

Cholesterol

Cholesterol is a natural chemical the liver makes to build cell membranes and brain and nerve tissues and to aid in hormone production. The liver makes all the cholesterol the body needs, but the typical diet also contains cholesterol. Too much cholesterol in the bloodstream increases the risk of heart disease. Cholesterol levels can rise as a result of eating too many high-cholesterol foods or eating a diet high in fat that stimulates the body to produce cholesterol. Dietary sources of cholesterol include egg yolks, meat (especially organ meats), some shellfish, and whole-milk dairy products. Plant foods do not contain cholesterol.

In order to travel through the bloodstream, cholesterol must attach itself to certain proteins. This combination of cholesterol and protein forms a lipoprotein. Low-density lipoproteins (LDL) and high-density lipoproteins (HDL) are the two most important lipoproteins. High levels of LDL cholesterol in the blood increase the risk of fatty deposits in the arteries, which in turn increases the risk of heart attack and stroke. For this reason, LDL cholesterol is often referred to as "bad" cholesterol. Elevated HDL cholesterol levels, on the other hand, seem to have a protective effect against heart disease. As a result, HDL cholesterol is often called "good" cholesterol.

Experts recommend that people without coronary heart disease eat less than 300 mg of cholesterol per day. It is also recommended that they keep their total blood cholesterol level below 200 and their HDL cholesterol level at 40 or higher.

Display Tip

Instructors find that their test tube presentations benefit from placing a dark piece of paper behind the test tubes for better viewing.

Minitext

FAT FACTS: Vending Machine Foods

Reading food labels helps us to make informed choices and to limit certain foods. Although selecting healthy vending machine foods can be challenging, it is possible. One of the keys to eating smart—whether at home or on the go—is understanding the relationship among calories, fat, and cholesterol. The chart below demonstrates that some vending machine foods are better choices than others.

| FOOD | CALORIES | FAT (grams) | CHOLESTEROL (mg) |
|----------------------------------|----------|----------------|---------------------|
| Potato Chips (small bag) | 150 | 10 | 0 |
| Pretzels (small bag) | 100 | .5 | 0 |
| Cupcakes (2) | 190 | 7 | 10 |
| Chocolate Bar w/Nuts | 230 | 14 | 5 |
| Peanut Butter Crackers | 130 | 12 | 0 |
| Chocolate Chip Cookies (4 small) | 150 | 7 | 0 |
| Animal Crackers (14 pieces) | 140 | 4 | 0 |
| Small Chocolate Donuts (3) | 220 | 10 | 10 |
| Mixed Nuts | 170 | 15 | 0 |
| Granola Bar | 160 | 1 | 0 |

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Vending Machine Basics

For times when fast food is not fast enough, we can look to vending machines for meal or snack options. While vending machines do not typically offer the healthiest choices, they do provide an alternative to meal skipping. Skipping meals is not a healthy habit, as it can cause us to eat more than we need later, so finding ways to eat nutritiously while on the go is important. In addition, a healthy snack from a vending machine just before going out to eat can help prevent overeating on less nutritious foods.

Making Healthy Vending Machine Choices

1. When making vending machine selections, remember to make sensible choices. Don't use the snack machine as an excuse to choose higher-fat foods.
2. Sometimes, nutrition labels may be large enough to see inside the machine before buying. If not, check the label once you have made your purchase, and make a mental note for next time.
3. Check with your vendor to see if healthier foods can be supplied.

Choose:

- pretzels
- animal crackers
- granola bars
- baked chips
- fig bars
- raisins or other fruit
- juice

Avoid:

- chocolate
- candy
- snack cakes
- doughnuts
- fried potato or corn chips
- nuts

Fat Facts

What Is Fat?

Fat is an essential nutrient for the human body. All people need some fat in their bodies as well as in their diets.

- Fat supplies energy and essential fatty acids and is important for growth and development.
- A layer of fat beneath the skin helps to insulate the body from cold.
- Fat surrounds the different organs in the body to protect them from injury.
- Fat carries the fat-soluble vitamins A, D, E, and K and promotes their absorption in the intestines.
- Fat gives taste and consistency to foods and helps people to feel full so that they stop eating.

However, people need only a small amount of fat each day, and most people get far more fat in their diets than they need. Too much fat can have negative health consequences. Fat is high in calories—it provides 9 calories per gram, compared with 4 calories per gram for carbohydrates or protein. As a result, a diet high in fat can lead to excessive body weight. In addition, too much fat in the diet may increase the risk of heart disease and certain types of cancer.

Types of Fatty Acids

The major types of fatty acids in the foods that people eat are **saturated**, **monounsaturated**, **polyunsaturated**, and **trans**. Each type of fat affects people's health differently. Saturated fatty acids are primarily found in foods of animal origin (including meat, butter, cheese, and milk) as well as in some tropical oils such as coconut oil and palm oil. Monounsaturated and polyunsaturated fatty acids are found mainly in foods of plant origin and some seafoods. Olive and canola oils are good sources of monounsaturated fat; most other kinds of vegetable oils, nuts, seeds, and fish are rich in polyunsaturated fat.

Food manufacturers use a process known as hydrogenation to extend the shelf life of many products. This process can also make foods crispier, smoother, or softer. Hydrogenation is the process of adding hydrogen to vegetable oil. The result is called trans fat. While small amounts of trans fatty acids occur naturally in various animal products, most trans fatty acids are found in processed foods, especially french fries, doughnuts, vegetable shortening, stick margarine, chips, popcorn, cookies, crackers, and other foods that contain hydrogenated vegetable oils. A product contains trans fat if the words "partially hydrogenated" or "vegetable shortening" appear in the list of ingredients on its label. Products that list these ingredients as one of the first few on the label are likely to be high in trans fat.

A diet high in saturated fat or trans fat increases the risk of heart disease because these fats raise blood cholesterol. Monounsaturated and polyunsaturated fats may reduce blood cholesterol when they take the place of saturated fat and trans fat in the diet. **Omega-3** and **omega-6** fatty acids (two types of polyunsaturated fatty acids) may have additional benefits. Omega-3 fatty acids are found in fish such as salmon and mackerel as well as in soybean and canola oil; omega-6 fatty acids, such as linoleic acid, are found in corn, soybean, and safflower oil. Both omega-3 and omega-6 fatty acids have been shown to lower cholesterol levels in the blood.

Total fat intake should be less than 30% of the calories a person eats in one day. Saturated fat should account for no more than 10% of total daily calories, and intake of trans fat should be as low as possible.