



Trends in Dietary Fiber in the U.S. Food Supply; Sales of Grain Products



Center for
Nutrition Policy
and Promotion

3101 Park Center Drive
Alexandria, VA 22302

Voice: 703-305-7600
Fax: 703-305-3300

www.cnpp.usda.gov

CNPP
Fact Sheet No. 2

December 2007

*USDA is an equal
opportunity provider
and employer.*

THERE ARE EVIDENT TRENDS in the availability of dietary fiber in the U.S. food supply. Concomitantly, there are trends related to the increase in the sale of grain products. This fact sheet provides an overview of the amount of fiber that has been available for consumption between 2000 and 2005 and the level of contribution by grains to fiber in the U.S. food supply. This fact sheet provides an overview, as well, of marketplace efforts to respond to changes in dietary guidance related to whole-grain consumption and trends in the sale of whole-grain products. The overviews show that data on the availability of fiber-enriched products can be enhanced—and the food industry's responses to Federal nutrition policies can be better reflected—when the Nutrient Content of the U.S. Food Supply series is able to account for industry-specific data such as those related to grain-based foods.

Health Benefits of Dietary Fiber

Most health benefits derived from dietary fiber (see box) occur as a result of mechanisms in the digestive tract. Dietary fiber is known to reduce digestive complaints and to increase satiety without adding calories. Thus, high-fiber diets may be useful for people who want to lose weight. A high-fiber diet lowers blood cholesterol levels and stimulates bacterial fermentation in the colon. These underlying actions may contribute to the health benefits of dietary fiber for health promotion and disease prevention, for example, chronic diseases such as heart disease and some types of cancer, diabetes, and obesity (Anderson, Perryman, & Young, 2005; Institute of Medicine, Food and Nutrition Board, 2005).

Definitions of Dietary Fiber

Dietary Fiber refers to nondigestible food plant carbohydrates and lignin.

Added Fiber refers to fiber added to foods during food processing.

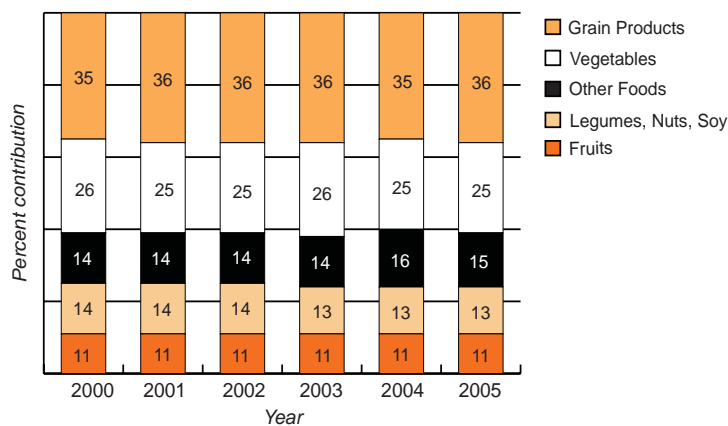
Total Fiber is the sum of **Dietary Fiber** and **Added Fiber** (Institute of Medicine, Food and Nutrition Board, 2005).

Sources of Dietary Fiber in the U.S. Food Supply

The Nutrient Content of the U.S. Food Supply series¹ reports annually the amount of dietary fiber; kilocalories, protein, carbohydrate, and fat; cholesterol; 10 vitamins; and 9 minerals available for consumption on a per capita per day basis (U.S. Department of Agriculture, 2007). These per capita estimates are useful for monitoring the nutritional needs of Americans and for examining relationships between food availability and diet-health risks. The Nutrient Content of the U.S. Food Supply series reports information on dietary fiber found in fruits, vegetables, dry beans and peas, and cereals such as oats (*soluble fiber*), and in whole grains (*insoluble fiber*). Data from the series show that for 2005, grain products; vegetables; legumes, nuts, and soy; and fruits accounted for 85 percent of the fiber in the U.S. food supply (fig. 1). Of this total, grain products accounted for more than a third of the fiber in the food supply.

¹The availability of nutrients in the U.S. food supply is linked closely to Federal dietary guidance, nutritional requirements, nutrition education, fortification policy, and food-marketing strategies. To characterize the availability of these nutrients, the Center for Nutrition Policy and Promotion uses data from the USDA Economic Research Service and Agricultural Research Service, as well as data from the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service, and from the States (U.S. Department of Agriculture, 2007).

Figure 1. Major sources of fiber in the U.S. food supply by food group, 2000-05



Efforts by the Grain-Based Food Industry to Increase the Dietary Fiber Content of Food

Manufacturers have embarked on ventures to promote the use of grain-based foods and ingredients for their dietary fiber benefits, as well as for their other many health benefits.² Several manufacturers have developed ingredients that offer all the nutrition of whole grain with a taste and texture similar to that of refined grains. At the same time, many manufacturers are reformulating existing products to incorporate more whole grains. Many manufacturers have, as well, used consumer education campaigns to increase consumers' awareness and consumption of these reformulated or new products.

Among the manufacturers reformulating their products,³ we find that ConAgra Food Ingredients started marketing Ultra Grain (whole-white wheat) and SustraGrain barley, which has almost twice the fiber of regular barley. The Archer Daniels Midland (ADM) Company offers an ultra-fine whole-white wheat, called Kansas Diamond™, which is similar to Ultra Grain; and Cargill has developed Maize Wise™, which has the health benefits of whole-grain nutrition and the sensory qualities of foods made from enriched-corn flour (Food Navigator-USA.com, 2007a & 2007b).

Other manufacturers are using new consumer-friendly whole grains to create new products. Sara Lee Corporation has a line of Soft and Smooth Whole Grain White bakery products (made with a mix of whole and refined flour). Another manufacturer, Interstate Bakeries Corporation (IBC), uses Ultraingrain® to produce a line of 100 percent whole-grain white bread (Whole Grains Council, 2007a).

Reformulation of products or development of new products is only one part of the marketplace equation of introducing new food products to the American consumer. Using educational campaigns to reach the consumer is a second essential aspect of the equation that allows manufacturers to promote the benefits of new food products. In 2005, for example, Kellogg® launched the 2-Week Fiber Challenge to promote products formulated with fiber-rich cereals (Kellogg Company's Media Room, 2005).

² In addition to the non-starch polysaccharides of plant cell walls, whole-grain foods are rich in a myriad of vitamins, minerals, and other compounds such as phytochemicals, that alone or in combination, are likely to have significant health benefits (Simin, 2003).

³ The mention of specific brand names or trademarks is not an endorsement by the United States Department of Agriculture.

On another front, the Whole Grains Council developed a whole grain stamp that allows consumers to identify products providing a half serving (8 grams) or more of whole grains. And the council's Just Ask™ campaign was designed to encourage Americans to challenge eateries to add at least one whole-grain choice to their menu (Whole Grains Council, 2007a and 2007b).

The dietary benefits that these types of technological efforts represent, unfortunately, are not yet reflected in the Nutrient Content of the U.S. Food Supply series. The 25 grams of fiber estimated as being available on a per capita per day basis did not change between 2004 and 2005 (fig. 2). Similarly, the 1-percentage-point increase in the contribution of grains between 2004 and 2005 (35 to 36 percent) (fig. 3) does not reflect the increased market sales of dietary fiber (U.S. Department of Agriculture, 2007).

Figure 2. Total available fiber per capita per day in the U.S. food supply, 2000-2005

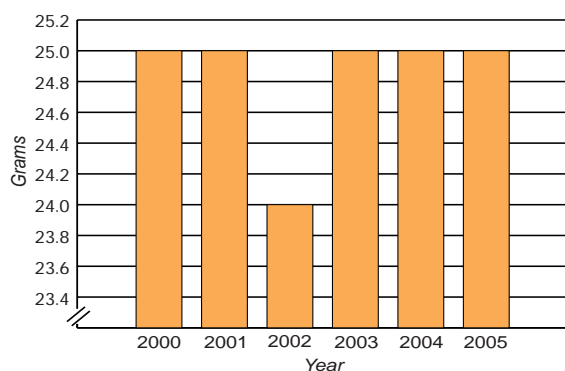
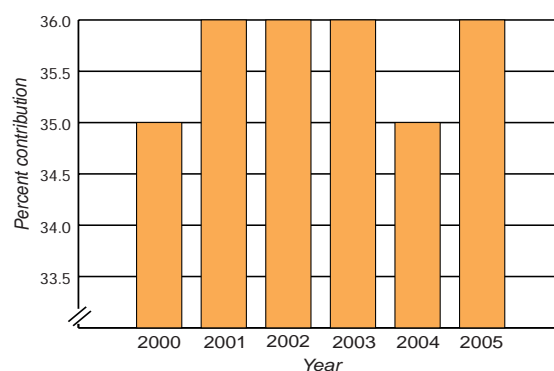


Figure 3. Grain contribution to fiber in the U.S. food supply, 2000-2005



Signs of Increase in Consumption of Whole Grains

Increased attention to dietary fiber resulted after the 2005 Dietary Guidelines for Americans and MyPyramid recommended that adults consume more fiber-rich foods, such as fruits, vegetables, and whole grains. The Institute of Medicine recommended 19 to 38 grams of fiber per day, depending on age and gender, with at least three daily servings of whole-grain foods (U.S. Department of Health and Human Services & U.S. Department of Agriculture, 2005; Institute of Medicine, Food and Nutrition Board, 2005; Anderson et al., 2005; and Brannon, 2007). However, the average American consumes about 14 grams of dietary fiber per day (Anderson et al., 2005).

The U.S. food fiber industry earned revenue of \$193.1 million in 2004 and could earn \$495.2 million in 2011 (Frost & Sullivan, 2005). As interest in dietary fiber increases, economic incentives will drive the development and subsequent marketing of more fiber products. For example, sales of whole-grain products have increased in recent years—more than 18 percent from June 2004 to 2005. This figure eclipsed the less-than-1-percent growth in the whole-grain market from 2000 to 2004 (Fernau, 2006).

As food manufacturers reformulated recipes for baked goods in response to the 2005 Dietary Guidelines for Americans and in preparation for the U.S. Food and Drug Administration's new labeling guidelines, reports based on Mintel Global New Products Database⁴ indicated that health claims for whole grains soared to the

⁴ The Global New Products Database monitors worldwide product innovation in consumer-packaged goods markets, offering coverage of new product activity for competitor monitoring, category awareness, and idea generation of new products (MINTEL, 2007).

number two position in 2006. During this period, the rank of “whole-grain” health claims in bakery goods increased in 2005 as well as in 2006, moving from ninth to third place (Lockwood, 2007).

Because food availability (per capita) data serve as popular proxies for actual consumption, a concomitant increase in the availability of grain products should have been evident in the Nutrient Content of the U.S. Food Supply series. However, the large increase in grain sales is not reflected in the food supply, although grain products were the largest contributor of dietary fiber in 2005. This gap between availability estimates and data on grain sales is mainly due to lack of having data from the grain-based food industry available for incorporation into the dataset used for the Nutrient Content of the U.S. Food Supply series.

Improving How Nutrient Availability Is Characterized

When foods are reformulated or new products are manufactured, the data used to characterize what is available for consumption must reflect those products. A reciprocal relationship between the food industry and the Federal Government would strengthen the reporting of trends in nutrient availability. The grain-based food and food-ingredients industry can help by providing additional data on fiber-enriched products. These data include (a) the percentage of total wheat flour that is comprised of whole-wheat flour and (b) the percentage of wheat, whole wheat, corn, or rice that is used for the manufacture of ready-to-eat or ready-to-cook cereal and for pasta and other breakfast foods.

To determine accurately the nutrient content of foods in the U.S. food supply, Federal Government scientists believe it is imperative to separate specific grain products into its various components. These data, for example, will allow the USDA Center for Nutrition Policy and Promotion to determine precisely the availability of macronutrients and the percent contribution by individual food groups to the U.S. food supply.

Conclusion

Many leading food industries are making efforts to manufacture products that are healthier for Americans. The Whole Grains Council reports that a continued emphasis on new and innovative education programs will persuade consumers that whole grains are readily available and simple to incorporate into everyday meal planning (Whole Grains Council, 2007a). As the benefits of whole grains become increasingly known and desired, a concomitant rise in sales of whole-grain products will occur, as illustrated in the 20-percent rise of whole-grain pasta sales in 2005 (Whole Grains Council, 2007a). Research has shown that such efforts are translated into increased food sales.

USDA wants to help consumers understand how foods can help them meet the recommendations of the 2005 Dietary Guidelines. This can be accomplished through a collaborative working relationship. When data on fiber-enriched products are included in the Nutrient Content of the U.S. Food Supply series, the dietary-fiber benefits of grain-based foods are more precisely recognized for their contributions and reflect the industry’s responses to Federal nutrition policies regarding the components of healthful diets.

References

- Anderson, J., Perryman, S., & Young, L. (2005). Dietary Fiber. No. 9.333. Colorado State University Extension-Nutrition Resources. Retrieved July 20, 2007, from Colorado State University Website: <http://www.ext.colostate.edu/pubs/foodnut/09333.html>.
- Brannon, C.A. (2007, May). Ancient and Alternative Grains. *Today's Dietitian*, 9(5), p. 10.
- Fernau, K. (2006, March 1). Whole grains grow popular: Healthier eating need not taste bad. Retrieved August 16, 2007, from The Arizona Republic Website: <http://www.azcentral.com/health/diet/articles/0301grains01.html>.
- Food Navigator—USA.com. (2007a). Heart study strengthens interest in wholegrain products. Retrieved July 20, 2007, from www.foodnavigator-usa.com/news/ng.asp?id=61604-wholegrain-heart-bread.
- Food Navigator—USA.com. (2007b). Cargill innovation taps health market growth. Retrieved July 20, 2007, from <http://www.foodnavigator-usa.com/news-by-product/news.asp?id=60605&idCat=35&k=ca>.
- Frost & Sullivan. (2005, December 5). New *Dietary Guidelines* Create Increased Potential for the United States Food Fiber Industry. News Release A940-88. Retrieved August 16, 2007, from PR Newswire Europe Limited Website: <http://www.prnewswire.co.uk/cgi/news/release?id=159753>.
- Institute of Medicine, Food and Nutrition Board. (2005). *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids (Macronutrients)*. Washington, DC: National Academy Press.
- Kellogg Company's Media Room. (2005, August). Take the '2-Week Fiber Challenge' and Feel the Difference! Eating One Bowl of Fiber-Rich Cereal a Day Is an Easy Way to Add Fiber to Your Diet. Retrieved July 20, 2007, from <http://investor.kelloggs.com/ReleaseDetailcfm?releaseid=171235>.
- Lockwood, D. (2007, March 7). New Products Annual – Baked Goods – March 2007. Trans fat and whole grains are the focus, consumers respond to healthier formulations, a rise in gluten-free products. Prepared Foods: Developmental trends and technologies for formulations and marketers. Retrieved September 25, 2007, from http://www.preparedfoods.com/CDA/Archives/BNP_GUID_9-5-2006_A_1000000000000067098.
- MINTEL gnpd. Global New Products Database. Retrieved September 25, 2007, from <http://www.gnpd.com/sinatra/npd/frontpage>.
- Simin, L. (2003). Whole-grain foods, dietary fiber, and type 2 diabetes: Searching for a kernel of truth. *American Journal of Clinical Nutrition*, 77, 527-529.
- U.S. Department of Agriculture. (2007). *Nutrient Content of the U.S. Food Supply, 1909-2004* (Home Economics Research Report No. 57). Washington, DC.
- U.S. Department of Health and Human Services & U.S. Department of Agriculture. (2005). *Dietary Guidelines for Americans, 2005*. Retrieved August 16, 2007, from USDA Website: www.cnpp.usda.gov/Publications/DietaryGuidelines/2005/2005DGPpolicyDocument.pdf.
- Whole Grains Council. (2007a). Getting Whole Grains to 3: Whole Grain Consumption Increasing Steadily: Oldways, Whole Grains Council and Industry Plan New Consumer Programs. Retrieved July 20, 2007, from www.wholegrainscouncil.org/Conf06pressrelease.html.
- Whole Grains Council. (2007b). Whole Grains at Every Meal, Just Ask for Whole Grains. Retrieved July 20, 2007, from www.wholegrainscouncil.org/JustAskHow.html.

Authors: Hazel Hiza, Thomas Fungwe, and Lisa Bente. USDA, Center for Nutrition Policy and Promotion.