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Microneedle vaccine technology

Measles is highly contagious disease caused by the single stranded envoloped RNA virus of Paramyxoviridae family. Currently there is a tremendous increase in the measles virus infection in the United states and this can partly be attributed to the non-compliance to the vaccine regimen. Thus there is an increased need to develop the easy to administer vaccine dosage forms which can lead to increased patient compliance. Since children are the primary recepients of the vaccine, we aimed at delivering the vaccine via needle-free routes: buccal and transdermal delivery of vaccine.

Introduction: The vaccine was formulated in microparticulate form to extend the shelf life by eliminating the requirement for cold chain facilities for storage and distribution. The buccal route was selected because the oral cavity is rich in dendritic cells similar to the Langerhans cells, type of antigen – presenting cells (APCs) and high density of T lymphocytes and mucosal associated lymphoid tissue like tonsils, salivary glands, Waldeyer's ring and pharyngeal lymphoid tissue. The vaccine was also delivered via transdermal route as skin is an attractive site for vaccine delivery because of its many resident dendritic cells and efficient drainage to lymph nodes. The antigen will be recognized by immune cells in the oral cavity and the skin and will be processed to produce protective antibodies against the measles virus. Later, whenever the body is exposed to virus, the protective antibodies will be capable of combating the infection. The goal of this study was to explore the potential of delivery of microparticulate measles vaccine via oral dissolving films (ODF) and transdermal laser ablation and to compare the efficacy of vaccine in producing a robust immune response.

Biography

Richard Addo, Keegan Braz-Gomes & Rokon Zaman are from Mercer University and they are expertise in Novel Vaccine Technology and currently working on Measles Vaccine, Influenza Vaccine, Breast cancer vaccine.

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