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Development of an effective microparticulate cancer vaccine for melanoma

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Cancer immunology has been an area of interest with the rise of novel approaches to specifically target a tumor with the aid of the body's immune system. Many tumor specific antigens and tumor associated antigens have been identified in the recent past. However, since antigens are proteins, there is a need for developing a robust delivery system for these antigens that will remain stable and function as immunogens to induce an effective anti-tumor immune response. In this study it was tried to enhance antigen delivery by making polymeric microparticles containing the antigens of interest that are expressed in a melanoma tumor. S-91 Cloudman melanoma murine cell lines which are syngeneic to a mouse model were used. The vaccine will consist of polymeric microparticles containing antigens from the S-91 cell line. Further, it is hypothesized that incorporation of CpG oligonucleotide, a toll-like receptor ligand (TLR-9 agonist) in the micro-particulate formulation may result in an enhanced uptake and stimulation of the micro-particulate vaccine. In this study, the S-91 antigen microparticles are prepared using a one-step spray drying technique and contain the CpG adjuvant in the formulation.

Biography

Bernadette D'Souza, PhD, is an Assistant Professor at McWhorter School of Pharmacy in Samford University, Birmingham, USA. She completed her PhD degree from Mercer University, Atlanta, GA in 2011 in the area of "Formulation and Evaluation of Particulate Systems for Protein and Vaccine Delivery". She also completed a research collaboration with Dr. RajamGowrisankar at the Centers for Disease Control and Prevention (CDC), National Center for Immunization and Disease NCID, Atlanta, Georgia evaluating the efficacy of a microparticulate delivery system to improve the immune response to current pneumococcal capsular polysaccharide vaccines (Pneumovax-23) without the use of synthetic adjuvants. She is a reviewer for the Journal of Drug Targeting and has published several papers in scientific journals. Her current research interests include vaccine nanotechnology involving encapsulation of adjuvants such as toll-like receptor agonists to boost immune response in antigen presenting cells.

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