

Red meats: bad for the health

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An important study, conducted with over half a million participants, has demonstrated that excessive consumption of red meats and cured meats is associated with an increased risk of premature death by nine different diseases. This adverse effect can, however, be completely abolished by replacing the red meats with poultry or fish.

The results of many population studies have led us to believe that this **premature death** was principally due to an increased risk of cardiovascular diseases, type 2 diabetes and certain cancers (colorectal cancer, in particular).

These adverse effects could be linked to the presence of heme iron – a form of iron bound to myoglobin in red meat – as well as to the presence of preservatives (nitrites/nitrates). White meat and fish do not contain these agents and consuming them thus diminishes the risk of premature death in people who regularly eat meat.

INCREASES IN 9 DISEASES

To better understand the effects of red and white meats on mortality, a team from the American National Cancer Institute examined the eating habits of 536,969 people between 50 and 71 years of age¹.

Over a period of 16 years, the researchers measured the total intake of red meats (beef, lamb and pork), cured meats and of white meats (poultry and fish) and the very large number of participants, along with the prolonged duration of the study, allowed the researchers to test for links between consumption of different types of meats and 9 principal causes of mortality.

The results were shocking: the researchers observed that the subjects who consumed the most red meat had a roughly 25% higher risk of dying prematurely compared to people who ate less of these meats.

This increased risk was observed for each of the 9 principal causes of death surveyed during the study, i.e. cancer, cardiovascular diseases, respiratory diseases, strokes, diabetes, Alzheimer's disease, infection, renal diseases and liver diseases.

In the last-mentioned case, the increased risk was particularly significant as the avid consumers of red meat had a risk of dying due to hepatic disease that was 100% higher.

Inversely, the consumption of white meats seemed to actually be beneficial for health, since the people who ate it most often saw their risk of dying reduced by 25%, compared to those who ate it less.

To sum up, the simple act of replacing red meats by white meats can have major effects on the risk of mortality, including deaths linked to diseases which were not previously known to be



associated with red meats, such as infections as well as respiratory, renal and hepatic diseases.

HEME IRON AND NITRATES

The most obvious difference between these red and white meats is evidently their colour. Red meats contain large quantities of myoglobin, a protein which contains an atom of iron within each molecular structure.

This heme iron allows myoglobin to store oxygen within the muscles so that it can withstand the intense metabolic activity involved in muscular contraction. White meats, on the other hand, are composed of “rapid” muscle fibres which are adapted for developing force during a short period of time, without using oxygen. These muscles thus have no or little myoglobin and obtain most of their energy from glycolysis.

According to the results of the study, this difference in heme iron is responsible for about 20% of the increased risk in mortality observed in those who consume large quantities of red meat, possibly due to the strong pro-oxidant effects of this form of iron.

The presence of preservatives (nitrate/nitrite) was found to be responsible for about half of the increased risk of mortality associated with the consumption of cured meats, a contribution which reached 72% for deaths linked to cardiovascular diseases.

The differences in the composition of red and white meats thus results in diametrically opposed effects on the risk of serious diseases and mortality.

For those who regularly eat meat, switching one's tastes to poultry and fish represents a concrete means of diminishing the risks associated with red meats, without completely eliminating meat from the regular menu.

⁽¹⁾ Etemadi A et al. Mortality from different causes associated with meat, heme iron, nitrates and nitrites in the NIH-AARP Diet and Health Study: population based cohort study. *BMJ* 2017;357:j1957.