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Oral vaccine platform elicits neutralizing antibody responses to influenza

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Introduction: Influenza vaccine compliance is difficult to measure, but according to the CDC, the National Immunization Survey and National Internet Flu Survey has determined that only 45% of persons were immunized this season. An oral tablet vaccine may increase immunization uptake because several distribution bottlenecks can be avoided, potentially even allowing for vaccine delivery through the regular mail.

Objective: To test oral immunization (using a non-replicating adenoviral based vector expressing influenza HA and dsRNA) for the ability to elicit immune responses to influenza in humans.

Methods: Two phase I clinical trials testing the vector were completed where humoral immune responses were measured by standard influenza assays. Additionally, flow cytometry was used for detailing the mucosal and cellular immune response to the influenza antigen HA. Results: A dose dependent immune response to influenza HA was shown; both T cell and antibody responses were observed, with up to 100% of subjects having an antibody and cellular response specific to HA and up to 67% seroconversion as measured by HAI assay. Mucosal immune responses were observed by flow cytometry and by measuring specific IgA in nasal and fecal samples.

Conclusions: Oral immunization can induce substantial HAI seroconversion and induce a mucosal immune response in humans, suggesting that this approach may become a viable and efficacious influenza vaccine.

Biography

Sean Tucker completed his Doctoral degree in Immunology at the University of Washington. He is the Chief Scientific Officer and Vice President for Research at Vaxart, Inc., a company focused on mucosal vaccine delivery. He has published several papers in immunology and served as a grant reviewer for several vaccine related study sections at the NIH.

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