

Does eating ham, bacon and beef really increase your risk of developing type 2 diabetes?

August 26 2024, by Duane Mellor



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That lunchtime staple, the humble ham sandwich, has come in for a bashing in the press recently. According to [many reports](#), eating two

slices of ham a day can increase your risk of developing type 2 diabetes.

But what's the science behind these headlines?

The research offers a more complex picture. [A new study](#) from the University of Cambridge highlighted an association between developing type 2 diabetes and eating processed meat like ham and bacon, and [red meat](#) such as beef and lamb.

This led to headlines suggesting the risk was mainly linked to [ham sandwiches](#). This seems to have come from the [press release](#), which used ham as the example to quantify the amount of processed meat associated with a 15% increased risk of developing type 2 diabetes over ten years.

The research found that this risk was linked to eating an extra 50g of processed meat every day, which happens to equate to two slices of ham. A useful example thus appears to have been taken up by the media as the main cause, perhaps ignoring some of the key messages coming from the study.

So, can processed and red meat really increase your risk of developing type 2 diabetes?

The [biggest risk factors](#) linked to developing type 2 diabetes are being over 40, having family members with type 2 diabetes, being of South Asian or African descent, or having a higher body weight—and especially a larger waist.

The Cambridge study used data from nearly 2 million people from 31 studies. Participants were followed for an average of ten years. During this time, around one in 20 people developed type 2 diabetes.

The research suggested that a 10% increase in the probability of

developing type 2 diabetes was associated with every 100g of additional red meat eaten daily. Eating half as much extra processed meat every day was linked to an even greater increased risk of developing the disease.

This is not the [first time](#) that both processed and red meats have been linked with an increased risk of developing type 2 diabetes. However, the key strength of the Cambridge study was that it tried to control for many of the other factors linked to the disease, including smoking, having a higher body weight, dietary intake and exercise.

However, the size of the increased risk is modest, considering few people included in the study ate 50g or more processed meat per day—meaning moderate ham consumption is likely to have [no meaningful effect](#) on your risk.

What's the link?

Processed meat has been linked to increased risk of type 2 diabetes because of its nitrate and [salt content](#)—additives that are used to cure many processed meats.

Nitrates and salt in processed meats have also [been linked to](#) an increased risk of developing colon cancer. In fact, the World Health Organization classifies the additives as [group 1 carcinogens](#), which means they can cause a range of cancers.

The mechanism linking processed meat to cancer seems to be similar to how it might be linked to type 2 diabetes. During digestion, processed meat produces [N-nitroso chemicals](#), which can damage cells. This can lead to inflammation and affects how insulin, the hormone that controls blood glucose (sugar), works. This in turn can lead to [insulin resistance](#), when cells in your muscles, fat and liver don't respond well to insulin and

can't easily take up glucose from your blood.

Red meat, meanwhile, is [rich in iron](#). Research suggests that people with [high levels of iron](#) are more likely to develop type 2 diabetes. However, [low levels of iron](#) are more of a health concern for the general population.

Another potential link regarding red meat could be the way it is cooked.

[Previous studies](#) have suggested that charred meat, cooked over an open flame or at high temperature, is also linked to an increased risk of developing [type 2 diabetes](#). Charring meat leads to formation of toxic chemicals such as [heterocyclic aromatic amines](#) and harmful compounds like [advanced glycation end products](#), both of which have been linked to [insulin resistance and type 2 diabetes](#).

Bye-bye barbecues and bacon butties?

The key message is reduction, rather than avoidance. The UK government nutritional recommendations offer sound advice: limit your combined intake of red and processed meat to no more than [an average of 70g per day](#).

But these guidelines also suggest that red meat can be a valuable source of iron. So, if you decide to stop eating red meat, you should eat alternative sources of iron such as beans, lentils, dark green vegetables and fortified cereals.

This needs to be done as part of a carefully planned diet. Non-meat sources of iron are more difficult for our bodies to absorb so should be eaten with a source of vitamin C, found in green vegetables and [citrus fruit](#).

The best advice to reduce your risk of developing type 2 diabetes is to maintain a healthy weight—consider losing weight if you have a higher body weight—and be as physically active as possible.

A [healthy diet](#) should be based on plenty of vegetables, fruit, beans, peas, lentils, nuts and seeds, along with some wholegrain foods, some [dairy products](#), fish and white meat (or vegetarian alternatives)—plus moderate amounts of red meat and minimal processed meat. This will help reduce your risk of type 2 diabetes, [heart disease](#), and [many cancers](#)—as well being more [environmentally sustainable](#).

But if you have a penchant for ham sandwiches, rest assured you can continue to indulge as an occasional treat. It's your overall lifestyle and diet that really matter for your health and risk of developing type 2 [diabetes](#).

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