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강연제목: 비가역적 전기천공법과 면역활성 나노입자의 조합을 이용한 국소 암 면역요법/Local Cancer Immunotherapy using a Combination of Irreversible Electroporation and Immunoactive Nanoparticles

Abstract:

Cancer immunotherapy is a promising next-generation treatment strategy, but its clinical application is limited due to adverse effects. In this study, effective image-guided cancer vaccines were developed using various forms of immunoactive nanoparticles and irreversible electroporation (IRE) technology. Immunoactive nanoparticles can be retained in the dense tumor extracellular matrix for an extended period after intratumoral injection, allowing internalization by antigen-presenting cells (APCs). IRE can induce immunogenic cell death. In mouse tumor models, immunoactive nanoparticles demonstrated longer tumor retention times compared to control groups. The combination therapy significantly inhibited tumor growth and showed superior survival rates compared to other treatments. This therapeutic approach induced the activation of cytotoxic lymphocytes and the maturation of APCs in vivo. This treatment strategy may be effective for image-guided local cancer immunotherapy.

Brief Biosketch

Dr. Wooram Park has been an Assistant Professor in the Department of Integrative Biotechnology at Sungkyunkwan University in South Korea since 2022. He majored in Biotechnology and received his Ph.D. degree from the Catholic University of Korea in 2015. From 2015 to 2017, he worked as a post-doctoral researcher in the Department of Radiology at the Northwestern Feinberg School of Medicine in the USA. His research focuses on the development of novel biomaterials and their applications in cancer immunotherapy, image-guided drug delivery, and tissue engineering. In 2023, he was awarded the Young Scientist Award by the Korea Nanotechnology Research Society. Prof. Park has authored or co-authored more than 100 peer-reviewed research papers in prestigious journals such as *the Journal of the American Chemical Society*, *Advanced Functional Materials*, *ACS Nano*, *ACS Central Science*, *Biomaterials*, and *Small*. In recognition of his outstanding research contributions, he was selected as one of the World's Top 2% Scientists by Stanford University in both 2022 and 2023.