



# Everything You Need to Know About the Functions of *Fats in Foods*

Think for a moment of your favorite foods...



What is it about them you enjoy most? The flavor of a succulent steak or delicious hamburger? The creaminess of ice cream or chocolate as it melts on your tongue? The

pleasing contrast of a silky smooth salad dressing with the crunch of fresh vegetables? That satisfied feeling that follows a snack of cheese or peanut butter on crispy crackers or celery?

These foods, all of which rank high on many people's lists of favorites, share a common trait.

## What are fats?

Fatty acids may be thought of as the "building blocks" of fats. All fats are a mixture of saturated, monounsaturated and polyunsaturated fatty acids.



They differ in the amount of hydrogen they contain. Saturated fatty acids contain the most hydrogen (they are "saturated" with hydrogen). Polyunsaturated fatty acids contain the least amount of hydrogen.

They contain fats. Fats provide much of the great taste and texture for which we prize these and other foods.

Indeed, the fats in foods play a vital role in their ultimate acceptability. Neither the amount nor type of fats can be changed indiscriminately without changing the very features that make a food appealing.

Without fats, foods—and eating—just wouldn't be the same. But with attention focused on reducing fats in our diets, we may forget the important role fats play in foods.

This brochure explains why fats are necessary in many foods as well as their place in a healthful diet.

### What foods contain fats?

Many foods naturally contain fats. Meats, dairy products, poultry, fish, nuts and vegetable oils supply most of the fats Americans eat. Whole grains and vegetables contain only small amounts of fats when prepared without added fats. Fruits (except avocados, coconut and olives) contain virtually no fats.

Many prepared foods also contain fats. Whether a cake is made from "scratch" at home, from a mix or purchased at the bakery, fats are frequently a key ingredient of baked goods. Further, there are grocery staples that are fats, such as butter, margarine products, shortening and oil.



## Why do we need different products like butter, shortening, margarine products and oil?

Fats serve a variety of functions in foods. Their unique mouthfeel supplies the rich, smooth, creamy sensation that distinguishes many foods. Fats also absorb and blend ingredient flavors and aromas to produce the distinct taste of individual foods.



In baked goods such as cakes, fats help produce a high, fine texture. When “creaming” fats and sugar—the first step in mixing many cake batters—fats trap tiny air bubbles that help the batter to rise. Fats also help keep dough and batter from separating and falling. And fats coat the proteins in flour to make a tender or flaky product.

While butter, shortening, margarine products and oils contain fat, each have different properties that affect how they work. Thus, they produce different results that can be key to the acceptance of many foods.

Shortening works best for some types of baking because it contains no water that would otherwise mix with flour and form gluten that toughens a product. As a result, shortening produces tender, flaky pie crusts and biscuits. Butter and margarine products contain water and hence produce a different, but still acceptable, texture. Vegetable oil (with the exception of olive oil) yields the best results in many box cake mixes. The flavor of fat-containing products affects their use as well. While many people prefer olive oil for sautéing, its distinctive taste may not be right for other uses, such as in baked products.

## What is the difference between solid fats like butter and shortening and liquid fats such as vegetable oils?

The difference between solid and liquid fats primarily relates to the type of fats they contain. All fats contain both saturated and unsaturated fats. Fats with a higher level of saturated fats are firmer at room temperature and need more heat to melt. Fats with a higher level of unsaturated fats tend to be liquid at room temperature. These properties help guide functional use in food preparation. For instance, more saturated (solid) fats perform better in certain cases, such as creaming a cake batter. More unsaturated (liquid) fats may function better in other applications, such as making salad dressings. The chart at the end of this brochure describes how different fat-containing products work in different uses. Some shortenings and margarine products are made from liquid vegetable oils that have been partially

hydrogenated. These products are hydrogenated only as much as needed to produce the desired texture and taste. Hydrogenation increases the firmness and melting point of oils. Partially hydrogenated products contain more unsaturated than saturated fats. However, *trans* fats are produced when unsaturated fats and oils are partially hydrogenated. *Trans* fats also occur naturally in small amounts in meats and dairy products. Many margarine products, particularly softer margarines, are now being produced with less or no *trans* fats.



## What role do dietary fats play in the diet?

The fats that we get from food are vital to good health. They provide energy—nine calories per gram—and essential fatty acids for healthy skin and important hormone-like substances. Fats also carry

and help the body absorb the fat-soluble vitamins A, D, E and K. What’s more, dietary fats help us feel satisfied following meals.

## How do dietary fats affect blood cholesterol?

The type and amount of dietary fats may affect levels of blood cholesterol. High blood cholesterol levels are one risk factor for coronary heart disease. Studies show some saturated fats raise blood cholesterol levels and unsaturated fats lower levels. The exception is stearic acid, a saturated fat that appears not to affect blood cholesterol.

Saturated fats are typically found in higher amounts in meats, egg yolks, whole milk and milk products, as well as palm, palm kernel, and coconut oils. Stearic acid is primarily supplied by cocoa butter and animal

sources. Unsaturated fats are found in higher amounts in fish, nuts, and liquid vegetable oils. Research suggests that foods containing *trans* fats have a similar effect as saturated fat in raising levels of total and LDL-cholesterol (the “bad” cholesterol). However, as with saturated fats, not all *trans* fats are created equal. Some research shows that certain *trans* fats from animal sources may have a neutral or beneficial effect on blood cholesterol.



## What is the difference between dietary cholesterol and fats in foods?

Foods with fats do not necessarily contain dietary cholesterol. Dietary cholesterol, a fat-like substance, is found only in animal products such as meats, dairy products, butter and egg yolks. It is not found in

vegetable oils, margarine, egg whites or plant foods like grains, fruits and vegetables. In addition, the body makes its own supply of cholesterol.

## How much of each dietary fat is recommended?

A balanced diet contains foods from all food groups and moderate amounts of total fats. The *2005 Dietary Guidelines for Americans* advise us to consume 20-35 percent of our calories from fats.



Specific recommendations focus on “knowing your fats.” *2005 Dietary Guidelines* recommend:

- Consuming less than 10 percent of calories from saturated fatty acids and less than 300 mg/day of cholesterol, and keep *trans* fatty acid consumption as low as possible.

- Most fats should come from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.
- When selecting and preparing meat, poultry, dry beans, and milk or milk products, make choices that are lean, low-fat, or fat-free.

To moderate fats, health experts recommend an eating pattern rich in a variety of grains, fruits and vegetables. To reduce *trans* and saturated fats, the American Heart Association recommends choosing vegetable oils, with the exception of tropical oils, and soft margarines instead of solid shortenings, stick margarines, and butter.

## What tools are available to manage fats in the diet?

The Food and Drug Administration (FDA) regulates messages about nutrients and content declarations on the food label. In light of dietary guidance, particularly on *trans* fat and saturated fats intake, consumers are advised to check the Nutrition Facts panel to compare products based on how much of

each of these fats is present per serving. Currently, the FDA requires that total fat, saturated fat, *trans* fat, and cholesterol be listed on the Nutrition Facts panel. When comparing two products, consider the combined amount of saturated and *trans* fats and choose the product with the lower combined value.

## What if a product is labeled “0 grams *trans* fat” but contains partially hydrogenated oil in the ingredients list?

Partially hydrogenated oils often are used at such low levels in food products (i.e., seasoning, blending, freshness) that they don’t contribute a significant amount of *trans* fat to the product by FDA standards, and are thus labeled “zero.” In this case, partially hydrogenated oil appears near the end of the ingredients list, as the

ingredients appear in descending order based on predominance by weight.

It is also important to note the difference between the terms “hydrogenated” and “partially hydrogenated.” Hydrogenated oils are fully saturated with hydrogen and, therefore, do not contain any *trans* fat.

## What is the bottom line concerning fats in foods?

Fats play a vital role in the taste, texture and appearance of foods. Consumers select fat-containing products according to how they intend to use them at home. Likewise, manufacturers choose different products to balance flavor, texture, shelf stability, and nutritional aspects. A manufacturer might make a cookie, for example, using shortening because it produces the texture, flavor and freshness qualities consumers want. Olive oil might be added to a salad dressing to give it a certain flavor.

Foods in the marketplace are currently undergoing changes in their fatty acid profiles, as scientists develop alternative formulations that have those fat-like characteristics listed above, to replace *trans* fats without increasing levels of saturated fats. Changes include producing for naturally functional oils and fats, fully hydrogenating vegetable oils, and further

modifying the partial hydrogenation process to produce less *trans* fats.

Above all, it’s important to remember that the principles of balance, variety and moderation form the basis for a healthful diet. Along with appropriate amounts of whole grains, vegetables, fruits, low-fat or fat-free dairy products and lean meats/meat alternatives consumers can enjoy moderate amounts of fat-containing products to add appeal to foods and good nutrition. Just remember to keep total fat intake between 20 to 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fats. The Nutrition Facts panel on the food label can help you determine the amount of total, saturated, and *trans* fats and cholesterol in foods. By balancing high-fat items with low-fat choices, Americans can reduce dietary fat while continuing to take pleasure in eating.

|  | BAKING  | FRYING   | DRESSINGS/SPREADS                                      |
|--|---|--|--|
| <b>Butter &amp; Margarine (80% fat)</b>            | Adds flavor; produces tender, crisp, chewy and brown cookies; tender pie crusts; cake frostings | Pan sautéing; burns easily                                   | Suitable for spreading directly on foods               |
| <b>Margarine Spreads (20% - 60% fat)</b>           | Cookies have “cake-like” texture; not suitable for pie crusts                                   | May not be suitable  | Suitable for spreading directly on foods               |
| <b>Non-fat/Very Low-fat Spreads (0% - 10% fat)</b> | Not suitable  | Not suitable   | Suitable for spreading directly on foods               |
| <b>Salad/Cooking Oils</b>                          | For special recipes such as carrot cake, box cake mixes and quick breads                        | Pan sautéing; frying and deep-fat frying                     | Mix with vinegar or herbs/spices                       |
| <b>Shortening</b>                                  | Produces tender, light, moist texture; best for flaky pie crust; thick cake frostings           | Pan sautéing; frying and deep-fat frying                     | May not be suitable                                    |
| <b>Cooking Sprays</b>                              | Pan coating   | Can be used to sauté in non-stick pans, if watched carefully | Not suitable   |
| <b>Dressings/Spreads</b>                           | Special recipes; some box cake mixes  | May not be suitable  | Suitable for use directly on/in foods and in marinades |
| <b>Spray Salad Dressings</b>                       | May not be suitable   | May not be suitable  | Suitable for spraying directly on foods                |

### If You Want to Know More

A registered dietitian (R.D.) is an authority on food, nutrition and health and can provide valuable information and advice. To locate a registered dietitian in your area, visit [www.eatright.org](http://www.eatright.org).

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For more information visit <http://ific.org>

