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Cooperative Extension Service

Dietary Supplements: What are They and Who Needs Them

Sandra S. Bastin, Dietetics and Human Nutrition

Choosing the right supplement is not a simple task, but with a little information, you can choose the best daily supplement for you. Traditionally, dietary supplements are products made of one or more essential nutrients, like vitamins and minerals, but they may also include amino acids, botanicals, or herbal ingredients. Supplements come in many forms including capsules, pills, gummies, powders, drinks, and bars.

There are differences between dietary supplements and FDA-approved medications. 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 companies put their products on the shelf. Once the dietary supplement is marketed, the FDA must prove that the dietary supplement is unsafe before it can restrict the product's use. There have been instances where the FDA determined that some products contained contaminated or harmful substances to human health and took action to remove them from store shelves.

A medication, 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, possible interactions, and appropriate dosages. The FDA then reviews the data and authorizes a drug's use. This process may take years, or in the case of a pandemic, may follow a faster timeline, such as the vaccines developed to reduce the risk of coronavirus disease.

Table 1. Essential vitamins and minerals and their functions.

VITAMIN	FUNCTION
Fat-Soluble	
A	Supports a healthy immune system; improves low-light vision; maintains and protects healthy skin and cell membranes
D	Builds and maintains strong bones and teeth
E	Protects and maintains cell membranes
K	Aids in blood clotting
Water-Soluble	
C	Supports a healthy immune system; increases wound healing
B_1 (Thiamin)	Involved in carbohydrate, fat, amino acid, glucose, and alcohol metabolism; involved in nerve-cell function
B_2 (Riboflavin)	Involved in carbohydrate and protein metabolism; maintains healthy skin and eyes
B_6	Involved in protein and lipid metabolism
B_{12}	Involved in maturation of red blood cells, neural function, and DNA synthesis
Folic Acid	Supports a healthy immune system; involved in red blood cell production; involved in normal fetal nervous system development
Niacin	Involved in carbohydrate and cell metabolism; assists in keeping the nervous system, digestive system, and skin healthy
MINERAL	**FUNCTION**
Calcium	Builds and maintains strong bones and teeth; assists nervous system and muscles to function properly
Copper	Involved in red blood cell production; involved in bone formation
Iron	Involved in hemoglobin and myoglobin formation
Magnesium	Supports a healthy immune system; maintains nerve and muscle function;
Potassium	Controls heart-muscle contractions; supports normal blood pressure; maintains cellular fluid balance
Selenium	Supports a healthy immune system; supports many enzymes in metabolism
Zinc	Supports a healthy immune system; involved in cellular metabolism

Vitamin and Mineral Functions in the Body

Vitamins and minerals have different jobs that help keep the body healthy. Every nutrient has a different function in the body. Essential vitamins and minerals are available only through the food we eat or through supplementation. They cannot be made in the body. There are 13 essential vitamins: vitamins A, C, D, E, K, and the B vitamins (thiamine, riboflavin, niacin, pantothenic acid, biotin, B_6, B_{12}, and folate). A number of minerals are essential for health, including calcium, phosphorus, potassium, sodium, chloride, magnesium, iron, zinc, iodine, sulfur, cobalt, copper, fluoride, manganese, and selenium. Table 1 gives you a brief overview of some of these essential vitamins and minerals and how they function in your body to keep you healthy.

Nutrient Recommendations for Vitamins and Minerals

It is impossible to know exactly how much of a nutrient an individual needs. Tolerances vary, and everyone is different. Based on thorough reviews of nutrition science research, scientists have developed an estimate of safe and adequate nutrient intakes for each day. The Reference Dietary Intake, or RDI, is the suggested amount of a nutrient for the general population to consume over time. RDIs refer to the average daily nutrient intake, at safe levels. While designed to assist health-care professionals in creating patient and consumer counseling and educational programs, they also assist in developing nutrition food labels and dietary guidelines for consumers. If you try to meet the RDIs, you are unlikely to suffer from nutritional deficiencies. A balanced, nutritious diet allows you to meet the RDIs for vitamins and minerals.

To assist you in determining your needs, nutrition facts labels provide the Daily Value (DV) of selected nutrients. The "% Daily Values" listings on nutrition and supplement facts labels allow you to see how much of a nutrient is in the product you are consuming. They also allow you to compare vitamin and mineral amounts in different products. The DVs are based on a 2,000-calorie intake for adults and children over four years of age. For more information on the RDIs for vitamins and minerals, consult the FDA's chart at https://www.fda.gov/media/99069/download, but selected vitamins and minerals are listed in Table 2.

Table 2. Reference values for nutritional labeling.*

NUTRIENT	DAILY VALUES
A	900 mcg
D	20 mcg
E	15 mg
K	120 mcg
C	90 mg
Niacin	16 mg
Thiamin (B_1)	1.2 mg
Riboflavin (B_2)	1.3 mg
B_6	1.7 mg
B_{12}	2.4 mcg
Folic Acid	400 mcg
Calcium	1,300 mg
Iron	18 mg
Sodium	2,000 mg

*United States Food and Drug Administration/Center for Food Safety and Applied Nutrition, 2023.
mg = milligrams
mcg = micrograms

Who Needs Dietary Supplements?

While some individuals do need to complement their diets with supplements, evidence-based research indicates that we should all prioritize healthy eating and staying active. It's never too late to choose nutritious foods.

The National Institutes of Health (NIH) reminds us that if you don't eat a variety of nutritious foods, some dietary supplements can provide you with essential nutrients your body needs for good health. Share with your health-care provider the dietary supplements you are taking. Only medical professionals can identify deficiencies by using medical tests and then prescribing or recommending treatment. A registered dietitian can help determine your personalized nutrient needs. The following people may be at a greater risk of nutrient deficiencies, and supplements may help.

- Women (including teenage girls) of childbearing age may need more folic acid and iron than foods alone usually supply.
- Pregnant or lactating women may need more folic acid and iron.
- Newborns, infants, and children under the age of two may have additional needs. Speak with your pediatrician about dietary questions.
- Lactose-intolerant individuals may need additional calcium to reduce the risk of osteoporosis.
- Those with a limited or restricted diet may need to supplement nutrients they are not consuming.
- Older adults who absorb and metabolize nutrients less efficiently or who may have chewing difficulties may be at risk of being deficient in vitamin B_{12}, vitamin D, and calcium.
- Individuals with chronic health conditions, such as heart disease, diabetes, cancer, HIV/AIDS, and some autoimmune diseases, may need more vitamins and minerals.
- Individuals living with or in recovery for substance or alcohol use disorder may need more nutrients.
- Individuals recovering from surgery, burns, injury, or illness may need extra nutrients to help regenerate tissue and heal.
- Strict vegetarians and vegans may need more vitamin B_{12}, iron, vitamin D, calcium, and zinc because they are commonly lacking in these diets.
- Individuals whose medications may interfere with the body's absorption and use of nutrients may need more education on interactions or side effects.

Bottom Line

When deciding whether a dietary supplement is right for you, include a registered dietitian, pharmacist, or other health-care provider in the conversation. Remember, supplements have not been proven to help you cope with stress, directly give you energy, build lean body tissue, or prevent or cure a self-diagnosed condition. Choosing the right supplement is not a simple task, but with a little information and help from your health-care provider, you can choose the best daily supplement for you, if needed.

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This publication provides information about health and wellness.
Readers are encouraged to use it for education, but not as a substitute for professional medical advice.
Revised by Heather Norman-Burgdolf, Dietetics and Human Nutrition.

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