Food Consumption

Animal Products: Their Contribution to a Balanced Diet

Joanne F. Guthrie and Nancy Raper
(301) 436-5810 (301) 436-5625

As a regular part of the diets of most Americans, animal products contribute important amounts of protein and essential vitamins and minerals to the American food supply. They are an especially important source of iron and calcium—low intakes of which were identified as public health concerns in 1989 by the U.S. National Nutrition Monitoring System, which coordinates food, nutrition, and health information from Federal agencies.

Meat, fish, and poultry are particularly important sources of iron. Milk and milk products supply most of the calcium in the American food supply.

The Dietary Guidelines for Americans—issued jointly by USDA and the Department of Health and Human Services—recommend a diet low in fat, saturated fatty acids (saturated fat), and cholesterol (see box). But following the guidelines does not mean omitting animal foods from diets.

When consumed in recommended amounts (see box), animal products provide important amounts of several essential nutrients without resulting in excess fat, saturated fat, and cholesterol intakes.

Spurred by consumer interest in diet and health, the food industry is making changes in production and marketing that offer increased options for leaner and lower fat food choices.

Use Shifting

Recent trends in consumer “use” of animal products are assessed us-

ing data from the U.S. Food Supply Series, the only source of information on long-term food and nutrient trends. This series, maintained by USDA, compiles data on food use, which represents amounts available for consumption from the U.S. food supply. Estimates are based on foods that disappear into marketing channels and are assumed to have been used for human consumption.

In the last two decades, the types of animal products used by Americans have shifted consider-

ably. Among the most noteworthy of these changes are: declining use of red meats and eggs; increasing poultry, fish, and cheese; and shifts from whole to lowfat milks and from animal to vegetable fats. (For more details, see “Food Consumption, 1970-90,” in the July-September 1991 issue of Food Review.)

Important Contributors of Essential Nutrients

HNIS nutritionists convert food supply data into estimates of nutrients available in the food supply, using data from USDA’s National Nutrient Data Bank. USDA also conducts surveys of food consum-

Volume 15 Issue 1

29
The Dietary Guidelines and Food Guide Pyramid

The 1990 Dietary Guidelines for Americans, published jointly by USDA and the U.S. Department of Health and Human Services, provide Americans with a simple guide to what to eat to be healthy. The guidelines, which apply to healthy Americans over the age of 2 years, recommend:

- Eat a variety of foods
- Maintain healthy weight
- Choose a diet low in fat, saturated fat, and cholesterol
- Choose a diet with plenty of vegetables, fruits, and grain products
- Use sugars only in moderation
- Use salt and sodium only in moderation
- If you drink alcoholic beverages, do so in moderation

To help consumers put the guidelines into practice, USDA developed a food guide. The guide separates foods into six groups and recommends the number of daily servings from each group for a nutritious diet.

Recently, USDA and the U.S. Department of Health and Human Services developed the Food Guide Pyramid, to graphically illustrate the food guide.

Food Guide Pyramid
A Guide to Daily Food Choices

- **Fats, Oils, & Sweets**
  - USE SPARINGLY

- **Milk, Yogurt, & Cheese**
  - 2-3 SERVINGS

- **Vegetable**
  - 3-5 SERVINGS

- **Meat, Poultry, Fish, Beans, Eggs, Nuts**
  - 2-3 SERVINGS

- **Fruit**
  - 2-4 SERVINGS

- **Bread, Cereal, Rice, Pasta**
  - 6-11 SERVINGS

FoodReview 30

Protein

In 1988, animal foods contributed about two-thirds of all protein available in the U.S. food supply (table 1).

Calcium

Milk and milk products are the major source of calcium in the food supply, accounting for three-fourths in 1988.

Adequate calcium is essential for developing teeth and bones, muscle contraction, and normal blood clotting. According to recent research, adequate calcium intake in childhood and early adulthood may reduce the risk of bone fractures later in life. However, recent USDA food consumption surveys indicate that the calcium intake of many Americans, especially women, is below their Recommended Dietary Allowance (RDA), as established by the National Academy of Sciences.

Iron

Meat, poultry, fish, and eggs contributed 25 percent of the iron in the food supply in 1988, second only to grains. Since only about 5-15 percent of the iron we consume is absorbed and used by the body, animal products are considered an important source. Meat, poultry, and fish contain heme iron, a type that is more absorbable than the type in plant products or the iron added through enrichment.

Iron-deficiency anemia is believed to be the most prevalent nutritional deficiency in the United States. Infants, young children, adolescents, and women of childbearing age are most at risk. In 1985, less than half of young children and less than one-quarter of women of childbearing age consumed their RDA of iron.
Table 1
Animal Products Are Important Sources of Many Vitamins and Minerals

<table>
<thead>
<tr>
<th>Item</th>
<th>Meat, fish poultry, eggs</th>
<th>Dairy products</th>
<th>Animal fats</th>
<th>Amount available per person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of total daily supply</td>
<td>Daily amount</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein</td>
<td>47</td>
<td>20</td>
<td>*</td>
<td>105 grams</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>*</td>
<td>5</td>
<td>*</td>
<td>425 grams</td>
</tr>
<tr>
<td>Fat</td>
<td>34</td>
<td>12</td>
<td>7</td>
<td>168 grams</td>
</tr>
<tr>
<td>Saturated fatty acids</td>
<td>42</td>
<td>20</td>
<td>11</td>
<td>60 grams</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>80</td>
<td>15</td>
<td>5</td>
<td>440 milligrams</td>
</tr>
<tr>
<td>Calcium</td>
<td>6</td>
<td>75</td>
<td>*</td>
<td>880 milligrams</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>33</td>
<td>34</td>
<td>*</td>
<td>1,540 milligrams</td>
</tr>
<tr>
<td>Magnesium</td>
<td>16</td>
<td>19</td>
<td>*</td>
<td>330 milligrams</td>
</tr>
<tr>
<td>Iron</td>
<td>25</td>
<td>2</td>
<td>*</td>
<td>17.1 milligrams</td>
</tr>
<tr>
<td>Zinc</td>
<td>50</td>
<td>19</td>
<td>*</td>
<td>12.7 milligrams</td>
</tr>
<tr>
<td>Copper</td>
<td>18</td>
<td>4</td>
<td>*</td>
<td>1.7 milligrams</td>
</tr>
<tr>
<td>Potassium</td>
<td>20</td>
<td>20</td>
<td>*</td>
<td>3,480 milligrams</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>25</td>
<td>16</td>
<td>3</td>
<td>1,630 retinol equivalents</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>8</td>
<td>3</td>
<td>2</td>
<td>16.7 milligrams alpha-TE</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>118 milligrams</td>
</tr>
<tr>
<td>Thiamin</td>
<td>26</td>
<td>8</td>
<td>*</td>
<td>2.2 milligrams</td>
</tr>
<tr>
<td>Riboflavin</td>
<td>29</td>
<td>33</td>
<td>*</td>
<td>2.4 milligrams</td>
</tr>
<tr>
<td>Niacin</td>
<td>45</td>
<td>2</td>
<td>*</td>
<td>26 milligrams</td>
</tr>
<tr>
<td>Vitamin B-6</td>
<td>43</td>
<td>10</td>
<td>*</td>
<td>2.2 milligrams</td>
</tr>
<tr>
<td>Folacin</td>
<td>15</td>
<td>8</td>
<td>*</td>
<td>284 micrograms</td>
</tr>
<tr>
<td>Vitamin B-12</td>
<td>80</td>
<td>18</td>
<td>*</td>
<td>9.1 micrograms</td>
</tr>
</tbody>
</table>

*Less than 1 percent.


Other Minerals
Animal foods were the largest contributors of zinc and phosphorus, providing two-thirds of the supply of each. The meat, poultry, fish, and egg group provided the largest share of zinc, 50 percent. Dairy products and the meat, poultry, fish, and egg group each provided a third of the phosphorus.

Animal foods also contributed substantial proportions of potassium (40 percent), magnesium (35 percent), and copper (22 percent) in the food supply.

Vitamins
Animal products are important sources of many vitamins. Except for small amounts added to cereals, animal foods are the only source of vitamin B-12 in the food supply. Animal foods are also the primary source of riboflavin. In 1988, milk and milk products accounted for a third of the available riboflavin, and the meat, poultry, fish, and egg group provided another 29 percent.

The meat, poultry, fish, and egg group is the leading source of vitamin B-6 and niacin, providing 43 percent of vitamin B-6 and 45 percent of niacin in 1988. This group ranks second as a source of vitamin A and thiamin, accounting for about a fourth of the total supply of each in 1988.

Animal fats add little to the amount of essential nutrients available in the food supply. The only significant contribution is the small amount (3 percent) of vitamin A provided by butter.

Primary Contributors of Fat and Cholesterol
In 1988, animal products contributed about half the total dietary fat in the food supply. Meat, poultry, fish, and eggs provided 34 percent of total fat, milk and milk products contributed 12 percent, and animal fats 7 percent. The remainder came from plant products, primarily vegetable fats and oils.

Saturated fats are found primarily in high-fat animal products, hydrogenated vegetable fats, and some vegetable oils, such as coconut and palm oil. In 1988, animal products contributed slightly less than three-fourths of saturated fats in the food supply. The meat, poultry, fish, and egg group provided the largest share, 42 percent. Milk and milk products accounted for 20
Obtain Nutrient Data Electronically

USDA's Human Nutrition Information Service (HNIS) operates a Nutrient Data Bank Bulletin Board as a service to professionals and consumers. Data files, such as those on pork and beef composition, are available to those using MS-DOS or PC-DOS computer systems.

To access the bulletin board, you need a computer, modem (1,200 or 2,400 baud), telephone line, and communication software. Users should set the following parameters on their modems or through their communication software: no parity, 8 bits, stop bit = 1 (n/8/1).

Dial (301) 436-5078 to access the bulletin board. Once connected, just respond to the series of prompts.

The bulletin board is on line 24 hours a day, 7 days a week (except a few hours a month for maintenance). For further information, contact David B. Haytowitz at HNIS: (301) 436-8491.

percent, and animal fats 11 percent. Most of the remainder came from vegetable fats and oils.

Cholesterol is found only in animal foods. Meat, poultry, fish, and eggs contributed 80 percent of the cholesterol in the food supply in 1988. Eggs, an especially rich source of cholesterol, contributed 33 percent, and meats provided 31 percent. (The figure for eggs is based on USDA's new 1989 data, which show cholesterol values for eggs to be 22 percent lower than previously published). Milk and milk products accounted for 15 percent, and animal fats contributed 5 percent.

The third edition of *Nutrition and Your Health: Dietary Guidelines for Americans* recommends that fat intake not exceed 30 percent of calories, and that saturated fats provide less than 10 percent of calories. But according to USDA survey data, adults age 19-50 years consumed 36-37 percent of calories from fat in 1985 and 13 percent of total calories from saturated fat.

Moderation and Variety Are the Keys

The dietary guidelines stress variety and moderation as the cornerstones of a healthy diet, since no single food can supply all of the more than 40 essential nutrients needed for good health. For example, milk supplies calcium but little iron, and meat supplies iron but little calcium.

Vegetables and fruit are important sources of vitamins A and C, folacin, and several minerals. Breads and cereals supply B vitamins, iron, and protein. Plant foods, including fruit, vegetables, breads, cereals, nuts, and legumes, are sources of dietary fiber.

USDA's Food Guide describes a nutritionally adequate diet that follows the dietary guidelines. The Food Guide recommends consumption of two to three servings from the meat, poultry, fish, eggs, nuts, dry beans, and peas group each day. This is equivalent to about 6 ounces of cooked meat, poultry, or fish. The American Heart Association and the National Cholesterol Education Program recommend similar amounts.

Choosing lean cuts and lowfat cooking methods will keep fat and saturated fat levels within acceptable limits. Since both the lean and fat portions of meat and the meat and skin of poultry contain cholesterol, limiting portion size will limit cholesterol intake. A 3-ounce serving of lean beef or pork provides 70-80 milligrams of cholesterol, one-fourth of the maximum daily limit of 300 milligrams suggested by several health authorities. The dietary guidelines recommend moderating use of egg yolks and organ meats, since they are concentrated sources of cholesterol.

The Food Guide recommends consumption of two-three servings of milk or milk products daily, with 1 cup of milk or yogurt or about 1-1/2 ounces of cheese considered a serving. Nonfat and low-fat choices from this food group, such as skim and lowfat milks and reduced-fat cheeses, provide as much or more calcium and protein as higher-fat choices. Most of the cholesterol in milk products is found in the fat fraction, so products that are lower in fat also contain less cholesterol.

Fats and oils from both animal and vegetable sources (like cooking oils and salad dressings) are concentrated sources of fat and saturated fat, but add little to nutrient intake. The dietary guidelines advise consumers to use fats and oils sparingly.

Product Composition and Marketing Are Adapting to Consumer Preferences

Consumer demand has prompted the food industry to develop lower fat products and incorporate dietary recommendations into consumer information programs.

Retailers are trimming more fat from beef cuts. Today, beef is trimmed to 1/4 inch or less of outside fat. And, over 40 percent of retail beef cuts are marketed with all the outside fat removed. Trimming outside fat also reduces the fat in the cooked lean portion. For example, beef eye of round, when cooked with the 1/2-inch trim, contains 7 grams of fat per 100 grams.
USDA 'Select' Beef Makes the Grade

USDA's Select grade provides health-conscious consumers a reliable guide for buying leaner beef.

Until 5 years ago, leaner beef was graded as "Good," as it had less intramuscular fat than either Prime or Choice beef. However, because consumers regarded Good as less tender than Prime or Choice, much of the beef that would have qualified as Good actually went ungraded.

To encourage the grading of this leaner beef and to let consumers know in a positive way that there is a lower fat alternative, USDA replaced Good with Select in November 1987.

Retailers and consumers have responded, and Select beef is gaining in popularity. As more beef is marketed as Select, market signals are sent back to packers and cattle producers to produce leaner meat.

Contact: Connie Crunkleton, Agricultural Marketing Service, (202) 720-8998.

Select Grade Gains in Popularity Among Consumers

Percent of beef marketed

<table>
<thead>
<tr>
<th>Year</th>
<th>Select Beef</th>
<th>Choice Beef</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987</td>
<td>0%</td>
<td>80%</td>
</tr>
<tr>
<td>1989</td>
<td>10%</td>
<td>60%</td>
</tr>
<tr>
<td>1991</td>
<td>20%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Contact: Connie Crunkleton, USDA's Agricultural Marketing Service, (202) 720-8998

Food Consumption

of cooked lean portion. If cooked after trimming all the fat, the meat contains 5 grams of fat per 100 grams of lean portion.

Pork has also become leaner. A nationwide study indicates that the fat content of most fresh pork cuts is lower than in 1983.

In response to leaner beef and pork, USDA has revised the data on the nutrient content of these meats. (Updated data on fresh pork composition are available through an electronic bulletin board, see box.)

Many new food products have been developed with lower fat contents. New milk products are particularly notable. Skim and lowfat milks have been available for many years, but other products, such as nonfat and lowfat regular and frozen yogurt, reduced-fat cheeses, and reduced-fat dairy desserts, are becoming common.

Changes in marketing practices assist consumers in making appropriate dietary choices. USDA has encouraged the marketing of leaner beef by changing the name of the beef grade USDA Good to USDA Select (see box). Select beef contains less fat than USDA Prime or Choice.

Private information programs are helping consumers select low-fat food items. The "Meat Nutri-Facts"—developed by the Food Marketing Institute, the American Meat Institute, and the National Livestock and Meat Board—is an example. Drawing on USDA's nutrient composition data, Meat Nutri-Facts provides consumers with nutrient and caloric information. The program also includes suggestions on lowfat cuts and lowfat cooking methods. Similar programs provide consumers with point-of-purchase information on poultry and seafood.

Future Food Labels Will Have More Nutrient Information

With the passage of the Nutrition Labeling and Education Act of 1990, consumers can look forward to more and more easily understood information on the nutrient content of foods. (See "Food Labeling Regulations Changing" in the
October-December 1991 issue of *FoodReview*.) Both the Food and Drug Administration, which regulates most processed food labeling, and USDA, which regulates labeling of meat and poultry products, have proposed new regulations.

New nutrition labels are proposed to include information on fat, saturated fat, cholesterol, carbohydrates, dietary fiber, protein, sodium, vitamins A and C, calcium, and iron, as well as total calories and calories from fat. Providing this information will help consumers plan their diets on the basis of dietary recommendations.

### References


---

**New from USDA’s Economic Research Service**

**CALL-ERS** is a new electronic bulletin board service available free to users of ERS information and data. Use **CALL-ERS** to:

- Download timely situation and outlook summaries
- Download selected situation and outlook tables as electronic spreadsheets.
- Download samples of electronic data products.
- Stay informed about new reports and data products from ERS.

Shop our on-line catalog for periodicals, reports, videos, and data products.

**CALL-ERS** supports 1200 and 2400 baud communications (N,8,1) on 1-800-821-6229 and 1-202-219-0377.

**Call from your computer today!**