A New Hypothesis in Aging Vaccinology:

Rejuvenation of immune cells in the vaccination: An interesting experience of Influenza vaccine in aged mice

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Abstract

Influenza remains a serious cause of death among aged people because of their aged physiologic. Immune cells function decline in elderly and regardless of mutation in the genome of virus; this is the main causative of inefficacy of Influenza vaccine in aged people. Herein, we hypothesized that if a mechanism established at the immune-switching time and rejuvenate the responding cells of aged people, this may result to increase of vaccine efficacy in aged people. Hemagglutinin of H1N1 virus formulated in Alum and tocopherol and then aged (16-20-month-old) and young (6-8-week-old) mice immunized subcutaneously two times with two week intervals with 5 µg of different formulations of vaccine. Two weeks after final boosting IFN-γ, IL-4 cytokines assessed with ELISA. Humoral immune responses of experimental groups assessed. In addition, vaccine efficacy is determined by experimental challenge of mice with H1N1 virus strain (Mouse adapted virus). Results show that our vaccine formulation improved cytokines response in the experimental mice but increase of cytokines responses were mainly seen in aged group but less in young group. In addition, protection versus

experimental challenge increased in aged mice. It seems that in our formulation condition aged mice give better immune responses versus Influenza vaccine and this strategy may targeted on cell physiologic.

Recent Publications

1. Simin N (2005) Vitamin E and immune response in the aged: molecular mechanisms and clinical implications. Immunological reviews P: 269-284.
2. Sung N (2007) Vitamin E and infectious diseases in the aged. Proceedings of the Nutrition Society pp. 697-705.
3. Han, SN, Wu, D, Ha, WK, Smith, DE, Beharka, A, Wang, H, Bender, BS & Meydani, SN (1998) Vitamin E supplementation increases splenocyte IL-2 and IFN-γ production of old mice infected with influenza virus. FASEB Journal 12, A819.
4. Sarah E (2009) Cytokine response to vitamin E supplementation is dependent on pre-supplementation

cytokine levels. IUBMB pp. 191-200

5. Marja R (2002) Effect of a Complete Nutritional Supplement on Antibody Response to Influenza Vaccine in Elderly People. The Journals of Gerontology pp. 563-566.



Biography

Yasaman Vahdani is a MD pharmacist graduated from Islamic Azad University of Tehran. She worked on IsdE as a recombinant vaccine of Methicillin Resistant Staphylococcus aureus (MRSA) with Dr. Mehdi Mahdavi. Recently, she joined to Dr. Mahdavi research team and works on a new hypothesis that derived from Dr. Mehdi Mahdavi as "**Rejuvenation strategy at immune-switching time**" to increase Influenza vaccine efficacy in aged people.

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Notes/Comments: