

Important Nutritional Aspects of HIV

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HIV represents the ultimate test for a weak immune system, and all indications is that current nutritional interventions can significantly change the course of HIV disease progression. Nutritional therapy in the place of a non-existent medication therapy approach would be cost effective and it would also improve the length and quality of life among HIV infected persons.

HIV infected individuals eventually exhibit nutritional deficiencies, which in turn impairs the immune system further. The basic components of effective nutritional intervention include adequate caloric intake, optimal protein intake and effective micronutrient (vitamins and minerals) supplementation.

Calories are measures of energy provided by macronutrients: carbohydrates, proteins, and fat. With inadequate caloric intake, the body depletes its own stores of energy. In persons with HIV, this calorie depletion is accelerated and very quickly results in muscle wasting and malnutrition.

Protein is required for maintaining lean body mass, and is also required for enzyme and hormone production. The other critical use of protein is in the maintenance of an intact immune system. HIV infected individuals need more protein than HIV negative individuals because of changes in metabolism which result in somatic or visceral protein depletion. Some protein sources are felt to have properties that help boost the immune system . An example is whey protein which compared to casein protein has a higher percentage of cysteine -an amino acid used to produce glutathione in the body. Glutathione is known for its immune enhancing and antioxidant properties.

As HIV disease progresses, research has shown the deficiency of specific vitamins and minerals like vitamin B-12, vitamin B-6, folic acid, zinc, and selenium. Dr. Will Taylor from the University of Georgia has proposed that a prolonged selenium deficiency reduces the levels of several important human proteins like glutathione peroxidase, an essential antioxidant enzyme. Low levels of selenium occur with HIV, and is thought to contribute to cardiomyopathy and suppression of the immune system. Increased selenium helps increase the levels of both glutathione peroxidase and glutathione (Glutathione levels correlate closely with survival in HIV). Supplementation with N-acetyl cysteine also increases glutathione levels . Dr. Ronald Watson at the University of Arizona is another researcher who has growing evidence strongly suggesting that the antioxidants: vitamin E, beta carotene, vitamin A, vitamin C slows the progression of HIV infection to AIDS in addition to slowing down cellular damage.

Free radicals or oxidants are a by-product of burning oxygen in our cells which is a normal biological process. They are highly energized, unstable molecules that contain an unpaired electron. It has been discovered that free radicals either initiate, mediate, or accelerate the disease process.

Antioxidants help neutralize the free radicals in the body thereby protecting the internal and external structures of the cells.

Known Antioxidants

Vitamin C (Ascorbic acid)	Vitamin E (Tocopherol)	Vitamin A (Retinol)
Selenium	Zinc	Manganese
Copper	Glutathione	Beta Carotene

SUGGESTED SUPPLEMENTS AND DOSES

Vitamin	Therapeutic Dose	Mineral	Therapeutic dose
Vitamin A (Retinol)	50,000-100,000 IU/day or 30-60 mg/day	Zinc	50-75 mg/day
Vitamin B6 (Pyridoxine)	50-60 mg/day	Selenium	100-200 mcg/day
Vitamin B12 (Cobalamin)	50-60 mcg/day	Iron	variable
Vitamin C (Ascorbic acid)	1,000-10,000 mg/day	Copper	1.5-3.0mg
Vitamin E (Tocopherol)	400-800 IU/day or 400-800 mg/day	Magnesium	280-350mg
Folic Acid	0.5-1.0 mg/day		
Protein	0.8-1.5 g/kg of desirable body weight		

By utilizing current developments in the area of HIV and nutrition, it is possible to improve the immune response, decrease convalescence and improve quality of life in HIV positive individuals.

Areas of emphasis should include:

1. Prevention of Malnutrition
2. Close monitoring of the lean body mass
3. Treating weight loss and immune suppression aggressively
4. Using a multidisciplinary approach, with nutrition as the nucleus.