Dose-Related Safety and Immunogenicity of a Trivalent Baculovirus-Expressed Influenza-Virus Hemagglutinin Vaccine in Elderly Adults

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ABSTRACT

Background: Influenza-virus hemagglutinin (HA) protein expressed in insect cells by recombinant baculovirus is a candidate influenza vaccine.

Methods: In a randomized, double-blind trial conducted in 399 adults > or = 65 years of age, the efficacy of trivalent inactivated influenza vaccine (TIV) licensed for intramuscular injection was compared with that of trivalent baculovirus-expressed HA vaccine administered at doses of 15 microg, 45 microg, or 135 microg of each HA.

Results: Compared with TIV, baculovirus-expressed HA vaccine was safe and induced better serum antibody responses to the H3 component when administered at doses of 45 microg or 135 microg of each HA.

Conclusions: Baculovirus-expressed HA is a safe and immunogenic influenza vaccine in elderly adults.

A recombinant baculovirus-expressed S glycoprotein vaccine elicits high titers of SARS-associated coronavirus (SARS-CoV) neutralizing antibodies in mice

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ABSTRACT

A recombinant SARS-CoV spike (S) glycoprotein vaccine produced in insect cells in a pre-clinical development stage is described. A truncated version of S glycoprotein, containing only the ecto-domain, as well as a His-tagged full-length version were cloned and expressed in a serum-free insect cell line, ExpresSF⁺. The proteins, purified to apparent homogeneity by liquid column chromatography, were formulated without adjuvant at 3, 9, 27, and 50 _g per dose in phosphate saline and used to immunize mice. Both antigens in each formulation elicited a strong immune response after two or three vaccinations with the antigen. Neutralizing antibody titers correlated closely with standard ELISA reactivity against the S glycoprotein. The truncated S protein was also formulated with an adjuvant, aluminum hydroxide, at 1 g per dose (\(^{+}\)adjuvant), and 5 g per dose (\(^{+}\)adjuvant). Significantly enhanced immune responses, manifested by higher titers of serum ELISA and viral neutralizing antibodies, were achieved in adjuvanted groups with fewer doses and lower concentration of S glycoprotein. These findings indicate that the ecto-domain of SARS-CoV S glycoprotein vaccine, with or without adjuvant, is immunogenic and induces high titers of virus neutralizing antibodies to levels similar to those achieved with the full S glycoprotein vaccine.