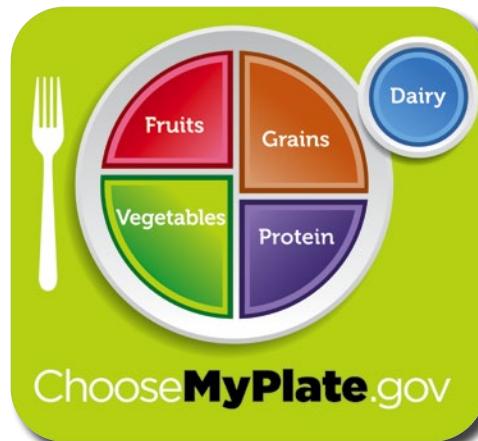


Oils



Key Nutrients

MyPlate is a tool to help us choose what foods to eat. MyPlate promotes a variety of foods, moderate portions, and nutrients specific to each food group. Each box of color below represents a food group: grains (orange), vegetables (green), fruits (red), dairy (blue), protein (purple), and oils (yellow).



The proportion of each color on MyPlate represents how much each food group contributes to the overall diet. Each food group provides distinct nutrients, which the body needs to be healthy. If these nutrients are missing from meals or snacks for many days, a person can develop a nutrient deficiency, increase risk of certain diseases, become sick, or even die. This publication lists many of the nutrients we need, explains their role in keeping us healthy, and suggests food sources using the color coded food groups.

Eating a variety of foods from all of the groups on MyPlate is a fun and satisfying way to stay healthy.

Macronutrients

“Macro” means large—these are the nutrients we need in large amounts. The key macronutrients are protein, carbohydrate, fat, and water.



Protein

Protein sources: Dairy and protein food groups

Description: Protein is made up of many tiny units called amino acids. Protein is found in both animal and plant foods, but the amino acids within each varies, which affects the protein quality. High quality protein is found in eggs, lean meat, poultry, fish, seafood, eggs, milk, and cheese. Most Americans eat enough protein but should focus on leaner and more varied sources of protein.

Functions of protein: Building blocks for bones, muscles, cartilage, skin, blood, enzymes, hormones, and antibodies.

Carbohydrate



Sources: Carbohydrate is found in the grain, vegetable and fruit groups; grains and vegetables provide primarily carbohydrates, whereas fruit provides sugar. Sugar can come from other foods including molasses, syrups, honey, and other sweets. Current recommendations suggest limiting added sugar to no more than 10% of calories. For the reference 2000 calorie diet, this would be 12 teaspoons of added sugar daily. Current intakes of added sugar are about double the recommendation.

Description: Carbohydrate provides over half of the energy in our diet. Carbohydrates with smaller units are considered “sugars” or simple carbohydrate, whereas those with larger units are referred to as “starch” or complex carbohydrate. Sugars take less time to breakdown in the body and raise blood sugar faster than starches.

Functions:

- Supplies energy and helps the body use fat as an energy source
- Sole source of energy for the brain
- Prevents protein from being used for energy so it can build and repair the body

Dietary Fiber



Sources: Fiber is found in the grain, vegetable, fruit, and protein groups. Foods containing fiber include whole grain breads and cereals, whole fruits/vegetables and dried beans (such as kidney and black beans).

Description: Dietary fiber is the part of plant foods that cannot be digested by humans; it is considered a complex carbohydrate.

Functions:

- Adds bulk to the contents of the intestine, which can provide a feeling of fullness
- Increases movement of intestinal contents, which may reduce constipation, diverticulosis, and other intestinal diseases
- Helps remove cholesterol from the intestine, which reduces risk of coronary heart disease

Water



Sources: Vegetables, fruits, beverages (milk), soup

Description: Water is one of the most essential nutrients that keeps our bodies healthy.

Functions:

- Important part of all cells and fluids in the body
- Carries nutrients to and wastes away from cells
- Helps digest and absorb the food we eat
- Helps keep body temperature constant

Fat



Sources: Oils, butter, margarine, salad dressing, shortening, and lard. Fat is found mainly in the oil group but also can come from food in the protein and dairy groups.

Description: Fat provides calories to our diet and adds texture, flavor, and aroma to food. Fat is made up of different kinds of fatty acids—saturated, monounsaturated, and polyunsaturated, which have different effects on our health. Try to limit saturated fat.

Functions:

- Supplies energy in a compact form (twice the calories as equivalent amounts of protein and carbohydrate)
- Stores energy for future use, which also serves as an insulator and cushions organs
- Supplies essential fatty acids (those our bodies need but cannot make)
- Helps body absorb and use some nutrients such as fat-soluble vitamins
- Provides structure and function to cells as a component of the cell walls

Micronutrients

“Micro” means small—these are nutrients we need in small amounts. Key micronutrients include vitamin A, thiamin (vitamin B1), riboflavin (vitamin B2), niacin (vitamin B3), folic acid, vitamin B12, ascorbic acid (vitamin C), vitamin D, vitamin E, calcium, iron, magnesium, and potassium.

Vitamin A



Sources: Carrots, leafy greens, sweet potatoes, broccoli, and vitamin A-fortified milk and margarine, fatty fish and liver.

Description: Vitamin A is a fat-soluble vitamin obtained in the American diet due to fortification. Beta carotene, a compound found in dark green and orange vegetables, is converted to Vitamin A by our body contributing to overall intake.

Functions:

- Helps the eyes adjust to dim light and protects against night blindness
- Helps young cells in the body develop into mature cells
- Keeps the skin and the lining of the mouth, nose, throat, and digestive tract healthy and resistant to infection
- Necessary for growth, reproduction, and immune function
- Beta carotene serves as an antioxidant to protect the body's cells from damage

Thiamin (Vitamin B1)



Sources: Whole grain and enriched grain products including bread, rice, pasta, tortillas and fortified cereals, pork, seeds, and dry beans

Description: Thiamin is a water-soluble, B vitamin found in many foods. However, it is sensitive to heat and oxygen and can be destroyed during cooking or storage. Because it is water-soluble it is easily lost when food is cooked with water.

Functions:

- Helps body cells release energy from food
- Helps synthesize some other compounds needed in the body

Riboflavin (Vitamin B2)



Sources: Whole and enriched grains, milk, cheese, yogurt, lean meats, eggs, poultry, fish and dry beans

Description: Riboflavin is a water-soluble B vitamin found in many foods; similar to thiamin, it is easily destroyed by light and heat.

Functions:

- Helps release energy from protein, carbohydrate, and fat
- Helps activate other vitamins

Niacin (Vitamin B3)



Sources: Whole grain and enriched breads and cereals, tuna, poultry, beef, dry beans, nuts, and seeds

Description: Niacin is a water-soluble B vitamin found easily in food, but also made in the human body.

Functions:

- Helps body cells release energy from food
- Helps the body make cholesterol and fatty acids
- Keeps the skin, tongue, digestive tract, and nervous system healthy

Folic Acid



Sources: Grains fortified with folic acid, leafy greens (especially spinach), broccoli, asparagus, corn, liver, dry beans, and nuts

Description: Folic Acid is a B vitamin that also is known as folate. It is especially important for women who are pregnant or who may become pregnant to prevent neural tube birth defects including spina bifida.

Functions:

- Used in the synthesis of DNA and RNA in growing cells
- Helps the body use some amino acids



Vitamin B12



Sources: Milk, beef, poultry, fish, clams, fortified cereals, and eggs

Description: Vitamin B12 is a water-soluble vitamin. Some humans cannot absorb vitamin B12 very well and can develop a type of anemia.

Functions:

- Helps maintain nerve insulation and sending messages through the body
- Essential to red blood cells preventing anemia
- Helps release energy from fatty acids
- Maintains folic acid activity
- Helps prevent elevated levels of homocysteine, a compound that may increase the risk of cardiovascular disease

Ascorbic Acid (Vitamin C)



Sources: Oranges, grapefruit, lemons, limes, strawberries, cantaloupe, broccoli, cauliflower, cabbage, Brussels sprouts, green leafy vegetables, peppers, tomatoes, and potatoes

Description: Vitamin C is a water-soluble vitamin commonly associated with citrus fruits. This vitamin can be easily destroyed by oxygen, light, and heat, so is easily lost during cooking and storage.

Functions:

- Strengthens the walls of blood vessels
- Helps wounds to heal
- Aids in building bones and teeth
- Helps the body absorb iron
- Works as an antioxidant to protect the body from damaging compounds in the environment
- Helps with immune function

Vitamin D



Sources: sunlight, milk fortified with vitamin D, fortified cereals, beef, liver, salmon, and eggs

Description: Vitamin D is sometimes called the sunshine vitamin because it is produced in the skin when it is exposed to sunlight. This vitamin is also found in Vitamin D fortified milk.

Functions:

- Maintains normal levels of calcium and phosphorus in the blood
- Helps keep bones healthy
- Promotes normal immune function



Vitamin E



Sources: Vegetable oils, leafy greens, sunflower seeds, and nuts

Description: Vitamin E functions as an antioxidant to protect the cells in our body. This vitamin is found throughout our food supply, so a deficiency is rare.

Functions:

- Works as an antioxidant to protect cell membranes from damaging compounds (free radicals) in the environment
- Helps maintain red blood cells, nerve cells, and immune cells
- Promotes eye health

Calcium



Sources: Milk, yogurt, cheese, dark green leafy vegetables (broccoli, spinach, and greens), fortified foods (soy milk, orange juice) and fish eaten with the bones (salmon canned with the bones)

Description: Calcium is the mineral found in the largest amount in our bodies. The majority of calcium is found in bones and teeth. Deficiency of this mineral is often associated with the loss of bone, or osteoporosis.

Functions:

- Helps maintain strong bones and teeth
- Helps regulate blood pressure
- Helps blood form clots
- Works as a messenger for nerves, muscles, and the heart to function properly

Iron



Sources: Meat, poultry, fish, leafy green vegetables, and whole grains

Description: Iron is a mineral that is found mainly in hemoglobin, the oxygen carrying component of the blood. Deficiency of iron is common and is called anemia.

Functions:

- Carries oxygen from the lungs to muscles, the brain, and other parts of the body
- Helps protect cells from damage by environmental factors

Magnesium



Sources: Whole grains, leafy greens (spinach), nuts, and dried peas/beans

Description: Magnesium is an abundant mineral in the body and helps regulate many metabolic reactions.

Functions:

- Helps the body maintain normal levels of calcium, sodium, and potassium needed for muscle contractions
- Helps maintains bone structure
- Helps release energy from carbohydrate, protein, and fat in the body
- Involved in the synthesis of DNA and RNA

Potassium



Sources: Bananas, oranges, and potatoes

Description: Potassium is a mineral that is a part of the fluid inside our cells. Potassium is tightly controlled by our body because any deficiency or excess of potassium can cause an irregular heartbeat.

Functions:

- Helps transmit nerve signals throughout the body
- Helps regulate blood pressure

Revised by Ruth Litchfield, Ph.D., R.D., L.D., nutrition and wellness state specialist, Iowa State University Extension and Outreach.

Iowa State University Extension and Outreach does not discriminate on the basis of age, disability, ethnicity, gender identity, genetic information, marital status, national origin, pregnancy, race, color, religion, sex, sexual orientation, socioeconomic status, or status as a U.S. veteran, or other protected classes. (Not all prohibited bases apply to all programs.) Inquiries regarding non-discrimination policies may be directed to the Diversity Advisor, 2150 Beardshear Hall, 515 Morrill Road, Ames, Iowa 50011, 515-294-1482, extdiversity@iastate.edu. All other inquiries may be directed to 800-262-3804. PM 877 December 2019

