



## In Health Naturopathic Medicine – Crystal Hannan, ND

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### Nutrients and Immunity

<b>Nutrient</b>	<b>Functions</b>	<b>Sources</b>
Vitamin A	Involved in cell differentiation and proliferation; defends against viral and bacterial infection. Helps speed healing, and strengthens the respiratory tract. <u>Deficiency:</u> Thymus atrophy, decreased DNA synthesis, increased susceptibility to infections, protective in chemically induced tumors.	Liver, green and orange vegetables, cantaloupe
Vitamin B-1	Involved in breaking down carbohydrates and fats to give the body energy. Helps in repair of digestive tract and nervous system. <u>Deficiency:</u> Thiamin responsive anemia, muscle wasting, confusion.	Brewers yeast, soy beans, sunflower seeds
Vitamin B-5	Involved in acetylcholine synthesis, a neurotransmitter which increases humoral and cell mediated immunity. <u>Deficiency:</u> Decreased antibody formation, fatigue.	Beef liver, chicken, peas, broccoli, eggs
Vitamin B-6	Involved in humoral and cell mediated immunity; enhances RBC production; metabolizes tissue proteins and synthesized nucleic acids. <u>Deficiency:</u> Decreased antibody synthesis, phagocytosis, inflammatory response, and membrane integrity; atrophy of the thymus.	Bran, bananas, salmon, tomato, soy beans, tuna
Vitamin C	Involved in wound healing and collagen synthesis; enhances phagocytic activity; acts as an anti viral, antioxidant and free radical scavenger; has anti-CA properties; increases production of interferon, and decreases allergic reactivity. <u>Deficiency:</u> Increased susceptibility to infection, fatigue, fever.	Oranges, green pepper, broccoli, cantaloupe
Vitamin E	Involved in phagocytosis; increases antibody response; free radical scavenger; antioxidant; has anti CA properties; increases WBC reactivity. <u>Deficiency:</u> Decreased inflammatory response, WBC function, T and B cell proliferation, and lymphatic organ size.	Wheat germ oil, almonds, sunflower seeds, pecans
Folic Acid	Involved in cell mediated and humoral immunity; in the formation of RBCs and WBCs; nucleic acid synthesis; and HCL production for digestion. <u>Deficiency:</u> Decreased T cell/B cell ratio and proliferation, inflammatory response, lymphatic organ size, and WBC activity; Inhibition of tumor growth.	Brewers yeast, green leafy vegetables, dairy, grains
Zinc	Involved in promoting T cell immunity, antibody production, wound healing, protein metabolism, carbohydrate digestion and enzyme production. <u>Deficiency:</u> Decreased cell mediated immunity, T cell count, and thymus atrophy. Immunosuppressive in high amounts. <i>Don't use in bacterial infections.</i>	Brewers yeast, liver, seafood, soy beans, spinach
Iron	Involved in RBC and WBC function, and production of collagen. <u>Deficiency:</u> Decreased T cells and B cells, decreased inflammatory response, and atrophy of lymph tissue. Immunosuppressive in high amounts.	Spinach, peas, artichokes, fish, molasses
Selenium	Involved in T cell activation; free radical scavenger; antioxidant; protects macrophages; has anti CA properties; protects body from heavy metals. <u>Deficiency:</u> Impaired T cell antibody response.	Butter, garlic, wheat germ, fish, legumes
Other nutrients involved in the immune system: Vitamin B-12, Magnesium, Cooper, Vitamin D, Calcium, Manganese		

#### Reference:

Marz, Russel, Medical Nutrition from Marz (Portland, OR: Omni-Press 1999) pp. 102-241

Haas, Elson, Staying Healthy with Nutrition, (Berkeley, CA: Celestial Arts 1992) pp. 83-254