

Evidence-based Beta Carotene Usage

Notes: All the significant positive evidence for beta-carotene applies to food sources, not supplements. See also: vitamin A.

Warnings: Synthetic beta-carotene has been found to be ineffective with and increases the cancer risk in smokers. It also increases the risk of disease of the blood vessels. Also, iron should not be taken at the same time as antioxidants.

Description: Plants have a precursor to vitamin A called Beta-carotene. This molecule splits into two compounds of vitamin A. Animal products include vitamin A because they consume the plants which have two molecules of the vitamin. The production of Ribonucleic acid (RNA) is enhanced by retinol. RNA is a nucleic acid that is a single strand of molecules that is complementary to the strand of DNA (deoxyribonucleic acid). This nucleic acid transfers instructions to each cell, telling it how to function at a particular time. If new RNA is not produced then the cells begin to degenerate.¹

Absorption/Storage: Beta-carotene is converted to usable nutrients through the use of a hormone called thyroxin produced by the thyroid gland. Once absorbed, vitamin A enters the bloodstream and is made accessible to various tissues. Absorption of vitamin A may be hampered by physical activity within 4 hours of intake, consumption of mineral oil, alcohol, and iron. The liver is the place where 90% of vitamin A is stored. If the diet is lacking retinol, the body will pull from the stores in the liver; however, zinc is needed to transport this vitamin.¹

Recommended Dietary Allowance: Beta-carotene is not an essential nutrient. Therefore a RDA does not exist. Normal doses of beta-carotene are 10,000 IU.²

Optimum Daily Allowance (Adult): 5,000-25,000 IU.³

Tolerable Upper Intake Levels: None available.

Principal Uses: Cancer prevention,⁴⁻⁹ cataracts and macular degeneration (with other carotenes and zinc),¹⁰⁻¹⁵ heart disease,¹⁶⁻²⁰ immune function for elderly people,²¹⁻²⁵ leukoplakia,²⁶⁻³¹ photosensitivity,³²⁻³⁶ and pregnancy and lactation support.³⁷

Proposed Uses: Immune function and pancreatic

insufficiency.³⁸

Traditional Uses: Alcohol withdrawal support, asthma, gastritis, heart attack, HIV support and sickle cell anaemia.³⁸

Healthy Sources:

High (40%+ US RDA):, cooked or raw carrots, cooked kale, raw mango cooked peas and carrots, raw red peppers, cooked spinach, squash, baked boiled or canned sweet potato, cooked turnip greens,³⁹ mustard greens, parsley, spinach and Hubbard squash.⁴⁰

Medium (25-39% US RDA): Dried or cooked unsweetened apricots, raw cantaloupe, and cooked sweet red peppers.³⁹

Contraindications: If you are taking this dietary supplement without a prescription, carefully read and follow any precautions on the label. For beta-carotene, the following should be considered:

Allergies--Tell your health care professional if you have ever had any unusual or allergic reaction to beta-carotene. Also tell your health care professional if you are allergic to any other substances, such as foods, preservatives, or dyes.

Pregnancy--It is especially important that you are receiving enough vitamins when you become pregnant and that you continue to receive the right amount of vitamins throughout your pregnancy. The healthy growth and development of the foetus depend on a steady supply of nutrients from the mother.

Beta-carotene has not been studied in pregnant women. However, no problems with fertility or pregnancy have been reported in women taking up to 30 milligrams (mg) of beta-carotene a day. The effects of taking more than 30 mg a day are not known.

Breast-feeding--It is especially important that you receive the right amounts of vitamins so that your baby will also get the vitamins needed to grow properly. However, taking large amounts of a dietary supplement while breast-feeding may be harmful to the mother and/or baby and should be avoided.

Children--Problems in children have not been documented

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with intake of normal daily-recommended amounts.

Older adults--Problems in older adults have not been documented with intake of normal daily-recommended amounts.

Medicines or other dietary supplements--Although certain medicines or dietary supplements should not be used together at all, in other cases they may be used together even if an interaction might occur. In these cases, your health care professional may want to change the dose, or other precautions may be necessary. Tell your health care professional if you are taking any other dietary supplement or any prescription or non-prescription (over-the-counter [OTC]) medicine.

Other medical problems--The presence of other medical problems may affect the use of beta-carotene. Make sure you tell your health care professional if you have any other medical problems, especially:

- Eating disorders or
- Kidney disease or
- Liver disease--These conditions may cause high blood levels of beta-carotene, which may increase the chance of side effects.

Use of beta-carotene has been associated with an increased risk of lung cancer in people who smoke or who have been exposed to asbestos. One study of 29,000 male smokers found an 18% increase in lung cancer in the group receiving 20 mg of beta-carotene a day for 5 to 8 years. Another study of 18,000 people found 28% more lung cancers in people with a history of smoking and/or asbestos exposure. These people took 30 mg of beta-carotene in addition to 25,000 Units of retinol (a form of vitamin A) a day for 4 years. However, one study of 22,000 male physicians, some of them smokers or former smokers, found no increase in lung cancer. These people took 50 mg of beta-carotene every other day for 12 years. If you smoke or have a history of smoking or asbestos exposure, you should not take large amounts of beta-carotene supplements for long periods of time. However, foods that are rich in beta-carotene are considered safe and appear to lower the risk of some types of cancer and possibly heart disease.⁴¹

Interactions:

Decreases Vitamin Availability:	Bile acid sequestrants, fluorouracil, lansoprazole, methyltestosterone orlistat, ³⁸ colestipol, colchicine, mineral oil, neomycin, ^{38,42} charcoal, fibre supplements, methotrexate, sucralfate, and vitamin E. ⁴²
Increases Vitamin Availability:	Ingestion of fat. ⁴²
Is Decreased By Vitamin Availability:	Mouth sores with chemotherapy and sun sensitivity with quinidine, ³⁸ and other carotenoids. ⁴²
Is Increased By Vitamin Availability:	Vitamin E. ⁴²
Adverse Reactions	Alcohol and iron supplements. ⁴²

Deficiency: A lack of vitamin A may cause a rare condition called night blindness (problems seeing in the dark). It may also cause dry eyes, eye infections, skin problems, and slowed growth. Your health care professional may treat these problems by prescribing either beta-carotene, which your body can change into vitamin A, or vitamin A for you.⁴¹

Toxicity/Side Effects: Along with its needed effects, a dietary supplement may cause some unwanted effects. The following side effects may go away during treatment as your body adjusts to the dietary supplement. However, check with your health care professional if any of the following side effects continue or are bothersome:

More common

- Yellowing of palms, hands, or soles of feet, and to a lesser extent the face (this may be a sign that your dose of beta-carotene as a nutritional supplement is too high)

Rare

- Diarrhoea; dizziness; joint pain; unusual bleeding or bruising.

Other side effects not listed above may also occur in some individuals. If you notice any other effects, check with your health care professional.⁴¹

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Treatment for Overdose: None.

Storage: To store this dietary supplement:

- Keep out of the reach of children.
- Store away from heat and direct light.
- Do not store in the bathroom, near the kitchen sink, or in other damp places. Heat or moisture may cause the dietary supplement to break down.
- Keep the dietary supplement from freezing. Do not refrigerate.
- Do not keep outdated dietary supplements or those no longer needed. Be sure that any discarded dietary supplement is out of the reach of children.⁴¹

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Compiled by:
Michael John Nisbett, HBScN, RN
MSc (Nutrition) Candidate