

A Consumer's Guide to Fats

Once upon a time, we didn't know anything about fat except that it made foods tastier. We cooked our food in lard or shortening. We spread butter on our breakfast toast and plopped sour cream on our baked potatoes. Farmers bred their animals to produce milk with high butterfat content and meat "marbled" with fat because that was what most people wanted to eat.

But ever since word got out that diets high in fat are related to heart disease, things have become more complicated. Experts tell us there are several different kinds of fat, some of them worse for us than others. In addition to saturated, monounsaturated, and polyunsaturated fats, there are triglycerides, trans fatty acids, and omega three and omega six fatty acids.

Most people have learned something about cholesterol, and many of us have been to the doctor for a blood test to learn our cholesterol "number." Now, however, it turns out that there's more than one kind of cholesterol, too.

Almost every day there are newspaper reports of new studies or recommendations about what to eat or what not to eat: Lard is bad, olive oil is good, margarine is better for you than butter—then again, maybe it's not.

Amid the welter of confusing terms and conflicting details, consumers are often baffled about how to improve their diets. Clearly, though, consumers are interested in obtaining this information.

FDA regulations enable consumers to see clearly on a food product's label how much and what kind of fat the product contains. Understanding the terms used to discuss fat is crucial if you want to make sure your diet is within recommended guidelines.

Fats and Fatty Acids

Fats are a group of chemical compounds that contain fatty acids. Energy is stored in the body mostly in the form of fat. Fat is needed in the diet to supply essential fatty acids, substances essential for growth but not produced by the body itself.

There are three main types of fatty acids: saturated, monounsaturated, and polyunsaturated. All fatty acids are molecules composed mostly of carbon and hydrogen atoms. A saturated fatty acid has the maximum possible number of hydrogen atoms attached to every carbon atom. It is therefore said to be "saturated" with hydrogen atoms.

Some fatty acids are missing one pair of hydrogen atoms in the middle of the molecule. This gap is called an "unsaturation" and the fatty acid is said to be "monounsaturated" because it has one gap. Fatty acids that are missing more than one pair of hydrogen atoms are called "polyunsaturated."

Saturated fatty acids are mostly found in foods of animal origin. Monounsaturated and polyunsaturated fatty acids are mostly found in foods of plant origin and some seafoods. Polyunsaturated fatty acids are of two kinds, omega-three or omega-six. Scientists tell them apart by where in the molecule the "unsaturations," or missing hydrogen atoms, occur.

Recently a new term has been added to the fat lexicon: trans fatty acids. These are byproducts of partial hydrogenation, a process in which some of the missing hydrogen atoms are put back into polyunsaturated fats. Some of the hydrogenated fatty acids take on a "straighter" structure: these are the trans fatty acids. "Hydrogenated vegetable oils," such as vegetable shortening and margarine, are solid at room temperature because straightening fatty acids allows them to pack more tightly.

Cholesterol

Cholesterol is sort of a "cousin" of fat. Both fat and cholesterol belong to a larger family of chemical compounds called lipids. All the cholesterol the body needs is made by the liver. It is used to build cell membranes and brain and nerve tissues. Cholesterol also helps the body produce steroid hormones needed for body regulation, including processing food, and bile acids needed for digestion.

People don't need to consume dietary cholesterol because the body can make enough cholesterol for its needs. But the typical U.S. diet contains substantial amounts of cholesterol, found in foods such as egg yolks, liver, meat, some shellfish, and whole-milk dairy products. Only foods of animal origin contain cholesterol.

Cholesterol is transported in the bloodstream in large molecules of fat and protein called lipoproteins. Cholesterol carried in low-density lipoproteins is called LDL-cholesterol; most cholesterol is of this type. Cholesterol carried in high-density lipoproteins is called HDL-cholesterol.

A person's cholesterol "number" refers to the total amount of cholesterol in the blood. Cholesterol is measured in milligrams per deciliter (mg/dl) of blood. (A deciliter is a tenth of a liter.) Doctors recommend that total blood cholesterol be kept below 200 mg/dl. The average level in adults in this country is 205 to 215 mg/dl. Studies in the United States and other countries have consistently shown that total cholesterol levels above 200 to 220 mg/dl are linked with an increased risk of coronary heart disease.

LDL-cholesterol and HDL-cholesterol act differently in the body. A high level of LDL-cholesterol in the blood increases the risk of fatty deposits forming in the arteries, which in turn increases the risk of a heart attack. Thus, LDL-cholesterol has been dubbed "bad" cholesterol.

On the other hand, an elevated level of HDL-cholesterol seems to have a protective effect against heart disease. For this reason, HDL-cholesterol is often called "good" cholesterol.

In 1992, a panel of medical experts convened by the National Institutes of Health (NIH) recommended that individuals should have their level of HDL-cholesterol checked along with their total cholesterol.

According to the National Heart, Lung, and Blood Institute (NHLBI), a component of NIH, a healthy person who is not at high risk for heart disease and whose total cholesterol level is in the normal range (around 200 mg/dl) should have an HDL-cholesterol level of more than 35 mg/dl. NHLBI also says that an LDL-cholesterol level of less than 130 mg/dl is "desirable" to minimize the risk of heart disease.

Some very recent studies have suggested that LDL-cholesterol is more likely to cause fatty deposits in the arteries if it has been through a chemical change known as oxidation. However, these findings are not accepted by all scientists.

The NIH panel also advised that individuals with high total cholesterol or other risk factors for coronary heart disease should have their triglyceride levels checked along with their HDL-cholesterol levels.

Triglycerides and VLDL

Triglyceride is another form in which fat is transported through the blood to the body tissues. Most of the body's stored fat is in the form of triglycerides. Another lipoprotein—very low-density lipoprotein, or VLDL—has the job of carrying triglycerides in the blood. NHLBI considers a triglyceride level below 200 mg/dl to be normal.

It is not clear whether high levels of triglycerides alone increase an individual's risk of heart disease. However, they may be an important clue that someone is at risk of heart disease for other reasons. Many people who have elevated triglycerides also have high LDL-cholesterol or low HDL-cholesterol. People with diabetes or kidney disease—two conditions that increase the risk of heart disease—are also prone to high triglycerides.

Dietary Fat and Cholesterol Levels

Many people are confused about the effect of dietary fats on cholesterol levels. At first glance, it seems reasonable to think that eating less cholesterol would reduce a person's cholesterol level. In fact, eating less cholesterol has less effect on blood cholesterol levels than eating less saturated fat. However, some studies have found that eating cholesterol increases the risk of heart disease even if it doesn't increase blood cholesterol levels.

Another misconception is that people can improve their cholesterol numbers by eating "good" cholesterol. In food, all cholesterol is the same. In the blood, whether cholesterol is "good" or "bad" depends on the type of lipoprotein that's carrying it.

Polyunsaturated and monounsaturated fats do not promote the formation of artery-clogging fatty deposits the way saturated fats do. Some studies show that eating foods that contain these fats can reduce levels of LDL-cholesterol in the blood. Polyunsaturated fats, such as safflower and corn oil, tend to lower both HDL- and LDL-cholesterol. Edible oils rich in monounsaturated fats, such as olive and canola oil, however, tend to lower LDL-cholesterol without affecting HDL levels.

Dietary guidelines endorsed by the U.S. Department of Agriculture and the U.S. Department of Health and Human Services advise consumers to:

- Reduce total dietary fat intake to 30 percent or less of total calories.
- Reduce saturated fat intake to less than 10 percent of calories.
- Reduce cholesterol intake to less than 300 milligrams daily.

U.S. Food and Drug Administration

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