



# FOOD TECHNOLOGY FACT SHEET

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## The American Diet: How Fats and Grains Affect Your Health and Weight

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### Introduction

“You are what you eat,” says the popular phrase, but it doesn’t seem to have had much effect on American eating habits. Gaining weight, keeping it and heading toward obesity are the clear consequences of the foods we eat: the quantity (calorie intake), quality (whole foods versus processed foods) and the composition (proteins, fats, carbohydrates and fiber). We believe that all fats are to blame, and we are told that carbohydrates make us gain weight, especially those found in sugars and grain products such as bread and pasta. However, the human body requires certain fats and carbohydrates to function well, stay healthy, have energy and feel good.

Half of all Americans are overweight and 12 percent of school-aged children are obese, twice the number reported 20 years ago. Americans should be concerned about their eating habits because of the significant long-term health and disease risks associated with being overweight and obese, including high blood pressure, heart disease, certain cancers and diabetes. More than 300,000 deaths a year (14 percent of all deaths) are directly related to weight problems, according to the Center for Disease Control and Prevention, and weight-related issues may account for 6.5 percent of Americans’ health care costs. The International Obesity Task Force estimates that more than 1.1 billion people in the world are overweight or obese, but overall, approximately 1.7 billion are at risk of a range of weight-related illnesses. Being overweight is one of the main causes of heart disease, the world’s biggest cause of death above wars, malaria and AIDS.

### Weight Management

Weight management requires positive energy balance – the calories we take in from any source balanced against the calories we burn. Calories that are not burned through exercise and our bodies’ metabolism are either passed through the body or stored as fat. Our bodies store excess fats very efficiently – as fat. Over the long term, eating a diet high in complex carbohydrates instead of a diet high in fats can reduce the risk of being overweight. A diet rich in complex carbohydrates, such as several servings a day of grain foods, coupled with regular physical activity, remains the best advice for managing weight, as well as for overall good health.

### Why are Americans Overweight and What's Being Done about It?

The popular response is to blame fats and carbohydrates, and there is some truth in that claim. However, it is not the fats and carbohydrates that cause the problems, but our American eating and lifestyle patterns – our love of fast, sweet and greasy foods and our limited physical exercise.

Buying and cooking or snacking on foods high in fat and eating away from home, especially at “fast food” places, play major roles in the American trend toward obesity. In a study by the U.S. Department of Agriculture, the fat content in meals cooked at home averages 31.5 percent of the total calories. For meals eaten away from home, the fat count climbs to almost 38 percent. Restaurants typically use fattier meats and more high-fat components, such as butter and sauces to improve flavor, and they generally do not pass that information to consumers.

Combine a diet high in fats with a lifestyle low or lacking in physical activity and exercise, especially in children, and the result is a heavy or obese body.

Because of the growing trends in premature death and disease rates related to carrying too much weight, the USDA is currently developing new educational programs to help consumers better understand how eating out can affect their health.

The 1990 Nutritional Labeling and Education Act was expected to improve home-cooking patterns by providing information that would help Americans make more healthful choices. The Nutrition Facts panel found on most food packages presents information on total carbohydrates and the amount per serving of saturated and unsaturated fats, cholesterol, dietary fiber and other major nutrients. The expected long-term positive effects from such labeling include a shift toward reducing the risk for heart disease and several types of cancer through better eating patterns.

The NLEA also established criteria for nutrient and health claims that could be made on food packaging. To claim that a product is “heart-healthy,” meaning it may reduce the risk of heart disease, the product must be low in cholesterol, saturated fats and other fats. A food item also may qualify as “heart-healthy” if it is a significant source of soluble fiber (found in fruits, vegetables and

grain and wheat products) and is low in saturated fat, cholesterol and salt.

These measures are the government's attempts to change eating habits and increase awareness of the relationship between eating and health. Rather than eating more healthfully to control weight, however, many Americans are using diets, fast weight-loss programs and food substitutes or meal replacements such as shakes and snack bars to lose weight. One program may claim that a high-carbohydrate diet is best, and another may claim that a low-carbohydrate diet is best. Consumers are responding to advertising and popular weight-loss theories that promise the "quick fix" – diets that cause immediate weight loss but more weight gain later – rather than following a healthful lifetime eating pattern for weight management.

## Fats

Our bodies need different kinds of fats to give us energy and keep us healthy. Fats and fatty acids play an important role in the biological activity of our cells. They give us energy, help us stay warm in cold temperatures, and some fats can actually build up our immune systems. Essential fatty acids, such as Omega-3 oils from flax seed or fish oils, can increase healthy function and contribute to our feelings of happiness and well being. Monounsaturated fats, such as olive oil, lower the "bad" LDL cholesterol but not the "good" HDL cholesterol and can help prevent heart attacks.

Excessive consumption of saturated fats also is associated with an increased risk of heart attacks by raising blood cholesterol and clogging the arteries. Too much unsaturated fat can contribute to a variety of disease conditions. Packaged foods may contain "hydrogenated" fats added in the form of shortening. Some "trans" fatty acids are formed when oils are hydrogenated to form shortening. Hydrogenated fats may contribute to some degenerative diseases.

## Carbohydrates

Carbohydrates, such as sugars, starches and celluloses, are made of carbon, hydrogen and oxygen. Most carbs come from green plants, specifically from cereals, grains and fruits. The body changes all carbohydrates into glucose, which feeds our brains and nourishes our cells. The brain can get its energy only from carbohydrates. Everyone needs plenty of carbs. Carbohydrates are very important nutrients.

Eating a healthy balance of carbohydrates and sugars is critical to our health and performance. There are two types of carbohydrates, simple and complex. For weight management, it is important to know the difference between them and the benefits of both.

### Simple Carbohydrates (Sugars)

Simple carbohydrates are the sugars, such as table sugar and other natural sweeteners, the sugars in fruits and vegetables and the lactose in milk. They are called "simple sugars" because they are made up of single-sugar molecules or pairs of sugar molecules bonded together. Simple sugars are the basic building blocks of all carbohydrates. They go rapidly into the blood and give a burst of energy.

### Complex Carbohydrates

Complex carbohydrates are found in grain-based foods, such as breads and pastas, and in starchy vegetables, such as potatoes and corn. Almost all vegetables contain some complex carbohydrates. They are called "complex" because they are made up of long strands

of sugar molecules linked together (polysaccharides, "poly" meaning *many* and "saccharide" meaning *sugar*). Complex carbohydrates empty more slowly from the stomach and take longer to break down into glucose, so we experience energy and eating satisfaction over a long period. That may be the reason we think of baked goods and pastas as "comfort foods."

These complex carbohydrates are the best source of energy compared to other foods in the Food Pyramid. According to a joint study by the Food and Agriculture Association and the World Health Organization, high-carbohydrate foods, such as grain foods, provide both immediate and "slow-release" energy. They make us feel "full" and satisfied, so we eat less over the short term and the long term.

## Fiber

Fiber also is a form of complex carbohydrates with an added bonus. "Fiber" is a general term for the parts of plant foods that we cannot digest. Fiber provides almost no energy or calories, but it is an important part of a healthy diet. The American Dietetic Association recommends 20 to 35 grams of fiber per day. But, according to a 1988 U.S. Department of Agriculture Food Consumption Survey, Americans are eating only 12 to 17 grams per day, approximately half the recommended amount for good health.

We get significant health benefits from fiber. It can:

- Help control fat absorbed into the body.
- Help maintain regular bowel movements.
- Help weight loss and maintain weight levels, when high-fiber foods are eaten instead of high-fat, high-calorie foods.
- Reduce health risks, including heart disease, colon and breast cancers, obesity and high blood cholesterol levels.
- Provide a feeling of fullness.

Fibers can be divided into two categories according to their physical characteristics and effects on the body: water insoluble and water soluble. Each form functions differently and provides different health benefits. Insoluble fibers, such as cellulose, hemicellulose and lignin found in cereals and grains, do not dissolve in water. Soluble fibers, such as gum and pectins found in larger quantities in fruits, do dissolve in water. According to the Food and Drug Administration, soluble fiber "as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease." Soluble fiber may help control blood sugar in people with diabetes.

## What Foods Supply Which Fiber?

Insoluble fiber is found in fruits, vegetables, dried beans, wheat bran, seeds, popcorn and brown rice. Good sources of soluble fiber are fruits such as apples, oranges, pears, peaches, prunes and grapes, vegetables, seeds, oat bran, dried beans, oatmeal, barley and rye. Among prepared foods, bran breakfast cereals and whole grain products such as breads, cereals and pasta are a good source of insoluble fiber. Insoluble fiber helps prevent constipation and diarrhea, relieves hemorrhoids and prevents diverticular disease by absorbing water and moving food through the digestive tract more quickly. The less processed the fiber source, the greater its effectiveness in preventing constipation.

## Low-Carbohydrate Diets

Nutrition experts have long supported a low-fat, complex carbohydrate-rich diet for good health. Contrary to popular-diet advertising claims, the complex carbohydrates found in grain foods

are extremely valuable for weight-control. They satisfy the appetite and reduce hunger, provide fewer calories than high-fat foods and are more easily burned by the body.

## Low-Carbohydrate Breads and Grain Products

The low-carbohydrate diet is not very well studied in the scientific world, and there is not enough scientific evidence for or against the use of these diets. Nevertheless, low-carbohydrate diets have become increasingly popular in the U.S., and many companies now offer or are planning to offer low-carbohydrate breads and other products. Manufacturers are wrestling to make tasty products with reduced carbohydrate content.

In order to produce bread that is significantly lower in carbohydrates, but that still has the taste and feel of “regular” bread, manufacturers must lower the amount of actual flour that goes into the dough. They have to increase the amount of gluten (wheat protein) they add to the dough, as well as the amount of yeast.

The difference in carbohydrate content between low-carbohydrate bread and regular bread can be up to 70 percent less carbohydrates per slice. On average, regular white and whole wheat bread have about 12 to 13 grams of total carbs per slice, while low-carbohydrate bread has only 3.6 grams of carbs per slice (based on “Joe Bread Low Carb Bread” nutritional values). However, to create appealing flavor and texture, the amount of fat in each slice is increased by 57 percent. In regular bread, there are 0.9 grams of fat per slice, compared with 1.6 grams of fat per slice in low-carbohydrate bread.

For more information on the nutritional aspects of a low-carbohydrate diet, visit <http://nutrition.tufts.edu/news/matters/2001-03-05.html>.

## Summary

With every bite we put in our mouths, Americans are making a choice about our short-term and long-term health. Many American children are overfed and undernourished, lethargic or hyperactive and physically unfit. We have an alarming number of citizens who are overweight and morbidly obese, a problem that causes discomfort, disease and premature death. We all pay for the consequences of poor eating habits in unemployment, insurance and health care costs.

We can reach and stay at our most comfortable and healthy weights if we develop wholesome, healthful eating habits. But we cannot do it if we do not know how to eat healthfully. The more information we have about how foods affect our bodies, mental functions and feelings, the better equipped we are to be healthy and alert and to feel good.

In terms of eating fats and carbohydrates for weight control, nutritionists recommend:

- Read the Nutritional Facts panel before you buy processed and packaged foods.
- Eat foods low in saturated fats and trans fats.

- Include foods containing unsaturated fats, such as olive oil, and essential fatty acids, such as Omega-3 oils in your diet.
- Everyday eat several servings of foods high in complex carbohydrates, including fresh fruits and vegetables and a variety of grain foods.
- Avoid eating in “fast-food” places and be aware of the fat content of meals when you are eating out.
- Choose snacks that are low in fats and high in complex carbohydrates.
- Avoid sugary foods.
- Keep physically active and get enough rest.

## References

- <http://www.cdc.gov/mmwr/preview/mmwrhtml/00001585.htm>  
Perspectives in Disease Promotion and Health Promotion  
Prevalence of Overweight -- Behavioral Risk Factor Surveillance System, 1987. *Morbidity and Mortality Weekly Report*. 1989, 38 (24):421-423.
- [http://www.hc-sc.gc.ca/food-aliment/ns-sc/ne-en/health\\_claims-allegations\\_sante/us-eu/e\\_us\\_claims\\_existing.html](http://www.hc-sc.gc.ca/food-aliment/ns-sc/ne-en/health_claims-allegations_sante/us-eu/e_us_claims_existing.html).
- FAO Food and Nutrition, report of joint FAO/WHO Expert Consultation, April 14-17, 1997, Carbohydrates in Human Nutrition, paper 66.
- Hill, J.O., Rolls, B.J. 1998. Carbohydrates and weight management. ILSI Press: Washington, D.C., pg:1-8.
- International Obesity TaskForce. 2003. <http://www.ietf.org>.
- John Hopkins Bayview Medical Center. <http://www.jhbmc.jhu.edu/Cardiology/REHAB/fiber.html>.
- Liu, S. 2002. Dietary carbohydrates, whole grains, and the risk of type 2 diabetes mellitus. Pages 155-185. In Whole-grain foods in health and disease. L. Marquart, J. L. Slavin, and R. G. Fulcher, eds. American Association of Cereal Chemists, Inc.: St. Paul, Minnesota.
- Wheat Foods Council. 2003. Personal communication and [www.wheatfoods.org](http://www.wheatfoods.org).
- WHO. 1998. Obesity: Preventing and managing the global epidemic. Report of a WHO consultation on obesity. World Health Organization, Geneva. See also <http://www.who.int>. Key words Health Topics then Obesity.
- U.S. Generic Health Claims in Canada. *Existing U.S. Generic Health Claims*. Diet-Disease Relationships: The Foundation of Health Claims. Kurtzweil 1998.

## The Oklahoma Cooperative Extension Service

### Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; home economics; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and based on factual information.

- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.