Effectiveness of Influenza VLP and SAR9 Vaccination

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In April 2013 an emerging virus, influenza A (H7N9), was identified in humans in China, with a novel avian-origin. Since its re-emergence in October 2013, there have been more than 220 laboratory confirmed cases. This virus may soon become human-to-human transmissible, posing more of a threat than it already does. Therefore, the purpose of this study was to determine whether the novel COBRA technique could serve as an effective means of pandemic prevention. H7 sequences were obtained from NCBI, and a phylogenetic tree was created. Consensus groupings were made in order to maximize the number of strains equally represented by targeting conserved sites on various antigens. The final HA sequence was synthesized, transformed, and purified. A restriction digest was used to verify results. The HA was then transfected onto a VLP. Mice models were used to determine efficacy of COBRA VLP compared to traditional techniques. Standard HAI assays were used to determine antibody response. The data was astounding. Although the data did not follow the exponential curve for different dosages as expected, it raised several intriguing questions that led to notable conclusions. The COBRA VLP, at its weakest point, still elicited an immune response that was deemed significant by literary values. The COBRA H7 VLP proved to be the most efficient and effective mechanism of defense in terms of pandemic prevention because it elicited the widest and most consistent immune response. In the HAI analysis, the antibodies created by the COBRA H7 recognized more of the significant H7 strains on the panel. Thus, the hypothesis was supported.

Awards Won:

U.S. Agency for International Development: First Award of $2,000