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## Nutrients and their role in host resistance to infection.

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Almost all nutrients in the diet play a crucial role in maintaining an "optimal" immune response, such that deficient and excessive intakes can have negative consequences on immune status and susceptibility to a variety of pathogens. Iron and vitamin A deficiencies and protein-energy malnutrition are highly prevalent worldwide and are important to the public health in terms of immunocompetence. There are also nutrients (i.e., glutamine, arginine, fatty acids, vitamin E) that provide additional benefits to immunocompromised persons or patients who suffer from various infections. The remarkable advances in immunology of recent decades have provided insights into the mechanisms responsible for the effects of various nutrients in the diet on specific functions in immune cells. In this review, we will present evidence and proposed mechanisms for the importance of a small group of nutrients that have been demonstrated to affect host resistance to infection will be presented. An inadequate status of some of these nutrients occurs in many populations in the world (i.e., vitamin A, iron, and zinc) where infectious disease is a major health concern. We will also review nutrients that may specifically modulate host defense to infectious pathogens (long-chain polyunsaturated n-3 fatty acids, vitamin E, vitamin C, selenium, and nucleotides). A detailed review of the effect of long-chain polyunsaturated n-3 fatty acids on host defense is provided as an example of how the disciplines of nutrition and immunology have been combined to identify key mechanisms and propose nutrient-directed management of immune-related syndromes.

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