

Nutrition and immunity with emphasis on infection and autoimmune disease.

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Nutrition and nutritional status can have profound effects on immune functions, resistance to infection and autoimmunity in man and other animals. Nutrients enhance or depress immune function depending on the nutrient and level of its intake. Protein-energy malnutrition and vitamin A deficiency are strongly associated with impaired immunity and infectious disease. The essential role vitamin A plays in infection and maintenance of mucosal surfaces has long been known. Recent evidence shows that T-cell subpopulations, cytokines and antibody subclasses are all affected by vitamin A. In animal studies supplementation with vitamin E protects against infection and is linked to stimulatory effects on the immune system. In man vitamin E and other antioxidants increase the number of CD4+ cells. Dietary lipids and zinc have a substantial impact on autoimmunity from protective to potentiation of immunopathological processes in animals. There is considerable potential to modify human autoimmune disease by manipulation of lipid nutrition. Deficiency of pyridoxine induces atrophy of lymphoid organs, marked reduction in lymphocyte numbers, impairs antibody responses and IL-2 production. Dietary copper is important in the prevention of infection in some animal species and T-cell function is defective under deficiency states due to an inability to produce IL-2. Selenium has been linked to viral infection, enhanced T-cell functions and TNF beta induced increase in natural killer cell activity. Understanding the molecular and cellular immunological mechanisms involved in nutrient-immune interactions will increase our applications for nutrition of the immune system in health and in disease

Publication Types:

- Review
- Review, Tutorial

MeSH Terms:

- Animals
- Avitaminosis/immunology
- Fatty Acids/immunology*
- HIV Infections/immunology*
- Humans
- Protein-Energy Malnutrition/immunology*

- Research Support, Non-U.S. Gov't
- Trace Elements/deficiency
- Trace Elements/immunology*
- Vitamins/immunology*

Substances:

- Fatty Acids
- Trace Elements
- Vitamins

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