Red and white meat

Daria Lytvynenko, Alina Kolomiiets

National University of Food Technologies

Meat is the flesh of animals used for food. There are several kinds of meat. Depending on the concentration of myoglobin in muscle fibre meat can be of two types: red (dark) and white (light). When myoglobin is exposed to oxygen, reddish oxymyoglobin develops, making myoglobin-rich meat red. The redness of meat depends on species, animal age and fibre type. Red meat contains more narrow muscle fibres that tend to operate over long periods without rest, while white meat contains more broad fibres that tend to work in short fast bursts. The white meat of chicken has under 0.05%; pork and veal have 0.1–0.3%; young beef has 0.4–1.0%; and old beef has 1.5–2.0%. The two kinds of muscles are often grouped into “fast-twitch” and “slow-twitch” muscles, with dark meat made up of the former and white meat, the latter. Geese and other flying birds use their breast muscles to flap their wings and fly, so they have mostly dark meat.

Most human muscles are made up of a combination of dark and white meat. The same goes for cows and other mammals. The concentration of each kind of muscle fiber in any given area of the body is based on what sort of job that muscle does. The more active the muscle, the more fast-twitch fibers will be present.

White meat is best known as meat that is lean, especially in comparison with red meat. The big point about white meat is that its fat content is less in comparison with red meat. One of the main advantages of eating white meat is the lower number of calories that it contains. Usually chicken and turkey breast meat is considered white. White meat has a translucent "glassy" quality when it is raw. When it's cooked, the proteins denature and recombine, or coagulate, and the meat becomes opaque and whitish.

Red meat in traditional culinary terminology is meat which is red when raw and not white when cooked. Red meat also includes the meat of most adult mammals such as cows, sheep, goats, and horses. When dark meat is cooked, myoglobin's color changes depending on what the meat's interior temperature is. Rare beef is cooked to 140° F, and myoglobin's red color remains unchanged. Above 140° F, myoglobin loses its ability to bind oxygen, and the iron atom at the center of its molecular structure loses an electron. This process forms a tan-colored compound called hemichrome, which gives medium-done meat its color. When the interior of the meat reaches 170° F, hemichrome levels rise, and the myoglobin becomes metmyoglobin, which gives well-done meat its brown-gray shade. Cows and pigs are both sources of dark meat, though pig is often called "the other white meat." Pigs' muscles do contain myoglobin, but the concentration is not as heavy as it is in beef and fish is mainly white meat.

Different types of meat require different cooking times. The best way to determine if meat is done is to use a meat thermometer to check the internal temperature. Beef can be cooked to a variety of temperatures: rare (140° F), medium (160° F), and well-done (170° F). Pork, chicken, and fish have less leeway. It's recommended that pork be cooked to 170° F, chicken to 180° F, and fish to 165° F.

Nutrient composition of red and white meat is presented in table 1.

Table 1

Nutrient composition of red and white meat

Nutrient	Goat	Chicken	Beef	Pork	Lamb
Calories	122	162	179	180	175
Fat (g)	2.6	6.3	7.9	8.2	8.1
Saturated Fat (g)	0.79	1.7	3.0	2.9	2.9
Protein (g)	23	25	25	25	24
Cholesterol	63.8	76.0	73.1	73.1	78.2

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