



# HEALTH

---

## Food vs. Pills

no. 9.338

by J. Anderson and J. Roach<sup>1</sup> (Revised 12/08)

### Quick Facts...

Healthy people can obtain all the vitamins and minerals they need from eating a variety of foods.

Taking supplements does not guarantee protection against disease.

Large doses of either single nutrient supplements or high potency vitamin-mineral combinations may be harmful.

Vitamin deficiency is rare unless a person's diet is limited and lacks variety.

Do not take self-prescribed single nutrient supplements without first consulting a physician or registered dietitian.

With so much confusion about the food we eat, the following questions and related myths explain the value of food in comparison to vitamin and mineral supplement pills.

### Can Food Give Us All the Nutrients We Need?

About 68 percent of Americans take a multivitamin supplement each day because they think the food they eat lacks needed nutrients. With the quality and variety of food available in the United States, however, healthy people can get the vitamins and minerals they need from food.

Our food supply provides a unique balance that cannot be duplicated by taking any combination of supplements. In addition, eating is one of life's pleasures. However, it is evident by supplement sales totaling \$23.7 billion a year that much is invested in the hope that supplements will help.

### The Value of Supplements

- 👎 **Myth:** People can eat whatever they want as long as they take vitamin and mineral supplements.
- 👍 **Fact:** Supplements supply some vitamins and minerals, but they do not provide all of the components of food necessary for good health. We need 42 nutrients each day. Supplements supply only a fraction of these and are not a quick fix for poor food choices.
- 👎 **Myth:** People need vitamin and mineral supplements to ensure good nutrition.
- 👍 **Fact:** Supplements are not needed if a variety of foods are eaten. Taking in more nutrients than the body needs does not give added energy, more brain power or greater protection against disease.

### Types of Supplements

- 👎 **Myth:** Natural vitamins are better for you than synthetic vitamins.
- 👍 **Fact:** The body treats most natural supplements the same as synthetic vitamins.
- 👎 **Myth:** Supplements with added enzymes are easier to digest.
- 👍 **Fact:** Supplements with added enzymes to aid digestion are unnecessary. The body makes its own digestive enzymes.
- 👎 **Myth:** Timed-release supplements help absorption.
- 👍 **Fact:** Actually, timed-release supplements are absorbed less efficiently than tablets, chewables or solutions.

**Colorado  
State  
University**

**Extension**

## References

Barrett B. Endrizzi S. Andreoli P. Barlow S. Zhang Z. *Clinical significance of common cold treatment: professionals' opinions.* *WMJ.* 106(8):473-80, 2007.

Caruso TJ. Prober CG. Gwaltney JM Jr. *Treatment of naturally acquired common colds with zinc: a structured review.* *Clinical Infectious Diseases.* 45(5):569-74, 2007

Kashanian M. Mazinani R. Jalalmanesh S. *Pyridoxine (vitamin B6) therapy for premenstrual syndrome.* *International Journal of Gynaecology & Obstetrics.* 96(1):43-4, 2007

Office of Dietary Supplements. *Dietary Supplement Fact Sheet: Calcium.* <http://dietary-supplements.info.nih.gov/factsheets/calcium.asp#h4> accessed November 26, 2008

Office of Dietary Supplements. *Dietary Supplement Fact Sheet: Iron.* <http://dietary-supplements.info.nih.gov/factsheets/iron.asp> accessed November 26, 2008

Office of Dietary Supplements. *Dietary Supplement Fact Sheet: Zinc.* <http://dietary-supplements.info.nih.gov/factsheets/Zinc.asp> accessed November 26, 2008

Sesso HD. Buring Je. Christen WG. Kurth T. Belanger C. MacFadyen J. Bubes V. Manson JE. Glynn RJ. Gaziano JM. *Vitamins E and C in the prevention of cardiovascular disease in men: the Physicians' Health Study II randomized controlled trial* *JAMA.* 300(18): 2123-33, 2008 Nov 12


Sharma P. Kulshreshtha S. Singh GM. Bhagoliwal A. *Role of bromocriptine and pyridoxine in premenstrual tension syndrome.* *Indian Journal of Physiology & Pharmacology.* 51(4):368-74, 2007 Oct-Dec.


Thurston, Charleston. *Neutraceuticals World. Dietary Supplements: The Latest Trends & Issues* <http://www.nutraceuticalsworld.com/articles/2008/04/dietary-supplements-the-latest-trends-issues> accessed December 10, 2008.

## Can Vitamin and Mineral Supplements Promote Health and Prevent Disease?


Vitamins and minerals will prevent diseases associated with nutritional deficiencies such as scurvy, beriberi, pellagra and rickets. These diseases, however, are rare in the United States because the foods we eat are good sources of the needed nutrients.

The diseases that plague today's Americans are chronic diseases not caused by specific nutrient deficiencies. Heart disease, cancer, diabetes and high blood pressure are affected by many factors, one of which is eating patterns. If people eat a variety of foods in adequate and moderate amounts, supplements will not give added protection.


 **Myth:** Taking supplements that contain antioxidants such as vitamins A and C, beta carotene, vitamin E or selenium will prevent cancer.


 **Fact:** Research from a decade ago suggested that taking antioxidant supplements might help protect against cancer. However, newer findings from clinical studies indicate that taking antioxidant pills does not offer protection against cancer, and may even do some harm. On the other hand, eating lots of food rich in antioxidants, such as green vegetables, citrus fruits, deep-orange colored produce as well as other types of fruits and vegetables has been shown to be protective.


 **Myth:** Antioxidant supplements prevent heart disease.

 **Fact:** Several recent clinical studies have shown no benefit in taking antioxidant pills to prevent heart disease. Most of the research thus far, however, has been on people who already have heart disease. Several studies have looked at antioxidants, especially vitamin E, and have found no protective effect against heart disease (and may even increase the risk of heart failure). The results from clinical studies do not support antioxidant supplement use.


 **Myth:** Osteoporosis can be prevented by taking calcium supplements.

 **Fact:** Many factors contribute to the development of osteoporosis, one of which is calcium. Estrogen levels, exercise, gender, body size, smoking, race and heredity are all important aspects that relate to osteoporosis. The most effective treatment in postmenopausal women may be a combination of extra calcium, vitamin D, exercise and estrogen.


 **Myth:** Vitamin B-15 (pangamic acid), vitamin B-17 (laetrile), and vitamin P (bioflavonoids) are new vitamins that prevent disease.

 **Fact:** These are not vitamins and have not been shown to prevent cancer, help athletes' performance or promote health.

 **Myth:** Vitamin B-6 will alleviate PMS (premenstrual syndrome).

 **Fact:** The evidence supporting this is thin. Two studies in 2007 have shown some benefit at reducing symptoms. Many factors are associated with PMS, and one critical factor is the importance of eating well and regularly.

 **Myth:** Zinc shortens the amount of time that you have a cold.

 **Fact:** Zinc, especially in the form of zinc lozenges, has shown mixed results. Too much zinc may depress the body's immune system. Most experts recommend no more than 40 mg of zinc per day.

## Can Supplements Be Dangerous?

Large doses of either single-nutrient supplements or high potency vitamin-mineral combinations may be harmful. These megavitamins may contain 10 to over 100 times the Dietary Reference Intake (DRI) for a vitamin or mineral and can act like drugs with potentially serious results.

Taken in high amounts, some supplements may produce undesirable effects such as fatigue, diarrhea and hair loss. Others may cause more severe side effects such as kidney stones, liver or nerve damage, birth defects, or even death. At high levels, single-nutrient supplements function as a drug in the body and not as a nutrient.

Fat-soluble vitamins such as vitamins A and D are harmful in high doses. Water-soluble vitamins have commonly been thought to be harmless. Recent research, however, shows that vitamin B-6, a water-soluble vitamin, can cause nerve damage at the high doses prescribed for PMS. Large amounts of vitamin C can cause diarrhea and nausea.

Many factors influence toxicity. Supplement potency, dose (number and frequency), body size and how long the supplement is taken all influence whether a supplement can be toxic.

👉 **Myth:** Supplements would not be on the market if they weren't safe.

👉 **Fact:** Currently, there is no pre-market approval of vitamin-mineral supplements. The FDA cannot limit the quantity or concentration of nutrients that a single pill can contain. The only exception is folacin. The FDA requires supplement companies to test their ingredients.

👉 **Myth:** There is no harm in taking supplements; after all, they contain the same nutrients as in foods.

👉 **Fact:** Very high doses of many vitamins such as A, C, D and B-6, as well as several minerals, can cause serious health problems if taken regularly. Excesses of one nutrient may cause nutritional imbalances or increase the need for other nutrients. Some supplements interfere with the action of medications, creating a variety of ill effects.

## Calcium

*To estimate the absorbability of calcium tablets or multivitamins that contain calcium, place the tablet in 6 ounces of vinegar for 30 minutes. If it disintegrates, the calcium in the pill can be effectively absorbed by your body.*

*Check the label to see if the supplement meets disintegration standards of the U.S. Pharmacopoeia (USP), which establishes quality standards for drugs and health care products. For the best quality, choose brand names or large chain-store brands. Avoid tablets containing bone meal or dolomite, which may be contaminated with lead.*

*Calcium is best absorbed in several doses, rather than all at once. The most popular calcium supplement, calcium carbonate, contains more calcium per tablet than calcium lactate, calcium gluconate or calcium citrate. Be sure to take calcium carbonate with meals because stomach acids help calcium absorption. Chewable tablets are fairly inexpensive sources of calcium.*

*Calcium from food is better absorbed and used than calcium from pills. The best food sources of calcium are low-fat milk, cheese, yogurt, and canned fish with edible bones such as sardines and salmon. Tofu, some dry beans, tortillas made with lime-processed cornmeal, and dark green leafy vegetables like broccoli, kale and collards also provide calcium. Spinach is high in oxalates and its calcium is not absorbed well.*

## Who Needs Supplements?

National food consumption data and dietary surveys show that the majority of Americans get the nutrients they need through food alone. Some nutrients, like calcium and iron, may require careful food selection but can be obtained from adequate amounts of foods.

Certain individuals have special needs and may benefit from taking a supplement. They include the following:

- People with limited food intake, such as chronic dieters and some elderly, have difficulty meeting their nutrient needs.
- Some vegetarians, especially strict vegans who eat no meat, dairy products or eggs, may not receive adequate amounts of iron, calcium, zinc and vitamin B-12.
- Individuals with certain diseases or physiological conditions may require supplementation.
- Newborn infants are given vitamin K to help their blood clot.
- Pregnant or breastfeeding women require higher levels of many nutrients, especially folacin, iron and calcium.

Adequate folate is particularly important before pregnancy and during the first trimester to prevent neural tube defects. A supplement is sometimes needed for folate and iron. The addition of folic acid to grains and cereals helps to increase the amount of folate people can obtain from foods.

Individual recommendations for supplementation should come from a physician or a registered dietitian. If you have a special need for iron or calcium and are taking it in pill form, see the sidebars on these minerals.

## People Who Need Supplements

The suggestion to buy nutrition insurance in pill form is appealing, but advertising is deceptive. Advertisers list all the terrible things that can happen if the diet is lacking, but never that vitamin deficiency is rare unless a person's diet

## Iron

*The most common iron supplement is ferrous sulfate, although other ferrous salts such as ferrous lactate, fumarate, glycine sulfate, glutamate and gluconate are also absorbed well. Ferrous succinate may have a 30 percent higher absorption rate than ferrous sulfate.*

*If you take iron tablets on an empty stomach, you get the best absorption but you also may experience constipation, diarrhea or stomach upset, depending on the dosage. Taking iron supplements with meals reduces iron absorption by up to one-third.*

*Vitamin C aids iron absorption whether the iron comes from food or a pill. Try meal combinations such as orange juice and iron-fortified cereal or salsa and bean burritos. Other good food sources of iron are meat, dried apricots, and iron-fortified bread.*

*Keep supplements out of the reach of children. **Eating iron-containing drugs is the most common cause of poisoning deaths in young children.***

is extremely unbalanced and lacks variety. Most important, they never tell how to measure whether or not the diet is adequate. If they did, they'd lose customers.

Determining dietary adequacy actually is quite easy. People can get an adequate amount of all essential nutrients by eating a variety of foods they enjoy and can afford. Eating well need not be expensive and should be pleasurable.

👉 **Myth:** People under emotional stress need “stress” vitamins.

👉 **Fact:** Emotional stress does not increase nutrient needs. In fact, some companies have been required to stop advertising their products as stress vitamins. Unfortunately, other companies continue to make these false claims. Physiological stress, such as burns, trauma and surgery, do increase nutrient needs, and a supplement may be prescribed.

👉 **Myth:** Those who smoke or drink in excess should take vitamin pills to protect their body from the harmful effects of smoking and drinking.

👉 **Fact:** Smoking does increase the body's need for vitamin C, and alcohol can interfere with the body's ability to use several nutrients. However, taking additional vitamins and minerals will not protect people from the harmful effects of smoking or alcohol abuse.

👉 **Myth:** Competitive athletes and others who exercise regularly should take extra vitamins and minerals.

👉 **Fact:** Athletes and fitness buffs are less likely to need supplements than anyone! When a person eats more calories to meet increased demands, the small amount of extra nutrients needed are easily supplied.

## Taking Supplements

Healthy people who take supplements should limit supplement potency to 100 percent or less of the Dietary Reference Intake (DRI) for their age and gender. Self-prescribed high dosages of supplements can be potentially dangerous and cannot guarantee good health.

👉 **Myth:** Taking supplements is an inexpensive way to ensure good health.

👉 **Fact:** The \$23.7 billion Americans spend on supplements is a lot of money. Because the body has limited storage for most of these nutrients, they are excreted and go down the drain. The most cost-effective way to promote good health is to exercise regularly and eat a wide selection of foods.

<sup>1</sup>J. Anderson, Colorado State University Extension food science and human nutrition specialist and professor; and J. Roach, M.S., graduate student.

U.S. Department of Agriculture, Colorado State University, and Colorado county cooperating. Extension programs are available to all without discrimination. No endorsement of products mentioned is intended nor is criticism implied of products not mentioned.