

# Red Meats: Nutrient Contributions to the Diet

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**F**resh red meats are **nutrient** dense — that is, they provide a high proportion of nutrients to calories. Their high nutritional density makes these meats an important component of a healthy diet. Nutrients found in meats include proteins, fats, vitamins, minerals, and water. Nutritional values of 3-ounce cooked servings of red meats, poultry, fish, and meat alternates are found in the tables inside.

**Proteins** — Those in meats are high quality. That is, they provide all **essential amino acids** in proportions needed for growth and repair of body tissues.

The proteins in animal foods are different from most proteins found in plant foods. Meats contain higher amounts of the eight essential amino acids, those that cannot be made by the body and must be obtained from food.

By comparison, vegetable proteins, usually limited in one or two essential amino acids, are best used in combinations such as Mexican-style dried beans and rice or combined with animal protein mixtures, e.g., macaroni and cheese casserole or navy bean soup with ham and corn bread. Such combinations can provide enough essential amino acids to raise protein quality to that of meat.

What proteins do for you:

- Provide amino acids to maintain body tissues, replacing proteins that are regularly broken down.

- Provide amino acids for new proteins needed during growth.
- Provide energy in the amount of 4 calories per gram.

**Fats** — Part of a larger group of compounds known as **lipids**. Most dietary fats occur as **triglycerides**. Each triglyceride molecule contains three fatty acids. These **fatty acids** may be **saturated**, **polyunsaturated**, or **monounsaturated**.

Meats are a major source of dietary saturated fatty acids. Saturated fatty acids are believed to be one of the major contributing dietary factors for the **atherosclerosis** that leads to coronary heart attacks and some strokes. Even so, saturated fatty acids make up only one-third of the fat in red meats with the other two-thirds polyunsaturated and monounsaturated fatty acids. When

*See Glossary for definition of terms in bold letters.*

used in limited or moderate amounts, these last two kinds of fatty acids have **blood cholesterol** lowering abilities.

Various research studies suggest that the total amount, as well as the kinds of fatty acids, are important to those who are susceptible to high blood cholesterol levels. Too much fat also contributes to obesity, **hypertension** and cancer.

Meats are an important source of fat, but they also have an important role in a healthy diet. Fat content of

meat can be reduced by selecting lean cuts, trimming visible fat, eating moderate amounts, and cooking with low-fat methods.

What fats do for you:

- Provide the most concentrated source of energy: 9 calories/gram. For example, 1 teaspoon of fat provides 40 calories.
- Provide a feeling of fullness after eating because fats stay in the stomach longer than other nutrients.
- Provide the essential polyunsaturated fatty acid, **linoleic acid**. Fat in red meats is about 3 percent linoleic acid.
- Add flavor to foods.

## Cholesterol

Cholesterol is a soft, waxy substance found *only* in animal foods. While not a nutrient, because your body can make it, cholesterol is necessary for every body cell and to make sex hormones, bile acids, and

vitamin D. For many, but not all people, the amount of blood cholesterol made is regulated by need and how much is in your diet. Too much **dietary cholesterol** and fat, particularly in the form of saturated fatty acids, can lead to too much blood cholesterol.

Persons with high blood cholesterol levels are often advised to lower the amounts of cholesterol eaten. This means limiting consumption of *lean* meats and poultry (without skin and visible fat) to 6 ounces or less daily. Organ meats — brain, sweetbreads, kidney, and liver — are especially high in cholesterol and rarely allowed. Prime grade and fatty cuts of meats (e.g., short ribs, spareribs, and brisket), regular ground beef, goose, domestic duck, sausage, bacon, regular luncheon meats, caviar, and

roe are some items that should seldom be eaten. Of course, other dietary sources of cholesterol like butter, egg yolks, sour cream, and high-fat cheeses are also limited.

**Phosphorus** — An abundant mineral necessary for every cell and found in nearly all foods, including meats. It helps release energy from fats, proteins, and carbohydrates. It also helps the transport of nutrients from the intestine to the cells where they are used. Phosphorus is part of many important protein and genetic compounds needed for cell activities. It combines with calcium to build strong bones and teeth and helps keep body fluids in balance.

**Magnesium** — Another abundant mineral. Although red meats are low in magnesium, they provide 15 percent of the body's needs. Magne-

sium, as well as calcium and phosphorus, is used by the body in making bone. Magnesium also is involved in building protein, obtaining energy from food, normal muscle contraction, transmission of nerve impulses and maintenance of teeth.

**Sodium** — Found in low amounts in fresh meats; large amounts in processed meats such as bologna and ham. As a component of blood and fluid surrounding body cells, it helps keep fluids balanced between blood and cells. It also helps maintain body neutrality by balancing acids.

**Iron** — A **trace mineral** found in red meats. About 50 percent of the iron in meats is heme iron, the most readily absorbed form of iron. Iron from cereals and dark-green leafy vegetables is better absorbed if consumed with vitamin-C rich foods or if eaten in the same meal with meat, poultry, or fish. Red meats provide about 23 percent of the iron available in foods.

Women's and children's diets are frequently low in iron, and iron deficiency among women is one of the most common dietary deficiencies in the United States. Adult women typically consume just over half the Recommended Dietary Allowance for iron. This is a problem across all age groups and economic levels. Iron, as a component of hemoglobin in red blood cells, aids the use of oxygen and elimination of carbon dioxide.

**Zinc** — Another trace mineral. Red meats provide about 36 percent of the zinc found in food. Zinc is an essential part of some 70 enzymes. It is involved in protein-building, digestion and metabolism, and is essential for growth and wound healing. Zinc enhances the sense of taste and is necessary for successful sexual maturation.

## Glossary

**amino acid** — one of many structural units of protein.

**atherosclerosis** — a type of "hardening of the arteries" in which cholesterol, fat, and other blood components build up on the inner lining of arteries.

**blood cholesterol** — cholesterol in the body found circulating in blood or serum.

**cholesterol** — a fat-like compound made in the body or obtained in food and found in all body tissues.

**diet** — the food and drink an individual usually consumes.

**dietary cholesterol** — cholesterol that comes from animal foods eaten in the diet.

**essential amino acid** — refers to an amino acid that the body requires for growth or maintenance that the body cannot make in adequate amounts.

**fatty acid** — an organic molecule made up of a carbon and hydrogen chain with an acid component on one end.

**hypertension** — high blood pressure.

**linoleic acid** — a polyunsaturated fatty acid that must be provided by food.

**lipid** — any one of a group of fat or fat-like compounds.

**monounsaturated fatty acid** — a fatty acid with one double bond.

**nutrient** — a substance found in food that the body needs but either cannot make or cannot make in adequate amounts.

**polyunsaturated fatty acid** — a fatty acid with two or more double bonds.

**saturated fatty acid** — a fatty acid with no double bonds. All carbon atoms are bound to four other atoms with single bonds.

**trace mineral** — a dietary mineral required in amounts no greater than a few milligrams per day.

**triglyceride** — a fat molecule made up of three fatty acids.

**Table 1. Nutritional Comparisons of Meats and Alternates: Energy, Nutrients and Cholesterol (3 oz cooked servings or equivalents)**

Food	Calories	Protein (g)	Total Fat (g)	Sat. Fatty Acids (g)	Monosat. Fatty Acids (g)	Polyunsat. Fatty Acids (g)	Cholesterol (mg)
Beef <sup>1</sup> (3 oz/85 g)	189	25.9	8.7	3.4	3.8	0.3	76
Pork <sup>1</sup> (3 oz/85 g)	198	23.0	11.1	3.8	5.0	1.3	79
Lamb <sup>1</sup> (3 oz/85 g)	175	24.0	8.1	2.9	3.5	0.5	78
Chicken <sup>2</sup> (3 oz/85 g)	162	24.6	6.3	1.7	2.3	1.4	76
Cod <sup>3</sup> (3 oz/85 g)	89	19.4	0.7	0.1	0.1	0.2	47
Halibut <sup>4</sup> (3 oz/85 g)	119	22.7	2.5	0.4	0.8	0.8	35
Shrimp <sup>5</sup> (3 oz/85 g)	84	17.8	0.9	0.2	0.2	0.4	166
Egg <sup>6</sup> (3 whole/177 g)	225	18.7	15.0	4.6	5.7	2.0	639
Peanut butter <sup>7</sup> (6 Tbsp/96 g)	564	23.6	48.0	9.2	22.6	13.8	0
Pinto beans <sup>8</sup> (1 1/2 cup/255 g)	351	20.9	1.3	0.3	0.3	0.5	0

**Table 2. Nutritional Comparisons of Meats and Alternates: Minerals and Vitamins (3 oz cooked servings or equivalents)**

Food	Phosp. (mg)	Magnes. (mg)	Sodium (mg)	Iron (mg)	Zinc (mg)	Thiamin (mg)	Riboflav. (mg)	Niacin (mg)	B <sub>6</sub> (mg)	B <sub>12</sub> (mcg)
Beef <sup>1</sup> (3 oz/85 g)	208	23	55	2.7	6.0	.08	.22	3.6	.30	2.3
Pork <sup>1</sup> (3 oz/85 g)	219	19	59	1.1	3.0	.59	.30	4.3	.36	0.7
Lamb <sup>1</sup> (3 oz/85 g)	179	22	64	1.7	4.5	.09	.24	5.4	.14	2.2
Chicken <sup>2</sup> (3 oz/85 g)	166	21	73	1.0	1.8	.06	.15	7.8	.40	0.3
Cod <sup>3</sup> (3 oz/85 g)	117	36	66	0.4	0.5	.07	.07	2.1	.24	0.9
Halibut <sup>4</sup> (3 oz/85 g)	242	91	59	0.9	0.5	.06	.08	6.1	.34	1.2
Shrimp <sup>5</sup> (3 oz/85 g)	116	29	190	2.6	1.3	.03	.03	2.2	.11	1.3
Egg <sup>6</sup> (3 whole/177 g)	267	15	189	2.2	1.7	.09	.76	0.1	.21	1.5
Peanut butter <sup>7</sup> (6 Tbsp/96 g)	309	150	459	1.6	2.4	.13	.10	12.6	.36	0.0
Pinto beans <sup>8</sup> (1 1/2 cup/255 g)	408	141	3	6.7	2.8	.47	.23	1.0	.40	0.0

<sup>1</sup>Composite of cuts, lean only, roasted

<sup>2</sup>Flesh only, roasted

<sup>3</sup>Atlantic, cooked, dry heat

<sup>4</sup>Atlantic and Pacific, cooked, dry heat

<sup>5</sup>Mixed species, cooked, moist heat

<sup>6</sup>No added fat

<sup>7</sup>Smooth style

<sup>8</sup>Cooked, boiled, unsalted

Sources: USDA, Composition of Foods, Agriculture Handbooks 8-1, 8-5, 8-10, 8-13, 8-15, 8-16 and 1989 Supplement

## Vitamins

**Thiamin (B<sub>1</sub>)** — Pork provides more thiamin than other meats. Red meats as a group provide almost one-fourth of the thiamin in food. Thiamin helps the body use fats and

carbohydrates. It also helps to maintain normal appetite and nervous system function.

**Riboflavin (B<sub>2</sub>)** — More riboflavin is provided by milk foods than by

red meats, but red meats provide about 16 percent of the riboflavin available in foods. The vitamin helps the body use carbohydrates, fats, and proteins and supports normal vision and skin.

**Niacin** — This B vitamin can be made from the amino acid tryptophan. Both niacin and tryptophan are found in meats. About 27 percent of niacin in the food supply comes from red meat. Niacin helps release energy from carbohydrates, fats, and proteins and helps form proteins, fats, and other body compounds. It also supports a healthy nervous system, skin, and digestive system.

**B<sub>6</sub> (pyridoxine)** — Red meats supply one-fourth of this B vitamin. B<sub>6</sub> is involved in many amino acid and fatty acid reactions in the body.

**B<sub>12</sub> (cobalamin)** — Found only in foods of animal origin. Red meats are the source of more than 50 percent of B<sub>12</sub> in the food supply. Vitamin B<sub>12</sub> is needed for growth and making new cells. It helps maintain healthy nervous tissue and is needed for normal blood formation.

## Summary

Red meats, because of their nutritional density, have an important role in a healthy diet. With careful planning, it is possible to eat a balanced, healthy diet without the use of red meats. It is easier, however, to assure balance and adequate nutrients when red meats are eaten. To obtain the optimal nutrition benefits from red meats, select lean cuts, use low-fat cooking methods, and consume moderate amounts.

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