

# Chapter 6



Roasted Beet Salad with Gorgonzola, page 748.

# Nutrition

**M**enu planners must have a basic understanding of nutrition because the human body requires a variety of foods in order to function and be healthy.

The food-service worker's responsibility to provide nutritious food and well-balanced menus depends, in part, on the operation. School and hospital food services must, of course, plan menus carefully to meet basic nutritional needs. A qualified dietitian is usually required in such establishments.

The obligations of restaurateurs are more subtle. Because they are in business to sell food, they must offer foods that will attract customers. People who plan menus are as concerned with presenting attractive, flavorful foods as they are with serving nutritious foods. Also, if the menu is à la carte, there is no way to ensure a customer will order items that make up a nutritionally balanced meal.

But restaurateurs do have an obligation to offer a choice. That is, menus should be planned so customers can order well-balanced meals if they desire. People are becoming more concerned with fitness and health, so a nutritiously balanced menu may even help attract customers.

## After reading this chapter, you should be able to

1. List and describe the six categories of nutrients, explain their functions in the body, and name some food sources of each.
2. Define the term *calorie* and describe the relationship between calories and weight gain.
3. List and describe the eight guidelines for maintaining a healthful diet.
4. Describe ways that cooks can incorporate nutrition principles into their cooking and their menu construction.

## Nutrients

Nutrients are chemical compounds that are present in foods and that fulfill one or more of the following functions:

- Supply energy for body functions.
- Build and replace cells that make up body tissues.
- Regulate body processes.

There are six categories of nutrients:

- Carbohydrates
- Fats
- Proteins
- Vitamins
- Minerals
- Water

## Calories

The *calorie* is a unit of measurement of energy. It is defined as the amount of heat needed to raise the temperature of 1 kilogram water by 1°C.

Remember that one of the functions of nutrients is to supply energy to the body. The calorie is used to measure how much energy certain foods supply for these functions. In our overfed society, calories have come to be viewed as something to be avoided. Nevertheless, without sufficient food energy, we could not live.

Carbohydrates, proteins, and fats can be used by the body to supply energy.

1 gram carbohydrate supplies 4 calories

1 gram protein supplies 4 calories

1 gram fat supplies 9 calories

There is a direct connection between calorie intake, physical activity, and weight gain. Simply put, if you consume more calories than you burn, you gain weight. If you consume fewer calories than you burn, you lose weight. All the diet schemes and fashions in the world—at least the ones that are medically sound—can be reduced to this. In other words, losing weight is possible only by eating fewer calories, by burning more calories through exercise, or, preferably, by both.

In order to lose weight while maintaining good nutrition and health, one should avoid *empty calories* as much as possible and eat primarily foods of high *nutrient density*. Empty-calorie foods are those that provide few nutrients per calorie. Refined sugars and starches are examples of empty calories. Foods of high nutrient density are those that provide relatively many nutrients per calorie. Fruits, vegetables, and whole grains are examples of foods with high nutrient density.

## Kinds of Nutrients and Their Importance

Each of the nutrients listed has certain characteristics and functions in the body. These are discussed in general terms. For a summary of individual nutrients and the foods in which they are found, see Table 6.1.

Many fad diets emphasize either the good or the bad qualities of a single nutrient. For example, a particular weight loss diet may advise eating mostly protein foods and eliminating carbohydrates as much as possible. However, because all nutrients are essential, such diets can lead to nutritional imbalances. Thus, it is necessary to understand the function and importance of all nutrients.

The amount of each nutrient needed daily varies from person to person, depending on such factors as age, sex, general health, and level of activity.

## CARBOHYDRATES

**Carbohydrates** are compounds consisting of carbon, hydrogen, and oxygen atoms bound together in chains of varying lengths.

Sugars are simple carbohydrates. Simple sugars, such as glucose, are small compounds containing 6 carbon atoms. Table sugar, or sucrose, is a larger sugar molecule with 12 carbon atoms. Sugars are found in sweets and, to a lesser extent, in fruits and vegetables.

Starches are complex carbohydrates consisting of long chains of simple sugars bound together. They are found in such foods as grains, bread, peas and beans, and many vegetables and fruits.

Carbohydrates are the body's most important source of food energy. Fats and proteins can also be burned for energy, but the body uses carbohydrates first. If no carbohydrates are available, the body then burns fat. However, if fats are burned with no carbohydrates present, toxic compounds called **ketone bodies** are produced. If too many ketone bodies accumulate, a condition called **ketosis** develops, and the blood becomes unable to carry oxygen properly. The result can be fatal. Thus, one of the important functions of carbohydrates is to help the body burn fat properly. About 50 to 100 grams carbohydrate are needed every day to prevent ketosis.

Most authorities believe complex carbohydrates, especially those from whole grains and unrefined foods, are better for you than simple carbohydrates. This is partly because starchy foods also have many other nutrients, while sweets have few other nutrients. Also, there is some evidence that a lot of sugar in the diet may contribute to heart and circulatory diseases. Simple sugars and refined starches are primary sources of empty calories.

Another reason carbohydrates from whole grains and unrefined foods are preferable to those from refined sugars and starches is that these unrefined foods are sources of fiber. The term **fiber** refers to a group of carbohydrates that cannot be absorbed and used by the body. Therefore, fiber supplies no food energy. However, it is important for the proper functioning of the intestinal tract and the elimination of body waste. In addition, there is evidence that sufficient dietary fiber helps prevent some kinds of cancers and helps decrease cholesterol in the blood. Fruits and vegetables, especially raw, and whole grains supply dietary fiber.

Fiber can be classified as either soluble or insoluble. **Soluble fiber** absorbs water and forms a kind of gel. It is found inside and between plant cells. **Insoluble fiber** also absorbs water, but less, and forms bulk in the intestines. It is found in cell walls and other structural parts of plants.

## FATS

**Fats** supply energy to the body in highly concentrated form. Also, some fatty acids are necessary for regulating certain body functions. Third, fats act as carriers of fat-soluble vitamins (vitamins A, D, E, and K). Because of these important functions, it is necessary to have some fats in the diet.

Fats may be classified as **saturated**, **monounsaturated**, or **polyunsaturated**. These terms reflect chemical differences in the composition of fats. Cooks do not need to know the chemical structure of fats, but they should understand their nutritional characteristics and the foods in which they are found. Many foods contain a combination of these three types, with one type predominating.

Saturated fats are solid at room temperature. Animal products—meats, poultry, fish, eggs, dairy products—and solid shortenings are the major source of saturated fats. Tropical oils such as coconut oil and palm kernel oil are also rich in saturated fats. Health experts believe these fats contribute significantly to heart disease and other health problems.

Polyunsaturated fats and monounsaturated fats are liquid at room temperature.

Although too much of any kind of fat is unhealthy, these fats are considered more healthful than saturated fats. Polyunsaturated fats are found in vegetable oils such as corn oil, safflower oil, sunflower oil, and cottonseed oil. High levels of monounsaturated fats are found in olive oil and canola oil. Both kinds of unsaturated fats are found in other plant products as well, including whole grains, nuts, and some fruits and vegetables.

One group of saturated fats of special concern is **trans fats**. These fats occur naturally in small amounts only. Most of the trans fats in our diet are from manufactured fats subjected to a process called **hydrogenation**. **Hydrogenated fats** are fats changed from liquid to solid by adding hydrogen atoms to the fat molecules. This is the process used to make products such

### CALORIES AND CALORIES

In scientific terminology, the amount of heat needed to raise the temperature of 1 kilogram water by 1°C is called a **kilocalorie**, sometimes written **Calorie** (with a capital C) and abbreviated **kcal**. When written with a small *c*, the term **calorie** refers to a unit of energy measurement that is only 1,000th as large—the amount of heat needed to raise the temperature of 1 *gram* of water by 1°C.

Nevertheless, in discussions of nutrition, the word **calorie** is commonly substituted for **kilocalorie**. Just remember that when you see **calorie** in connection with food, the real meaning is **Calorie** (or **kilocalorie**).

## ESSENTIAL FATTY ACIDS

Fats are made up of smaller compounds called *fatty acids*. Two of these are called *essential fatty acids* because they cannot be made by the body. The essential fatty acids are *linoleic acid* and *alpha-linoleic acid*. Linoleic acid is a member of a group of compounds called *omega-6 fatty acids* (the term refers to its chemical structure). It is found in vegetable oils and is usually abundant in North American diets.

Alpha-linoleic acid is a member of the group of *omega-3 fatty acids*. The body can change alpha-linoleic acid into other omega-3 fatty acids called *DHA* and *EPA*. These are all important nutrients that play vital roles in growth, in the immune system, in proper eyesight, and in cell structure. Alpha-linoleic acid is found in certain vegetable oils. DHA and EPA, in addition to being made by the body, are also found in some fatty fish, including salmon, mackerel, tuna, and sardines. Unlike omega-6 fatty acids, omega-3 acids are not usually abundant in North American diets, so it is important to be aware of foods that supply them.

as solid shortening and margarine. Trans fats are of concern because they limit the body's ability to rid itself of cholesterol that builds up on the walls of arteries (see sidebar, p. 130).

Fats are members of a group of compounds called *lipids*. Another lipid found in the body is *cholesterol*, a fatty substance closely linked with heart disease because it collects on the walls of arteries and blocks the flow of blood to the heart and other vital organs. It is found only in animal products and is especially high in egg yolks, butterfat, and organ meats such as liver and brains. The human body also manufactures its own cholesterol, so not all the cholesterol in the blood is necessarily from foods. Although some cholesterol is necessary for body functions, it is not considered a nutrient because the body is able to manufacture all the cholesterol it needs. Experts generally agree it is best to keep the cholesterol in the diet as low as possible.

Recent research has suggested that monounsaturated fat may actually lower the levels of the most harmful kinds of cholesterol in the body. This may explain the relatively low incidence of heart disease in Mediterranean regions, where olive oil is the most widely used fat. This research has helped popularize the use of olive oil in other parts of the world, especially in North America.

Remember, however, that *too much fat of any kind is bad for the health*. Do not make the mistake of thinking monounsaturated fats are good for you and can be used in excess.

## PROTEINS

*Proteins* are known as the building blocks of the body. They are essential for growth, for building body tissues, and for basic body functions. They can also be used for energy if the diet does not contain enough carbohydrate and fat.

Proteins consist of substances called *amino acids*. The body is able to manufacture many of them, but there are nine amino acids it cannot manufacture and must get from foods. A food protein that contains all nine essential amino acids is called a *complete protein*. Meats, poultry, fish, eggs, and dairy products contain complete proteins.

Proteins that lack one or more of these essential amino acids are called *incomplete proteins*. Foods high in incomplete proteins include nuts, grains, and dried beans and other legumes. Foods that, *if eaten together*, supply all the amino acids are called *complementary proteins*. For example, cornmeal tortillas topped with chili beans supply complete protein because the corn supplies the amino acids lacking in the beans. Beans and rice is another example of a food combination supplying complementary proteins.

Complementary proteins are especially of interest to vegetarians, especially vegans, and are discussed in more detail in Chapter 20.

The average adult needs 50 to 60 grams protein a day. For most North Americans, getting enough protein daily is not a problem; most get about twice as much as they need. Greatly excessive protein in the diet can lead to a variety of health problems, including kidney and liver damage.

## VITAMINS

*Vitamins* are present in foods in extremely small quantities, but they are essential for regulating body functions. Unlike proteins, fats, and carbohydrates, they supply no energy, but some of them must be present in order for energy to be utilized in the body. Also, lack of certain vitamins causes *deficiency diseases*.

Vitamins are classified as *water-soluble* and *fat-soluble*. The water-soluble vitamins (the B vitamins and vitamin C) are not stored in the body and must be eaten every day. Foods containing these vitamins should be handled so the vitamins are not dissolved into the cooking water and lost (as discussed in Chapter 16).

Fat-soluble vitamins (A, D, E, and K) can be stored in the body, so they do not need to be eaten every day as long as the total amount eaten over time is sufficient. Consuming too much of a fat-soluble vitamin daily, as sometimes happens when people take too many vitamin supplements, can result in toxic levels of the vitamin stored in the tissues.

More detail about individual vitamins, their functions, and their sources, can be found in Table 6.1.

Table 6.1 Major Nutrients

NUTRIENT	MAJOR DIETARY SOURCES		FUNCTIONS IN THE BODY
Carbohydrates	Grains (including breads and pasta) Dried beans	Potatoes Corn Sugar	Major source of energy (calories) for all body functions. Necessary for proper utilization of fats. Unrefined carbohydrates supply fiber, important for proper waste elimination.
Fats	Meats, poultry, and fish Dairy products Eggs	Cooking fats and shortening Salad dressings	Supply food energy (calories). Supply essential fatty acids. Carry fat-soluble vitamins.
Proteins	Meats, poultry, and fish Milk and cheese Eggs	Dried beans and peas Nuts	Major building material of all body tissues. Supply food energy (calories). Help make up enzymes and hormones, which regulate body functions.
Vitamin A	Liver Butter and cream Egg yolks	Green and yellow vegetables and fruits	Helps skin and mucous membranes resist infection. Promotes healthy eyes and makes night vision possible.
Thiamin (vitamin B <sub>1</sub> )	Pork Whole grains and fortified grains	Nuts Legumes Green vegetables	Needed for utilization of carbohydrates for energy. Promotes normal appetite and healthy nervous system. Prevents beriberi.
Riboflavin (vitamin B <sub>2</sub> )	Organ meats Milk products	Whole grains and fortified grains	Needed for utilization of carbohydrates and other nutrients. Promotes healthy skin and eyes.
Niacin (a B vitamin)	Liver Meat, poultry, and fish	Legumes	Needed for utilization of energy foods. Promotes healthy nervous system, skin, and digestion. Prevents pellagra.
Vitamin B <sub>12</sub>	Most animal and dairy products		Promotes healthy blood and nervous system.
Vitamin C (ascorbic acid)	Citrus fruits Tomatoes Potatoes Dark green leafy vegetables	Peppers, cabbage, and broccoli Cantaloupe Berries	Strengthens body tissues. Promotes healing and resistance to infection. Prevents scurvy.
Vitamin D	Fortified milk products	Formed in skin when exposed to sunlight	Necessary for utilization of calcium and phosphorus to promote healthy bones, teeth, and muscle tissue.
Vitamin E	Unsaturated fats (vegetable oils, nuts, whole grains, etc.)		Protects other nutrients.
Calcium	Milk products Leafy vegetables	Canned fish with bones	Forms bones and teeth. Necessary for healthy muscles and nerves.
Iron	Liver and red meat Raisins and prunes Egg yolks	Leafy vegetables Dried beans Whole grains	Needed for formation of red blood cells.

### MORE CHEMISTRY: LIPOPROTEINS

Lipoproteins are combinations of protein and fat that carry cholesterol and fat through the bloodstream. Two of these compounds are of concern to us.

**Low-density lipoprotein (LDL)** is the most important carrier of cholesterol. Although it performs a needed function, if too much of it is present it deposits excess cholesterol inside arteries, blocking the flow of blood. **High-density lipoprotein (HDL)**, on the other hand, helps remove cholesterol from the blood and eliminate it from the body. Consequently, HDL is seen as a major preventer of heart disease.

Certain saturated fats called *trans fats* (see p. 127) are considered especially bad in the diet because they apparently interfere with the action of HDL and thus raise cholesterol levels in the blood.

### PHYTOCHEMICALS

A phytochemical is any of several hundred compounds that are found in foods in tiny amounts and may help reduce the chance of cancer or heart disease.

The list of phytochemicals includes flavonoids, isoflavonoids, phenols, lycopene, indoles, dithiolthiones, and sulforaphane. These chemicals are not yet well understood, and research is continuing. Phytochemicals are found most abundantly in whole grains, fruits, and vegetables.

### MINERALS

Minerals, like vitamins, are consumed in very small quantities and are essential for regulating certain body processes. Minerals that must be consumed in relatively large amounts—more than 100 milligrams daily—are called **major minerals**. These include calcium, chloride, magnesium, phosphorus, sulfur, sodium, and potassium. Minerals that must be present in smaller amounts are called **trace minerals**. These include chromium, copper, fluoride, iodine, iron, manganese, molybdenum, selenium, and zinc. Less is known about the functions of some of the trace minerals. It is important to understand, however, that although small quantities are needed by the body, too much of any of them can be harmful.

Sodium, a component of table salt, is well known as a health problem. Too much sodium is thought to contribute to high blood pressure. Health authorities try to convince people to reduce the sodium in their diets, primarily by salting foods less.

### WATER

The adult human body is 50 to 60 percent water by weight. Water plays a role in all the body's functions, including metabolism and other cell functions, digestion, delivery of nutrients, removal of waste, temperature regulation, and lubrication and cushioning of joints and tissues.

Water forms a large part of most of the food we eat and all the beverages we drink. The body is good at regulating its own water content and tells us when we need more by making us feel thirsty. This signal should not be ignored. Even better is to drink enough fluids to *prevent* feeling thirsty. Required daily water intake varies greatly from person to person, depending on age, level of activity, and environmental factors such as heat. The common recommendation of 8 glasses of water a day is not enough for some people, such as athletes and others who exercise strenuously, and is too much for others, such as older, sedentary adults.

### KEY POINTS TO REVIEW

- What foods are good sources of proteins? What functions do proteins have in the body?
- What foods are good sources of carbohydrates? What functions do proteins have in the body?
- What foods are especially high in fats? Of the three categories of fat compounds, which kind is the most healthful, and which is the least healthful?
- What does the term *calorie* mean? What role do calories play in weight gain or loss?

## The Balanced Diet

In order to stay healthy, we must consume a varied diet that contains all the essential nutrients. In addition, we must limit our intake of foods that can be harmful in large quantities. Although researchers still have much to learn about nutrition and our knowledge is constantly changing, there is strong evidence about what good eating patterns are. According to government health agencies, the following guidelines are suggested for maintaining a healthful diet. It should be noted these are only general recommendations for people who are already healthy and want to stay that way. They are not necessarily for those who need special diets because of disease or other abnormal conditions.

### 1. Get adequate nutrients within calorie needs.

The greater the variety of nutrient-dense foods and beverages within and among the basic food groups we consume, the more likely we are to get all the nutrients we need. Choosing nutrient-dense foods and avoiding empty calories is necessary in order for us to get adequate nutrition without consuming too many calories in the process. Choose foods that limit the intake of saturated and trans fats, cholesterol, added sugars, salt, and alcohol.

## 2. Manage weight.

To maintain a healthy body weight, balance the calories you consume with the calories you burn. People who are greatly overweight are more likely to develop certain chronic diseases, including high blood pressure, heart disease, and stroke. People who consume more calories than they burn off will gain weight.

To prevent gradual weight gain, make small decreases in the calories you consume and increase your physical activity. Rather than depending on crash diets, it is usually better to lose weight slowly and gradually, to develop better habits of eating, and to increase physical activity. To get all the nutrients you need while cutting down on calories, decrease foods that are high in calories but low in nutrients, especially fat and fatty foods, sugar and sweets, and alcohol.

## 3. Engage in physical activity.

Engaging in regular physical activity promotes health, psychological well-being, and a healthy body weight. For general health and reducing the risk of chronic diseases, getting at least 30 minutes of moderately vigorous exercise every day is desirable, and more and longer vigorous exercise can be even more beneficial. In order to avoid gaining weight, adults should try to get 60 minutes of exercise most days while at the same time not consuming too many calories. People who wish to lose weight gradually should try to get 60 to 90 minutes of exercise most days, again while limiting calorie intake.

## 4. Select from the right food groups.

Fruits, vegetables, whole grains, and low-fat or fat-free milk and milk products are the foods with the highest nutrient density. These foods should be strongly emphasized in a healthy diet. In particular, someone who consumes 2,000 calories a day should try to eat the following daily:

- 2 cups (4 servings) fruit, selecting from a variety of fruits
- 2½ cups (5 servings) vegetables, selected from as many of the basic vegetable groups as possible: dark green vegetables, orange vegetables, legumes, starchy vegetables, and others
- 3 servings of whole grains
- 3 cups of fat-free or low-fat milk or its equivalent in other dairy products, such as yogurt and cheese

In the United States, these food groups, along with others including meats, poultry, and fish, form what is known as the *food guide pyramid*. Figure 6.1(a) shows the standard pyramid developed by the United States Department of Agriculture (USDA). Although it reflects the pyramid shape of earlier versions of the food guide, the current diagram is only a generalized symbol of healthful eating patterns, with a stick figure climbing stairs to represent physical exercise. Each colored stripe represents one of the five basic food groups: grains, vegetables, fruits, milk, and meat and beans. A thin yellow stripe between fruits and milk represents oils. The thickness of each stripe represents the relative proportion of each group to include in the diet. The image contains no information on portions and portion sizes. Instead, it is intended to refer consumers to resources such as the website [www.mypyramid.gov](http://www.mypyramid.gov), where pyramids can be customized based on age, sex, and level of activity.

Canadian nutrition experts have devised the “Food Guide to Healthy Eating,” usually referred to as the *food rainbow* because of its format (Figure 6.1e). The number of daily servings of each group, as well as information about standard portion sizes, is indicated in the Canadian rainbow.

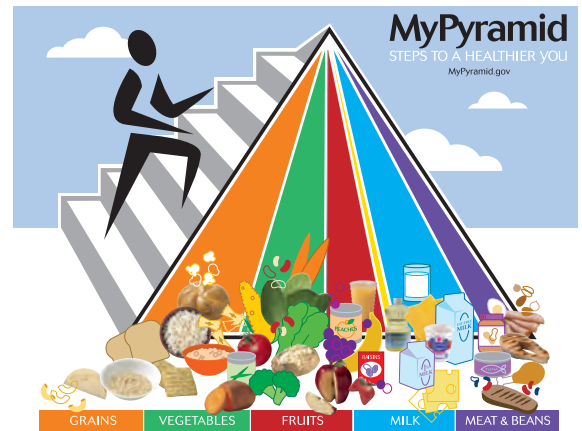


Figure 6.1a Food guide pyramid.  
Courtesy the U.S. Department of Agriculture.

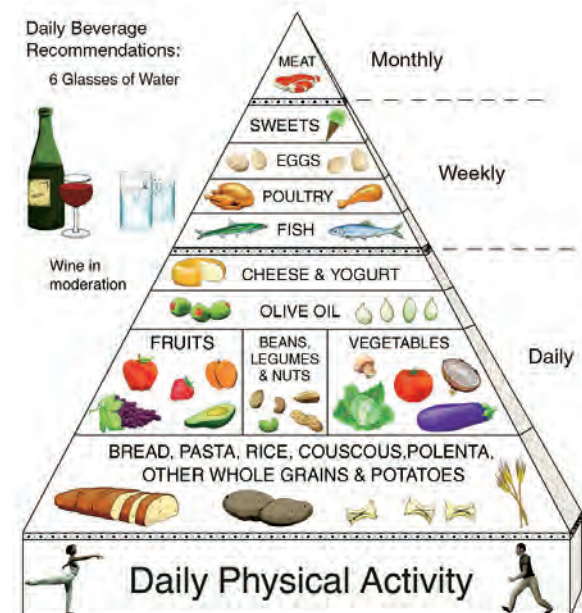


Figure 6.1b The traditional healthy Mediterranean diet pyramid.  
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Figure 6.1c The traditional healthy Asian diet pyramid.  
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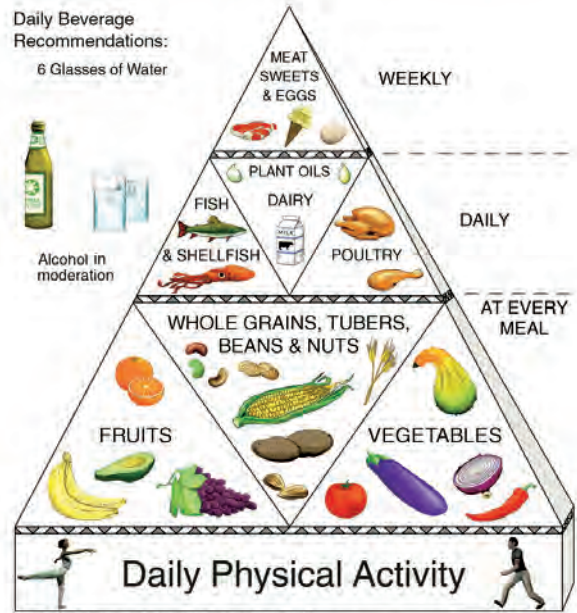


Figure 6.1d The traditional healthy Latin American diet pyramid.  
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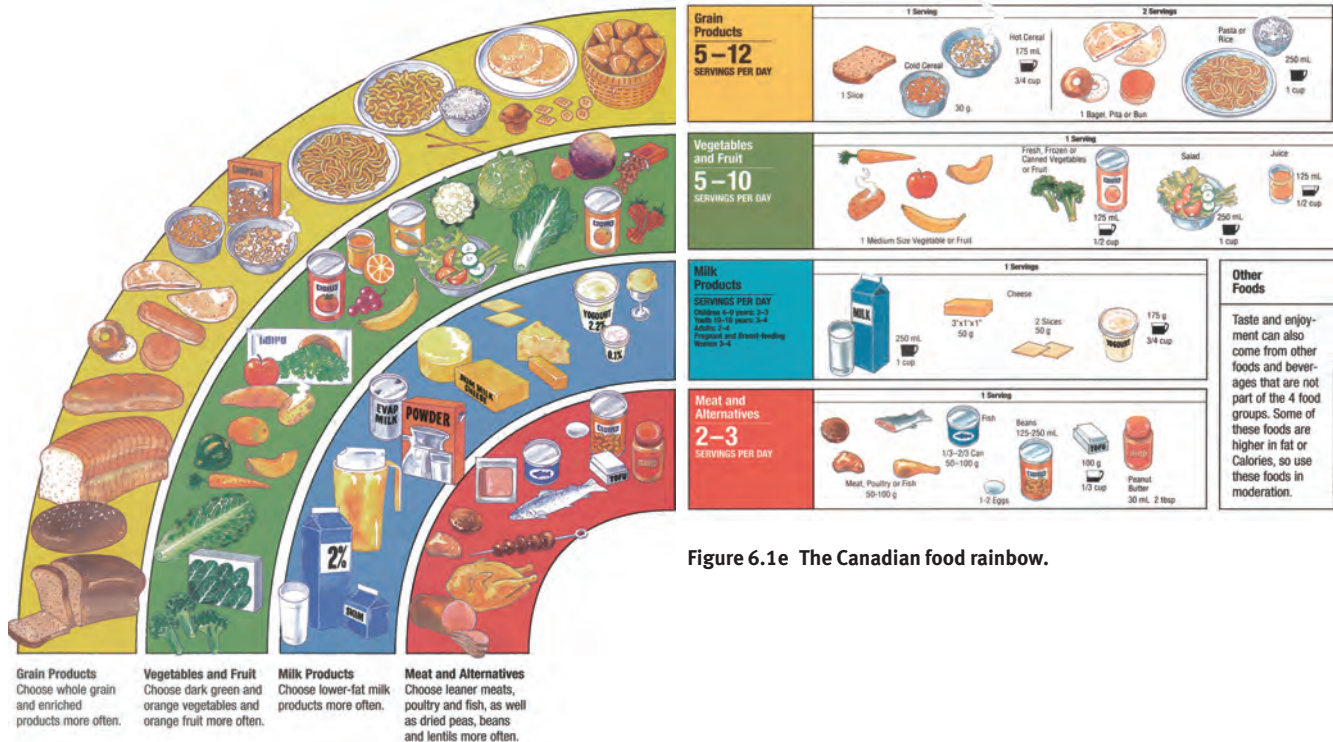


Figure 6.1e The Canadian food rainbow.

### 5. Manage consumption of fats.

Keep total fat intake between 20 and 35 percent of calories, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils. This means for a diet of 2,000 calories daily, calories from fat should be between 400 and 700.

Why not lower than 20 percent? Remember that some fatty acids are essential nutrients, and fats also carry fat-soluble vitamins. Consuming less fat than 20 percent of daily calories could be unhealthy.

Keep consumption of saturated fats, especially trans fats, as low as possible. Consume less than 10 percent of calories from saturated fatty acids.

Consume less than 300 milligrams cholesterol per day.

When selecting and preparing meat, poultry, dry beans, and milk or milk products, make choices that are lean, low-fat, or fat-free.

Remember: High fat intake, especially of saturated fats and cholesterol, is associated with such conditions as heart disease and high blood pressure. Although other factors contribute to these diseases, such as heredity and smoking, following this dietary recommendation should increase the chances of staying healthy.

### 6. Manage consumption of carbohydrates.

Choose fiber-rich fruits, vegetables, and whole grains. These foods are the sources of the most healthful carbohydrates. Avoid prepared foods high in added sugars.

Reducing refined sugars and starches in the diet has the added benefit of helping reduce tooth decay.

### 7. Manage consumption of sodium and potassium.

Consume less than 2,300 milligrams (about 1 teaspoon or 5 milliliters salt) sodium per day. Sodium, as noted earlier, appears to contribute to high blood pressure. For people who already have high blood pressure, it is especially important to reduce sodium in the diet. The best ways to do this are to decrease the use of salt in the kitchen and at the table and to limit the intake of prepared foods that are high in salt, such as potato chips, salted nuts, pretzels, pickled foods, cured meats, and salty condiments like soy sauce.

Reduce the harmful effects of sodium by eating potassium-rich foods, such as fruits and vegetables.

### 8. Manage consumption of alcoholic beverages.

People who choose to drink alcoholic beverages should do so sensibly and in moderation—defined as the consumption of up to one drink per day for women and up to two drinks per day for men.

Alcoholic beverages are high in calories but provide few nutrients. Heavy drinking may cause a variety of serious diseases. Moderate drinking—one or two drinks a day—appears to do little harm and may, in fact, be of some benefit.

Many people, including children and adolescents, pregnant and lactating women, people taking medications that interact with alcohol, and people with certain medical conditions, should avoid alcohol completely. In addition, alcoholic beverages should be avoided by people engaging in activities that require attention, skill, or coordination, such as driving or operating machinery.

## Cooking Healthful Meals

Restaurateurs and chefs are becoming more and more attentive to people's health and diet concerns. Many of them are reexamining their menus, modifying their cooking practices, and adding new, healthful items to their menus. Some have developed new menus intended to follow as closely as possible the eight recommendations listed above.

An increased health consciousness has affected the way we think about food and the way we cook. Professional cooks are making their foods more healthful in several ways:

### 1. Using less fat in cooking.

Cooking methods that require no added fat, such as simmering, poaching, baking, steaming, and grilling, can be considered the most healthful.

For sautéing, nonstick pans are becoming more widely used because little or no fat is needed. With regular pans, one can be careful to use as little fat as possible.

Grilling is popular because it can be done without first coating the food with fat. If this is done, however, one must be careful not to let the food dry out.

Using less fat in cooking also means using ingredients with less fat. Excess external fat can be trimmed from meats and poultry. Low-fat sauces, such as salsas and vegetable purées, can often be used instead of high-fat sauces. Recipes can often be modified to reduce quantities of high-fat ingredients, such as butter, cheese, and bacon.

### 2. Using unsaturated fats.

When you do use fats, try to substitute monounsaturated fats, such as olive oil or canola oil, for saturated fats when appropriate.

### 3. Emphasizing flavor.

Taste is the most important factor in preparing nutritious food. The most vitamin-packed dish does no one any good if it is uneaten because it doesn't taste good. Preparing flavorful foods requires knowledge of the principles of cooking. You can't rely simply on nutritional information.

Rely more on the natural flavors of foods and less on salt and other additives that should be decreased in the diet.

### 4. Using the freshest, highest-quality foods possible.

In order to prepare delicious foods with little or no added salt and with less reliance on high-fat, high-sodium sauces and condiments, it is important to use high-quality natural ingredients at their peak of flavor. Healthful cooking means letting the true flavors of foods dominate.

To enhance natural flavors without added salt, cooks are using more fresh herbs, hot seasonings such as chiles, ginger, and pepper, and flavorful ingredients like garlic, browned onions, and flavored vinegars.

### 5. Storing foods properly.

Foods in storage lose nutrients as they age. The loss of nutrients can be slowed, however, by proper storage. This applies particularly to proper refrigeration. For each category of perishable food discussed in this book, pay close attention to how the foods should be stored.

### 6. Modifying portion sizes.

It is not necessary to feature huge slabs of meat to serve satisfying meals. Smaller portions of well-trimmed meat, poultry, or fish, nicely balanced on the plate with an assortment of attractive fresh vegetables and complex carbohydrates, are likely to be more healthful.

Sauces often get the blame for adding calories to a meal, but if a sauce is flavorful, you don't need much. Make a better sauce and serve less of it. Also, if a sauce isn't too thick, it won't cling as heavily to the food, and a little will go farther.

### 7. Giving customers a healthful choice.

Offer a menu with a variety of foods so customers can choose a well-balanced meal suited to their needs and desires. It's not necessary to cook only "diet food," but a menu that offers French fries as the only available starch is not well balanced.

Place more emphasis on fruits, vegetables, and whole grains. Offer a menu with choices from all the groups in the USDA food pyramid or the Canadian rainbow, with a variety of choices from the bottom half of the pyramid or the outer rings of the rainbow.

Be flexible in the kitchen. A good chef is willing to modify menu items to meet dietary requirements and to satisfy special requests from customers.

### 8. Training the dining room staff.

Some restaurants offer special "spa menus" in addition to their regular menus, or they highlight "healthy" items with a special symbol. Unfortunately, this approach may suggest to some people that the highlighted menu items are boring "health food,"

while the other menu items are unhealthful because they aren't flagged. Consequently, many chefs prefer to train their dining room personnel to answer customers' questions about the menu and to offer suggestions when asked.

**9. Using nutritional information.**

Study the nutritional content of foods in order to plan healthful menus. Many publications are available that list the nutritional content of common food items. Some restaurants have even hired registered dietitians to analyze their menus and give advice on how to make their food more healthful.

Hiring a dietitian is, of course, not practical for every operation. On the other hand, a basic awareness of nutrition helps every professional minimize the fat, cholesterol, and sodium in and maximize the nutritional content and balance of the foods they serve.

**KEY POINTS TO REVIEW**

- In the eight guidelines for maintaining a healthy diet, what are the recommended food groups, and how many servings of each should the average person consume each day?
- What two major categories of nutrients do most people eat too much of? What are the recommendations for managing these nutrients in the diet?
- Which mineral is of special health concern because of excess consumption? Why?
- What are eight ways chefs can help their customers eat a more healthful diet?

**TERMS FOR REVIEW**

calorie	soluble fiber	essential fatty acid	vitamin
empty calorie	insoluble fiber	omega-3 fatty acid	low-density lipoprotein (LDL)
nutrient density	fat	lipid	high-density lipoprotein (HDL)
carbohydrate	saturated fat	cholesterol	major mineral
ketone body	monounsaturated fat	protein	trace mineral
ketosis	polyunsaturated fat	complete protein	
fiber	trans fat	complementary protein	

**QUESTIONS FOR DISCUSSION**

1. Describe the difference between foods with empty calories and foods with high nutrient density. Give examples of foods in each category.
2. Why are unrefined carbohydrates more healthful than refined starches and sugars?
3. Why is it necessary to have some fat in the diet?
4. Which vitamins are water-soluble? Which are fat-soluble? Which of the two groups is more important to include in the diet every day? Why?
5. According to the recommendations of government health agencies, which food groups should we consume more of than we now do, on average? Which foods should we consume less of?
6. Discuss and compare the healthful or unhealthful qualities of saturated fats, polyunsaturated fats, and monounsaturated fats. Give examples of each type.
7. What are some ways you, as a cook, can reduce the fat and sodium content of your menu offerings?
8. How can you ensure a nutritionally balanced menu without actually calculating the nutrient content of every item?