




THE WILDCAT WAY TO WELLNESS

Getting More from Dietary Supplements

A severe shortage in a nutrient can affect many body processes. Interactions between nutrients are complex, and much remains to be learned about what the nutrients do and how they are interrelated. You should consult a physician or dietitian for an evaluation of your vitamin status before beginning supplementation.

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Only competent medical professionals can identify deficiencies by using medical tests and then prescribing treatment. Choosing the right supplement is not a simple task, but armed with a little information, you can choose the best daily supplement for you. Traditionally, dietary supplements are products made of one or more of the essential nutrients, such as vitamins, minerals, and protein. They fall under the 1958 Food Additive Amendments to the Federal Food, Drug, and Cosmetic Act. In 1990, the Nutrition Labeling and Education Act added herbs or other botanicals to the definition of the term "dietary supplement."

The Dietary Supplement and Health Education Act of 1994 was enacted to establish a new framework for assuring safety, including guidelines for use of non-medicinal claims, ingredient and nutrition labeling, and the establishment of good manufacturing practice (GMP) regulations. A new Commission of Dietary Supplement Labels and an Office of Dietary Supplements (ODS) was formed within the National

Institutes of Health as part of the new law. ODS has developed the International Bibliographic Information on Dietary Supplements (IBIDS). IBIDS is a database of scientific literature on dietary supplements.

There are differences between herbal supplements and FDA-approved medications. A drug, which may be originally derived from a plant, is intended to diagnose, cure, mitigate, treat, or prevent diseases. Before they are marketed, drugs must undergo strict clinical studies to determine their effectiveness, safety, interaction possibilities, and appropriate dosages. The FDA then reviews the data and authorizes a drug's use.

Because the FDA views dietary supplements as food, dietary supplement manufacturers simply ensure that the products they put on the market are safe. The FDA does not review or approve supplement ingredients or products before marketing. Once the dietary supplement is marketed, the FDA must prove that the dietary supplement is unsafe before it can restrict the product's use.

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Vitamin and Mineral Functions in the Body

Each nutrient has a different function in the body. The nutrient profile on supplement labels usually includes 11 essential vitamins and seven minerals. Essential vitamins and minerals are available only through the food we eat or through supplementation; they cannot be made in the body. The table below gives you a brief synopsis of these essential vitamins and minerals.

Vitamins A, D, E, and K are fat-soluble vitamins and can be stored in the body. Vitamins C, B₁,

B₂, B₆, B₁₂, folic acid, and niacin are water soluble. Very little of water-soluble vitamins is stored in the body, and these vitamins are eliminated through the urine.

The essential minerals are calcium, copper, iron, magnesium, potassium, selenium, and zinc.

Recommended Daily Intakes for Vitamins and Minerals

It is impossible to say exactly how much of a nutrient an individual needs, because tolerances vary. It is best to err on the conservative side. Based on a review of

Vitamin	Function
Fat-soluble	
A	Healthy skin; resistance to infection; antioxidant
D	Strong bones and teeth
E	Antioxidant
K	Blood clotting
Water-soluble	
C	Antioxidant; blood vessel repair; wound healing; strong bones and teeth; iron absorption from foods
B ₁ (Thiamin)	Nervous system functions; promotes appetite and digestion
B ₂ (Riboflavin)	Healthy skin and eyes; protein, fat, and carbohydrate metabolism
B ₆	Protein metabolism; blood cell production
B ₁₂	Promotes normal growth; prevents anemia
Folic acid	Blood cell production; resistance to infection; normal fetal development
Niacin	Healthy skin and tongue; nervous and digestive system functions
Mineral	Function
Calcium	Strong bones and teeth; nervous system, heart, and muscle functions
Copper	Red blood cell production
Iron	Prevents iron-deficiency anemia
Magnesium	Nerve and muscle contractions
Potassium	Heart-muscle contractions; fluid balance
Selenium	Antioxidant
Zinc	Wound healing; normal growth; taste acuity

the research literature, scientists have developed Reference Daily Intakes (RDIs). The RDIs are not requirements, but an estimate of safe and adequate nutrient intakes. The RDIs are designed for the age group with the highest need. An example is the RDI for iron. It is based on a woman's need and is overly generous for men. You should try to meet the RDIs on a daily basis, but if you meet your weekly average you are unlikely to suffer from nutritional deficiencies. The Nutrition Facts label on food contains Daily Values (DVs), which are the RDIs expressed in percentages. DVs allow you to compare food based on their nutrient content. In the case of supplements, the DV designation allows you to compare vitamin and mineral amounts in each pill. The nutrient label should contain vitamins and minerals in amounts less than or close to 100 percent of the DVs. The DVs are based on a 2,000 calorie intake for adults and children over 4 years of age.

Reference Values for Nutritional Labeling*

Nutrient	Daily Values
A-----	5,000 IU
D-----	400 IU
E-----	30 IU
K-----	80 µg
C-----	60 mg
Niacin-----	20 mg
Thiamin (B-1)-----	1.5 mg
Riboflavin (B-2)-----	1.7 mg
B-6-----	2.0 mg
B-12-----	6 µg
Folic Acid-----	400 µg
Calcium-----	1,000 mg
Iron-----	18 mg
Sodium-----	2,400 mg

*United States Food and Drug Administration/Center for Food Safety and Applied Nutrition, 1998.

Common units of measurement

mg = milligrams

µg = micrograms

RE = retinol equivalents

Who Needs Dietary Supplements?

There are some valid reasons for taking dietary supplements beyond the nutrients obtained from food. The following people may need supplements:

- Individuals who have nutrient deficiencies.
- Women (including teenage girls) in their childbearing years who need more folic acid than foods alone usually supply. The U.S. Public Health Service recommends a folic acid supplement of 400 micrograms per day for this group.
- Pregnant or lactating women who may need iron and folic acid.
- Newborns, infants, and children under the age of 2 who may have additional needs. Speak with your pediatrician.
- Lactose-intolerant individuals who may need additional calcium to reduce the risk of osteoporosis.
- Habitual dieters who make poor food choices.
- Elderly individuals who absorb and metabolize nutrients less efficiently or who may have chewing difficulties.
- Individuals with AIDS who lose nutrients faster than foods can supply them.
- Drug addicts or alcoholics who absorb fewer nutrients.
- Individuals recovering from surgery, burns, injury, or illness who may need extra nutrients to help regenerate tissue.
- Strict vegetarians who may need vitamin B₁₂, vitamin D, iron, and zinc.
- Individuals whose medications may interfere with the body's use of nutrients.

There are some valid reasons for taking dietary supplements beyond the nutrients obtained from food. You should consult a physician or dietitian for an evaluation of your vitamin status before beginning supplementation.

Supplements have not been proven to help you cope with stress, give you energy, build lean body tissue, or prevent or cure self-diagnosed conditions.

Supplements have not been proven to help you cope with stress, give you energy, build lean body tissue, or prevent or cure self-diagnosed conditions. An excess of any nutrient will not produce mysterious or beneficial reactions in the body and may in fact be toxic. Some people should consult their health care provider before taking supplements to avoid possible interactions, including those with kidney or liver disease, those who take medications, or those who smoke.

Herbal Dietary Supplements

Herbs are natural products that contain an array of chemicals with concentrations that vary depending on the genetics of the plant, growing conditions, plant parts used, harvest time, preparation, and storage. An herbal product sold as a dietary supplement that is labeled as a treatment or cure for a specific disease or condition would be considered an illegal drug. The FDA oversees safety, manufacturing, and product information, while the Federal Trade Commission (FTC) regulates the advertising of all dietary supplements. Since supplements are regulated as food, manufacturers are not required to do the testing or quality control that is standard protocol for regular drugs.

A number of studies have shown that certain herbs may help people with conditions ranging from headaches to high cholesterol. Some herbs might even have the potential to become the next quinine, aspirin, or digitalis—all drugs that were originally derived from plants.

However, you face a formidable obstacle if you decide you want to use herbs. There is no guarantee that the pills are what is claimed for them, and, in most cases, no one really knows what will happen if you take them. You may have no way to know whether:

- a plant's active ingredients actually ended up in the herbal pills you buy
- a supplement's ingredients are in a form your body can use
- the dosage makes any sense
- unknown ingredients are in the pills
- the pills are safe, or
- the next bottle of those same pills will have the same ingredients.

No herb should be a substitute for established disease therapy. Potential use should be discussed with appropriate health care professionals. Consider changes to your diet or lifestyle that might accomplish your goals. If you do take herbal supplements and experience any unusual symptoms, allergies, rashes, or other problems, stop taking the product at once. The FDA advises a consumer to contact his or her physician, who should then call the Agency's MedWatch hotline for professionals to report adverse effects. Also contact your state and local health departments and consumer protection agency.

Buyer Beware

There are some herbs that merit further study, such as chamomile, Echinacea, garlic, ginger, ginkgo biloba, ginseng, and St. John's wort. However, some herbs, vitamins, and minerals can have possible health hazards. Remember,

any product potent enough to help people can also be potent enough to cause side effects. The FDA has issued warnings about the following dietary supplements:

- Chaparral may cause irreversible liver disease.
- Comfrey and germander can obstruct blood flow to the liver, possibly leading to death.
- Ephedra, also known as Ma huang and ephedrine, can raise blood pressure and cause nerve damage, headaches, seizures, heart attack, stroke, and death.
- Lobelia can cause low blood pressure, rapid heartbeat, coma, and death.
- Willow bark can cause Reye syndrome.
- Wormwood can cause neurological symptoms, characterized by numbness of arms and legs, mental dysfunction, delirium, and paralysis.
- Vitamin A in doses of 10,000 RE a day has caused birth defects, bone abnormalities, and severe liver disease.
- Vitamin B₆ in doses above 100 milligrams a day can cause balance difficulties and nerve injury.
- Niacin in slow-release doses of 500 milligrams or more a day or immediate-release doses of 750 milligrams or more a day can cause reactions that range from stomach pain, vomiting, and diarrhea to liver disease, muscle disease, eye damage, and heart injury.
- Selenium in doses of 800 to 1,000 micrograms a day can cause tissue damage.
- L-tryptophan can cause a potentially fatal blood disorder.

Fraudulent products often can be identified by the types of claims

made in the labeling, advertising, and promotional literature. Beware of terms such as "breakthrough," "magical," "miracle cure," "new discovery," "detoxify," "purify," and "energize." Also, beware if a product claims to be backed by scientific studies but has no list of references or if references are inadequate.

How to Make Good Dietary Supplement Choices

Check Out the Label

- The nutrient label should contain vitamins and minerals in amounts less than or close to 100 percent of the Daily Values.
- There are few supplements with 100 percent of the Daily Values for calcium, magnesium, phosphorous, or biotin. Calcium and magnesium are too bulky, biotin is expensive, and phosphorous is usually added in unison with calcium.
- Beta-carotene is the only form of vitamin A that acts as an antioxidant in the body. Look for a supplement that contains beta-carotene only.
- Avoid excess doses of vitamins and minerals. Not only do they increase the price of the supplement, but high doses of some nutrients can interfere with the benefits of others. Some nutrients, such as fat-soluble vitamins A and D, can be toxic in large doses.

Choose a High-Quality Supplement

- Because supplement manufacturers are not required to prove the safety or effectiveness of their products, quality can be difficult to assess.

Some herbs, vitamins,
and minerals
can have possible
health hazards.

Pills have only about eight to 20 of the thousands of nutrients or chemicals your body needs for good health, so the only way to get all the nutrients you need is to eat a variety of foods.

- Do not buy a supplement past its expiration date.
- Store supplements in a cool, dry place, and keep the bottle well sealed to minimize loss of potency.
- A supplement must be absorbed by the body to be of value. The U.S. Pharmacopoeia (USP), an organization that sets federal standards on the composition and quality of drugs and supplements, has established dissolution standards. These standards tell you how well the supplement is absorbed by the body within 45 minutes.
- It generally is recommended that you take your supplement with a meal. A full stomach takes longer to empty, allowing muscles to agitate and dissolve the tablet so it can be more easily absorbed by the system later and reduces gastric irritation that some individuals experience.
- Chelated supplements offer no advantages. The term chelated does not mean it is absorbed more easily. It merely describes the chemical bond that attaches minerals to certain compounds.
- Stress formulas offer no advantages. Medical stresses can increase the need for B vitamins and vitamin C, but there is no evidence that emotional stresses increase the need for vitamins or minerals.
- High-potency or therapeutic-dose supplements offer no advantages. More is not better.
- Time-release supplements are not worth the extra expense. Maintaining a constant level of vitamins in body fluids is not needed as it is with antibiotics.

Don't Be Fooled by Unsubstantiated Claims

- Natural vitamins offer no benefits over synthetic vitamins. In some cases, the synthetic form is more easily absorbed by the body than the natural form, as is true for folic acid. In most cases, natural vitamins are actually a mixture of natural and synthetic substances. Of course, vitamins in their natural state in food are associated with other healthful nutrients, such as phytochemicals. Phytochemicals are substances found in plant foods that may act as cancer-fighting substances or cause other health benefits when eaten as a part of a varied diet.
- Higher-price brands are not necessarily better. Store brands are often the same as national brands, only cheaper. Consider the name of the manufacturer or distributor. Supplements made by a nationally known company are more likely to be produced with good manufacturing practices. You can also write to the manufacturer for more information.
- Women who take iron supplements should take them at mealtime with a glass of juice. Foods rich in vitamin C help the body extract more iron from supplements and food. Avoid coffee or tea, as these contain substances that may inhibit iron absorption. Not all iron preparations are created equal. Ferrous compounds, such as ferrous gluconate or ferrous sulfate, are good choices. However, ferrous pyrophosphate, ferrous citrate, and ferrous tartrate are poorly absorbed.

Buy the Best for Your Money

- If calcium is a priority in order to reduce the risk of osteoporosis, calcium carbonate is absorbed most consistently. If you are taking more than 1,000 milligrams, divide the dose in half (take half in the morning and half in the evening). Take at mealtimes, especially if you are over 60. Calcium citrate can be absorbed with or between meals by an individual whose stomach does not secrete enough acid.
- Usually B-vitamins (thiamin, niacin, riboflavin, folic acid, and vitamins B₆ and B₁₂) are absorbed easily.
- Experts continue to debate whether doses beyond the RDA for vitamins C and E are beneficial. Research using antioxidant nutrients for disease prevention shows mixed results.

Dietary supplements do not make up for a poor diet. Vitamins do not supply energy and cannot

give you extra pep. Most claims of improved health from amounts beyond the Daily Values have not been substantiated. Pills have only about eight to 20 of the thousands of nutrients or chemicals your body needs for good health.

The only way to get all the nutrients you need is to eat a variety of foods. Research has documented the benefits of eating a wide variety of fruits and vegetables in generous quantities daily. Food also gives you bulk to aid in digestion and elimination. And eating food is much more satisfying to most people than taking a pill! If you still believe a supplement is needed, remember to examine the ingredients and choose one that satisfies your needs.

This publication provides information about wellness. Readers are encouraged to use it for education, but not as a substitute for professional medical advice.

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- Sizer, F., and E. Whitney. *Nutrition Concepts & Controversies*. Wadsworth, 2000.

For more information about Dietary Reference Intakes, ask your County Extension Agent for *Nutrition 2000: Foods for the 21st Century*.

Online Resources

Office of Dietary Supplements, National Institutes of Health
International Bibliographic Information on Dietary Supplements (IBIDS) <http://odp.od.nih.gov/ods/databases/ibids.html>

Federal Drug Administration
<http://www.fda.gov>

American Society for Nutritional Sciences
<http://nutrition.org>

Vitamin and Mineral Guide
<http://www.thriveonline.com/eats/vitamins/guide.index.html>

American Dietetic Association
<http://www.eatright.org/>

MedWatch
<http://www.fda.gov/medwatch/report/consumer/consumer.htm>
or 1-800-FDA-1080



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