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Design and development of ovarian cancer vaccines

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The aim of this study was to monitor cell-based immune response developed by microparticulate ovarian cancer vaccine when administered via dissolving microneedles for transdermal routes in murine models and correlate it with tumor retardation observed in tumor challenge study. Immunotherapeutic strategies may serve as an alternative method to control the recurrence or progression of ovarian cancer. Therefore, we propose here microparticulate vaccine to treat as well as to prevent ovarian cancer. This vaccine resulted in tumor retardation when challenged with live tumor cells. Recently, we conducted a study to understand the mechanism by which the vaccine worked, where we compared humoral and cellular immune response with tumor suppression observed. We also checked the efficacy of the adjuvants to improve the efficacy of the vaccine. The microparticles were made up of cellulose polymers such as HPMC, CPD and EC. Alum and MF59 were used as adjuvants to enhance the immune response. The microneedles were formulated using polymers such as HPMCAS and PVA along with sugars such as maltose and trehalose for their dissolving properties. We have demonstrated the efficacy of vaccine microparticles containing whole cell lysate of ID8 ovarian cancer cells in retarding tumor growth in murine models. Spray drying process and the formulation used for this purpose could retain the immunogenicity of vaccine resulting in T-cell response. Thus, the microparticulate vaccine provides a promising approach in terms of cost-effectiveness, ease of production and patient compatibility.

Biography

Rikhav Gala is a Research Scientist in the department of Pharmaceutical Sciences at the University of New Mexico, Albuquerque. His area of interest are formulations of dosage forms for small and large molecules. He has worked on the formulation and mechanistic characterizations of vaccines. He has worked on ovarian cancer immunotherapy which was NIH funded. This talk is focused on the ovarian cancer vaccine for delivery via the transdermal route using microneedles patch. He has a PhD and an MSc in Pharmaceutical Sciences.

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