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## Influenza virus-like particle vaccines elicit protective immunity in the early stage of vaccination

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It is known that influenza vaccine takes about two weeks after vaccination for antibodies to develop in the body that protect against influenza virus infection. However, the protective immunity induced in the much earlier stage of vaccination is unknown. In this study, a VLP vaccine comprising hemagglutinin (HA) and M1 from the A/California/04/09 were used and its ability to induce protective immunity during the early stage of vaccination was assessed. A single intramuscular vaccination with VLPs provided the protection at day 4 and 7 post-vaccination against lethal virus challenge with only moderate body weight loss. VLP vaccination induced significantly higher levels of IgG antibody responses and high hemagglutinin inhibition (HAI) titers at day 4 post-vaccination. At day 7, predominant IgG2a antibody responses and viral neutralizing antibodies were induced. These immune responses were found to be closely correlated with protections. Upon challenge on day 4 and 7 post-vaccination, lung IgG antibody responses and recall IgG antibody-secreting cell responses were induced. Lung virus titers decreased significantly at day 7 compared to that at day 4 post-vaccination. The lung virus titer at day 4 post-vaccination also decreased significantly compared to naïve control. This study demonstrates that VLP vaccination provides effective protection in the early stage of vaccination. The results indicate that VLPs can be developed into an effective vaccine that confers protection in the early stage of vaccination.

### Biography

Fu Shi Quan received her PhD degree at Korea University Seoul, Korea and had Postdoctoral training in the laboratory of Professor Richard W Compans (Department of Microbiology & Immunology, School of Medicine, Emory University, GA, USA). Currently, she is a Professor in Department of Medical Zoology at Kyung Hee University School of Medicine. She is recognized as an expert in influenza VLP vaccine research.

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