An *in vitro* human cell culture model of NALT to evaluate humoral immune response to influenza vaccines

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Abstract

Background: Influenza is a mucosal infection in the respiratory tract which is transmitted through the nasal mucosa. Human adenoids and tonsils are major components of local mucosal immune organs namely; nasal-associated lymphoid tissue (NALT) in humans and are known to be important induction sites for both mucosal and systemic immunity against upper respiratory tract pathogens. In this study, an *in vitro* cell culture model was used to describe the B cell immune responses induced by influenza vaccines.

Objectives: Human NALT derived immune cells is an important model to study immune response. Using NALT to measure immune response against influenza viruses is mimicking the natural immunity against the viruses.

Results: Intranasal live attenuated influenza virus-LAIV (FluMist) vaccine stimulation of NALT mononuclear cells (MNCs) induced IgG, IgA and IgM antibodies to pH1N1, sH1N1, and sH3N2. Additionally, flu vaccines also induced mucosal cross-reactive antibodies to aH5N1 following MNCs stimulation.

Conclusion: It is very important to use the human models to assess pathogens that causing human health problems such as influenza viruses. This model is very successful in terms of representing the natural infection.

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