

Bacterially Expressed Influenza Virus Recombinant HA Proteins for Vaccine and Diagnostic Applications

Technology Summary

Pandemic H1N1 influenza virus is a recently emergent strain of influenza virus that the World Health Organization (WHO) estimates has killed at least 14,711 people worldwide. Avian influenza viruses are emerging health threats with pandemic potential. Due to their global health implications, there has been a considerable international effort to produce protective vaccines against these influenza virus strains. Currently, influenza virus vaccines are produced in chicken eggs, a production method encumbered by lengthy vaccine production times and issues in scaling up to meet global demands.

FDA researchers identified specific recombinant hemagglutinin (HA) proteins from H1N1, H5N1, and other strains of influenza virus produced in bacteria. These HA proteins properly fold, form oligomers, bind fetuin, agglutinate red blood cells and induce strong neutralizing antibody titers in several in vivo animal models. This technology's expression of the HA proteins in bacteria reduces the vaccine production time and offers the ease of scalability for global usage, an issue with current production methods. The recombinant HA proteins can also be used for diagnostic applications.

Potential Commercial Applications

- Vaccines for the prevention of influenza infection
- Diagnostics for influenza virus specific antibodies

Competitive Advantages

- Novel vaccine candidates
- Rapid production time
- Ease of scalability

Development Stage:

Inventors: Hana Golding, Surender Khurana

Publications:

- Khurana, S., et al. Recombinant HA1 produced in E. coli forms functional oligomers and generates strain-specific SRID potency antibodies for pandemic influenza vaccines. *Vaccine*. 2011 Aug 5;29(34):5657-65, PMID: [21704111](https://pubmed.ncbi.nlm.nih.gov/21704111/)

Intellectual Property:

United States Patent No: [9,163,068](https://www.uspto.gov/patents/publications/9163068) issued 10.20.2015

Product Area:

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