mucosal drug/vaccine delivery and dental drug delivery. She is currently leading a project on local vaccine production in Turkey through a Ministry-Industry-Academic collaboration. She serves on the Evaluation Committee of Vaccine Products at National Medicines Agency and Advisory Board on Vaccines at National Research Council. She has served as the President of the EUCHIS (2009-2013). She has received the CRS-InterVet 2005 Best Paper Award, 2005 Novartis Research Fund-Pharmaceutical Technology Best Paper Award, 2010 Distinguished Scientist Award by the Academy of Science of the Turkish Pharmacists Association and 2011 Hacettepe University Science Award.

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