

Facts about Carbohydrate¹

Nancy J. Gal, Amanda L. Ford, and Wendy J. Dahl²

Why do we need carbohydrate?

Carbohydrate, fat, and protein are the three nutrients that provide energy (calories). However, carbohydrate from starch and sugars is our main source of energy. During digestion, starch is broken down to sugar (glucose). Carbohydrate in the form of glucose provides energy to cells, tissues, and organs to carry out daily activities. Some glucose is stored in the liver and muscle cells for later use when required. Children need carbohydrate for growth, and adults need carbohydrate to maintain their weight.

How much carbohydrate do we need?

The Recommended Dietary Allowance (RDA) for carbohydrate is 130 grams per day for everyone over the age of one year (IOM, 2005). This is the amount of glucose needed for optimum brain and nervous system function. Since the carbohydrates (starch and sugar) in our food provide 4 calories of energy per gram, this is equivalent to a minimum of 520 calories from carbohydrate each day.

It is recommended that we consume 45% to 65% of our total energy intake (in calories) from carbohydrate (IOM, 2005). Because carbohydrate provides 4 calories per gram, we can figure out how many grams of carbohydrate we need. For example, if our daily energy need is 2000 calories, it would be recommended that we consume 225 to 325 grams of carbohydrate per day:

2000 calories x 45% = 900 calories; 900 calories divided by 4 calories/g = 225 g

2000 calories x 65% = 1300 calories; 1300 calories divided by 4 calories/g = 325 g

What happens if we do not get enough carbohydrate?

As many foods contain carbohydrates, most people get enough. However, low carbohydrate diets may restrict carbohydrate intake to below the requirement (ADA 2009). At very low intakes (< 20 g/day), the body will resort to breaking down fat to use as fuel. This process produces ketones to provide energy to the brain, muscles, and other organs. Low carbohydrate diets may be effective for weight loss, but they can be unhealthy and risky for some individuals with certain health conditions (ADA 2009). Consult your health care provider before starting any low-carbohydrate diet.

What are the sources of carbohydrate in our diet?

Carbohydrate is abundant in our diet. Grains, fruit, milk, legumes (beans, peas, and lentils), and vegetables contain carbohydrate. Table 1 gives some examples of the carbohydrate content of common foods.

1. This document is FSHN14-03, one of a series of the Food Science and Human Nutrition Department, UF/IFAS Extension. Original publication date February 2014. Revised May 2017 and March 2021. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication.

2. Nancy Gal, Extension agent IV emeritus, Food and Consumer Sciences, UF/IFAS; Amanda Ford, former doctoral student; and Wendy J. Dahl, associate professor, Food Science and Human Nutrition Department; UF/IFAS Extension, Gainesville, FL 32611.

Most nuts contain very little carbohydrate, and eggs, cheese, fresh meat, poultry, and seafood contain virtually no carbohydrate. However, processed foods often have added starch and sugars (e.g., breaded meat patties). It is important to note that the carbohydrate content of a food is equal to the total starch, sugars, and fiber in a food.

The carbohydrate content of packaged food is shown on the Nutrition Facts label. An example of a Nutrition Facts label is shown in Figure 1. Total carbohydrate, dietary fiber, and sugars are presented in grams per serving and as a percentage of the Daily Value. The Daily Value is the value set for a nutrient specifically for food labels and is based on a 2000 calorie diet. In this example (Figure 1), one serving of the food contains 11 g of total carbohydrate, 3 g of dietary fiber, and 1 g of sugars. The difference of 7 g is the amount of starch per serving. The food provides 4% of the Daily Value, which is 4% of 275 g of carbohydrate per day based on a 2,000-calorie diet (275 is the average of the 225 to 325 range described above).

Nutrition Facts	
8 servings per container	
Serving size	2/3 cup (55g)
Amount per serving	
Calories	230
% Daily Value*	
Total Fat 8g	10%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%
<small>* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.</small>	

Figure 1. Nutrition facts new label.
Credits: FDA 2020

What happens if we eat too much carbohydrate?

There is no upper limit for carbohydrate intake. The amount we should eat depends on our energy needs. For example, athletes and people who have physically demanding jobs may need high intakes to help meet their energy needs. Excessive carbohydrate intake may lead to weight gain. Fat, protein, and alcohol also provide calories. Consuming more calories than we need from any combination of carbohydrate, fat, protein, and alcohol will also lead to weight gain.

It is recommended that we limit the intake of foods that contain added sugar, particularly sweetened beverages. Instead, choose foods containing naturally occurring starch and sugars (USDA 2015). Added sugars can be identified by reading the new Nutrition Facts label on food products (See: <https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/LabelingNutrition/ucm385663.htm>) or the ingredient list on the food label. Examples of added sugars are dextrose, lactose, brown sugar, malt syrup, maltose, corn syrup, molasses, nectars, fructose, honey, raw sugar, sucrose, invert sugar, and high-fructose corn syrup.

Added sugars have some important functions in foods, and it is not necessary to avoid all added sugars. They influence the texture, flavor, and color of baked goods. Sugars support the growth of yeast for leavening and fermentation. They contribute volume in ice cream, baked goods, and jams, and enhance the creamy consistency of frozen desserts. Added sugars also help to maintain the natural color, texture, and shape of preserved fruits.

Summary

Carbohydrate is an important nutrient for good health. Choosing whole grains, fruits, root vegetables, legumes, and low-fat dairy products is a healthful way of meeting carbohydrate needs.

Where Can I Find More Information?

For more information on high fructose corn syrup, see *Facts about Fructose* at <https://edis.ifas.ufl.edu/pdf/files/FS/FS14800.pdf>.

A registered dietitian/nutritionist (RDN) may be able to provide you with more information about choosing a healthy diet. To find an RDN in your area, you can visit the

Academy of Nutrition and Dietetics RD Finder at <http://www.eatright.org/programs/rdfinder/>.

The Family and Consumer Sciences (FCS) agent at your local UF/IFAS Extension office may have more information about food and nutrition, and may also have classes for you to attend.

References

American Dietetic Association. 2009. “Position of the American Dietetic Association: Weight Management.” *Journal of the American Dietetic Association*, 109:330-346. <https://doi.org/10.1016/j.jada.2008.11.041>.

U.S. Food and Drug Administration (FDA). 2020. “What’s New with the Nutrition Facts Label.” Accessed March 16, 2021. <https://www.fda.gov/food/new-nutrition-facts-label/whats-new-nutrition-facts-label>.

Institute of Medicine, Food and Nutrition Board. 2005. *Dietary Reference Intakes for energy, carbohydrate, fiber, fat, fatty acids, cholesterol, protein, and amino acids*. 339-421. The National Academies Press, Washington, D.C.

US Department of Agriculture, Agricultural Research Service. n.d. “FoodData Central.” Accessed March 16, 2021. <https://fdc.nal.usda.gov/>.

US Department of Health and Human Services and U.S. Department of Agriculture (USDHHS and USDA). 2020. “2020–2025 Dietary Guidelines for Americans. 9th Edition.” Accessed March 16, 2021. https://www.dietaryguidelines.gov/sites/default/files/2020-12/Dietary_Guidelines_for_Americans_2020-2025.pdf.

Table 1. Carbohydrate contents of common foods (USDA n.d.).

Food	Carbohydrate (g/serving)
Grains	
Bagel, 1/2 of 4-inch bagel	33
Bread, wheat (1 slice)	14
Cereal, Raisin Bran (1 cup)	46
Cereal, Cheerios (1 cup)	21
Oatmeal, instant (1 packet)	28
Crackers, club, multigrain (4 crackers)	9
Vegetables	
Potato, russet, baked (medium)	37
Sweet potato, cooked, baked (medium)	24
Carrots, raw (1 medium)	6
Beans, green, snap, boiled (1/2 cup)	5
Fruit	
Apple, raw, with skin (medium)	23
Grapes, red or green, seedless (1 cup)	27
Banana (1 medium)	27
Legumes	
Beans, black, boiled (1/2 cup)	20
Lentils, green, boiled (1/2 cup)	20
Dairy	
Milk, low-fat, 1% (1 cup)	12
Yogurt, fruit variety, non-fat (6 oz.)	32
Yogurt, greek, plain, non-fat (6 oz.)	6
Nuts	
Pecans (1 oz.)	4
Almonds (1 oz.)	< 1