A chimeric influenza/SARS vaccine

The advent of molecular biology techniques has facilitated the development of DNA-based viral vaccines, where specific viral epitopes are expressed following vaccination. Using this technology, European scientists developed a SARS vaccine delivered by an influenza virus vector.

The Severe Acute Respiratory Syndrome (SARS) virus was identified in 2003 after causing a major epidemic which started in China and spread all over the world. The SARS-induced pneumonia can lead to fatal respiratory failure, driving researchers globally in a race towards developing a SARS vaccine.

To this end, the EU-funded ‘Development of a combined influenza/SARS vaccine’
(SARS/FLU Vaccine) project proposed to develop a vector based on the replication of defective influenza delNS1 virus for delivering antigens from the SARS-associated corona virus. This influenza vector, developed by project partners, had a deletion of the interferon antagonist NS1 which is normally used by the virus to shut down host immune responses.

By developing a chimeric delNS1 influenza/SARS vaccine, a strong interferon immune response was expected. Scientists predicted the appropriate SARS antigens to be expressed by the delNS1 vector through a bioinformatics approach. Subsequently, they validated the immunogenic potential of the chosen antigens in vitro and in vivo, and the antigenic epitopes responsible for triggering T- and B-cell immunity.

Information regarding safety, stability and efficiency of epitope expression, coupled with the positive pre-clinical data obtained during the SARS/FLU Vaccine project, makes the delNS1-SARS vaccine a promising vaccine strategy. Testing of this novel chimeric vaccine in clinical trials constitutes the next step for consortium partners.

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