

## Red Meat and Nutrition

Meat has played an important role in our evolution for millennia. Evidence suggests that man has had a long history of eating a meat-based diet based on cave drawings of hunting scenes, analyses of prehistoric refuse heaps, anatomical features of early humans, and data on the diets of modern hunter gatherers. Nowadays, we choose to eat meat for the nutrients it provides as well as for pleasure, tradition and convenience.

### What is meat?

The term 'meat' describes the muscle tissue that makes up steaks, joints, cubed and minced meat as well as organs such as liver and kidneys which are termed 'offal'. Red meat includes beef, veal, pork and lamb (fresh, minced and frozen). Processed meat includes meat that has been preserved by methods other than freezing, such as salting, smoking or adding preservatives e.g. ham, bacon, sausages, hamburgers, salami and corned beef. The tradition of preserving meat goes back centuries.

### Health Benefits

Red meat can form part of a healthy diet. It is a good source of protein and provides essential vitamins and minerals, such as iron and zinc. To have a healthy, balanced diet, people should try to eat some protein-rich foods (such as lean red meat, fish or pulses) as well as base meals on starchy carbohydrates (particularly wholegrain or higher-fibre varieties), eat plenty of fruit and vegetables, have some lower fat dairy foods or dairy-alternatives, and choose unsaturated rather than saturated oils and spreads (small amounts).

### Protein

Red meat is a good source of high quality protein. Protein is essential for growth and maintenance of the body and can also provide energy. Red meat contains, on average, 19-24 g of protein per 100 g when raw and 27-35 g of protein per 100 g when cooked.

### Minerals

Red meat is an important dietary source of minerals, in particular iron and zinc. Red meat contributes approximately 13% of total iron intake in the UK and contains the more readily absorbed 'haem' form of iron. In the UK, almost 50% of girls aged 11-18 years and over a quarter of women aged 19-64 years have inadequate iron intakes.

Studies have shown that non-meat eaters are more likely to have lower iron body stores compared with meat-eaters. People following restrictive vegetarian diets are more at risk of iron-deficiency anaemia.<sup>1</sup>

Low intakes of zinc are also a concern for some population groups in the UK, such as young girls (aged 4-11 years) and older children (aged 11-18 years). Red meat is a good source of zinc, which, similar to iron, is available in a form that is readily absorbed by the body.

## Vitamins

Red meat contains a variety of vitamins, including a range of B vitamins, particularly vitamin B<sub>3</sub> (niacin) and vitamin B<sub>12</sub>. Vitamin B<sub>12</sub> is only found in foods of animal origin, fish, yeast extracts, some edible seaweeds and fortified foods. Therefore, people who do not consume these foods may have inadequate intakes. Red meat is also a useful source of vitamin B<sub>1</sub> (thiamin) and vitamin B<sub>2</sub> (riboflavin) with pork being higher in thiamin than the other red meats.

Red meat also contains vitamin A, and offal is a rich source. Because liver is particularly rich in vitamin A, it is not advised for pregnant women to consume liver or liver products, or take vitamin A supplements. This is due to concerns that excessive amounts of vitamin A may present a risk to the unborn baby.

Low vitamin D status is prevalent in the UK, particularly amongst young people and older adults and in ethnic minority groups. Most people get enough vitamin D during the summer months from the action of sunlight on the skin. In winter, or all year-round for those who don't get much sun exposure, vitamin D status is dependent on food sources and vitamin D supplements (which are now recommended for everyone in the UK). There are few naturally rich food sources of vitamin D. Foods that contain significant amounts are mostly of animal origin, with rich sources including egg yolk and oily fish. Some red meats (e.g. pork and some cuts of beef and lamb) are a source of vitamin D and meat and meat products make a substantial contribution to vitamin D intakes, particularly for those who don't consume oily fish.

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<sup>1</sup> Haider LM et al. The effect of vegetarian diets on iron status in adults: A systematic review and meta-analysis. *Crit Rev Food Sci Nutr.* 2016 23:0. [Epub ahead of print]

## Fat

In a number of Western countries, red meat consumption has declined, partly due to a concern about its fat content. However, advances in animal husbandry and butchery techniques over the last 40 years have significantly reduced the fat content of carcass meat by 10-30%. This means that the fat content of lean red meat is much lower than some consumers may think. Typically the total fat content of lean red meat is between 4-10 g per 100 g.

We can further reduce the fat content of meat by using specific preparation and cooking methods such as dry frying or grilling and by trimming visible fat off meat.

There are common misconceptions about the type of fat red meat contains. Red meat contains both saturated and unsaturated fats. Indeed, lean beef and pork contain more unsaturated fat than saturated fat. Red meat also contains small amounts of omega-3 polyunsaturated fatty acids, which are important for health.

### Nutrient content of red meat

Nutrient	Nutrients per 100g cooked meats		
	Beef (grilled steak)	Lamb (grilled chop)	Pork (grilled chop)
Energy (kcal)	177	213	184
Protein (g)	31.0	29.2	31.6
Fat (g)	5.9	10.7	6.4
Saturated fat (g)	2.5	4.9	2.2
Monounsaturated fat (g)	2.5	4.0	2.6
Polyunsaturated fat (g)	0.5	0.6	1.0
Carbohydrate (g)	Nil	Nil	Nil
Vitamin B <sub>12</sub> (µg)	3.0	3.0	1.0
Iron (mg)	3.6	2.1	0.7
Zinc (mg)	5.6	3.6	2.4

Reference: Finglas et al. 2015 McCance and Widdowson's The Composition of Foods

## In Conclusion

Red meat can make an important contribution to nutrient intakes in the diet. It provides a number of essential nutrients, including protein, iron, zinc, vitamin B<sub>12</sub> and vitamin D. It is for this reason that lean meat is often regarded as being nutrient

dense. Some of these nutrients, such as iron and zinc, are more easily absorbed from meat than plant-based foods. Therefore, red meat can make a significant contribution to the diet, especially for those groups in the population that are known to have low intakes of these nutrients.

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