Case No.: IPR2023-00209
U.S. Patent No. 10,039,306

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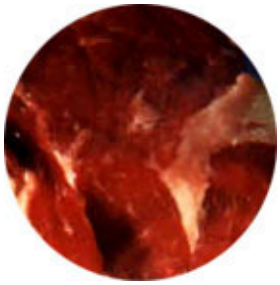
What Gives Meat Its Color?



Beef

Pork

Fish

There are basically two types of meat: dark and white.

Red, or dark meat is made up of muscles with fibers that are called *slow-twitch.* These muscles are used for extended periods of activity, such as standing or walking, and need a consistent energy source. The protein *myoglobin* stores oxygen in muscle cells, which use oxygen to extract the energy needed for constant activity. Myoglobin is a richly pigmented protein. The more myoglobin there is in the cells, the redder, or darker, the meat.

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.

White meat is made up of muscles with fibers that are called *fast-twitch.* Fast-twitch muscles are used for quick bursts of activity, such as fleeing from danger. These muscles get energy from glycogen, which is also stored in the muscles.

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.

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. Chickens have a mixture of both dark and white meat, 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.

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