



Multi-Vitamins

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Multi-Vitamins w/
Phytonutrients

Accurate Education

A Quick Look at Vitamins

Vitamin Supplements

This is a brief overview of vitamins to provide a quick reference for reviewing risks and doses. When taking a vitamin supplement, one should consider taking a multi-vitamin supplement that also includes phytonutrients, the anti-inflammatory and antioxidant compounds found in fruits and vegetables, as these compounds are generally suboptimal in the average American diet.

Vitamin A (Beta-carotene)

Beta-carotene is a yellow-red-orange pigment found in plants and fruits, especially carrots and colorful vegetables, that is converted into vitamin A. Vitamin A is an antioxidant and may reduce inflammation and studies have demonstrated that higher beta-carotene dietary intake is associated with lower incidence of metabolic syndrome and heart disease.

- **Dose:** Vitamin A is toxic at high levels. No specific supplement recommendations at this time.
- **Foods:** Onions, carrots, peas, spinach and squash.

Vitamin B complex

B vitamins are required for optimum functioning of the nervous system. Except for Vitamin B12, there are no special recommendations, but a high dose B-Complex supplement is recommended with the following considerations:

Vitamin B1 (Thiamine)

- **Dose:** 15-30 mg/day; Higher doses suggested: cancer, g.i. diseases and a history of chronic alcohol use.
- **Deficiency Risks:**
 1. Diabetics, post-op extensive surgery, smokers, regular alcohol use, obesity and those with high-carbohydrate diets
 2. Common in patients with severe kidney disease
 3. Ages > 75: One study found that more than 40% of hospitalized patients and 20% of outpatients had thiamine deficiency

Vitamin B2 (Riboflavin)

- **Dose:** 400 mg/day
- **Deficiency Risks:**
 1. More likely with diets lacking dairy products, meat and fortified grain products
 2. Prevalence of riboflavin deficiency in those over 65 is estimated between 10% and 27%
 3. Symptoms of peripheral neuropathy may occur with riboflavin deficiency
 4. Migraines: Riboflavin @400 mg/day may reduce duration, frequency and severity

Vitamin B3 (Niacin or Nicotinamide)

- **Dose:** 50 mg/day
- **Special Considerations:** none

Vitamin B5 (Pantothenic Acid)

- **Dose:** 23 mg/day
- **Special Considerations:** none

Vitamin B6 (Pyridoxine)

- **Dose:** 1 mg/day
- **Deficiency Risks:**
 1. >50 y/o, Obesity,, Diabetes, Heart Disease, Crohns, Ulcerative Colitis, Rheumatoid Arthritis, History of stroke (CVA)
 2. *Medications:* theophylline, hydralazine, isoniazid

Vitamin B9 (Folate or Folic Acid)

- **Dose:** 1 mg/day
- **Deficiency Risks:**
 1. >50 y/o, Celiac disease, Dialysis, Sickle Cell, Crohns, Ulcerative Colitis, Genetic risks (PGT) – MTHFR and COMT
 2. *Medications:* NSAIDs, metformin, barbiturates (Fioricet), birth control, methotrexate, carbamazepine, valproate

Vitamin B12 (Cyanocobalamin or *Methylcobalamin)

- **Dose:** 1 mg/day; Guide dosing by blood levels.
- **Route:** Sublingual, has small advantage over oral, no advantages with injection of B-12
- **Deficiency Risks:**
 1. >50 y/o, vegetarian, alcohol use, Inflammatory Bowel Disease (Crohns, Ulcerative Colitis)
 2. Impaired absorption: post-gastrectomy, gastric bypass, ileal resection, pernicious anemia, gastritis
 3. *Medications:* metformin, antacids, H-2 blockers (Pepcid), PPIs (prilosec, Nexium)
- **Benefits suggested for:**
 1. Spontaneous pain, hyperalgesia, and allodynia associated with diabetic peripheral neuropathic pain, Low back and neck pain, herpetic neuralgia (Herpes), Trigeminal Neuralgia (TGN) and Glossopharyngeal Neuralgia
- **Special Considerations:**
 1. Formulations: methylcobalamin may have advantages over cyanocobalamin with:
Irritable Bowel (IBS), Inflammatory Bowel Diseases (Celiac, Crohns, Ulcerative Colitis), gastric bypass, metformin use

Vitamin C (Ascorbic Acid)

- **Dosing:** 250-500 mg/day, guided by blood levels; **High Dose:** 500-1000 mg/day
- **Special Considerations:** Very high doses (2000–6000 mg/day) can cause gastrointestinal disturbances or diarrhea.
- **Dosing guided by blood levels:**
 1. **Vitamin C Levels <0.2 mg/L (<11µM)** May precipitate scurvy: bleeding gums, loose teeth, nosebleeds, bruise easily, weakness, fatigue, rash, joint pain and immune compromise, hair grows in bent/coiled shapes, poor wound healing.
 2. **Vitamin C Levels <0.35 mg/L (<20µM)** Likely deficient, may be associated with weakness, fatigue, sore arms and legs.
- **Special Considerations:**

Prevalence of scurvy in the U.S. is 7.1%, but the prevalence of vitamin C deficiency is 14% in males and 10% in females. The number of individuals with inadequate intakes of vitamin C is estimated to be as high as 31%.

Those who need higher intakes of Vitamin C (500-1000 mg/day):
People with: *diabetes* require 1.4 to 1.6 times higher; *metabolic syndrome* 2.7 times higher; pregnant or breastfeeding, *chronic infection* (hepatitis, herpes, HIV etc.); **Medications:** Smokers (tobacco & cannabis, estrogens, chronic aspirin)

Those who may benefit from higher intake of Vitamin C (500-1000 mg/day):
 1. Pre-operative, acute post-operative and post-injury, Malabsorption disorders: bariatric surgery, Crohns, Colitis

Vitamin D (D3)

- **Dose:** guided by blood levels (optimal level: 40-60 ng/ml); **High Dose:** up to 5000 IU/day or 50,000-100,00 IU/week
- **Benefits:** Low quality evidence for benefits for all types of chronic pain, preserves cartilage in knee, maintains healthy bones
Reduces inflammatory cytokine and prostaglandin release, maintains immune system
- **Deficiency Risks:** >50 y/o, obesity, dark skin; **Diet risk:** low intake dairy products, lactose intolerance
Medications: glucocorticoids (prednisone, cortisone etc.) **Levels <25 ng/ml** assoc. w/ increased low back, muscle & joint pain
- **Special Considerations:** Combined vitamin K2 and D3 supplementation is more effective for bone health than either alone

Vitamin E

- Protects the body against lipid oxidation. Benefits of Vitamin E supplementation for heart diseases is controversial.
- Deficiency can cause neuropathy; levels should be screened in Crohn's disease, pancreatitis and short bowel syndrome.
- **Foods:** olive, sunflower, safflower oils; nuts (almonds, hazelnuts, peanuts), seeds; some vegetables (spinach and broccoli)
- **Deficiency Risks:** Smoker: tobacco AND cannabis (marijuana) although may not be clinically significant
- **Dose:** The RDA is 15 mg/day; Avoid doses of 150 IU/day or greater, and emphasize intake of foods rich in vitamin E

Vitamin H (Biotin)

- **Dose:** 150 mcg/day
- **Special Considerations:** May reduce high sugar-induced nerves damage.



Vitamins



Vit B-12



Vit C



Vit D



Vit E