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THE SATURATED FAT AND HEART DISEASE DEBATE

There has been a lot of recent debate surrounding saturated fat intake and heart disease. This article will examine some of the common arguments put forward by those who challenge the link between the two.

Saturated fats contain single bonds between carbon atoms which causes the fat to be 'saturated', or to be linked to as many hydrogen atoms as possible. Sources of saturated fat include: butter, coconut oil, palm oil, lard, full-fat dairy products, pies, pastries, cakes and biscuits and the visible fat on meat.¹ Due to the association between saturated fat and increased low density lipoprotein (LDL) cholesterol levels, most public health bodies recommend limiting saturated fat intake in order to reduce the risk of heart disease.^{1,2}

ARGUMENT ONE

Studies have found that saturated fat intake is not associated with heart disease

A large meta-analysis by Chowdhury et al (2014)³ is often quoted to support this argument, as this study did not find a significant association between saturated fat intake and cardiovascular disease (CVD).

However, there have been several criticisms of this study, such as errors in some of the data, omitting relevant studies, a lack of consistency (e.g. whether saturated fat was substituted for refined carbohydrates) and the fact that data representing monounsaturated fats was taken from meat and dairy rather than more relevant sources such as nuts and olive oil.⁴ Furthermore, numerous other large meta-analyses have found that lowering saturated fat intake is associated with a reduced risk of heart disease.⁵⁻⁷



These studies also found that neither a lower total fat intake nor replacing saturated fat with refined carbohydrates was associated with a lower risk of heart disease, but that replacing saturated fat with unsaturated versions or wholegrains was associated with a reduced risk of CVD.⁵⁻⁷ For example, a large systematic review by Hopper et al (2015) found that a reduced saturated fat intake was associated with a 17% reduced risk of CVD.⁷

A more recent large prospective cohort study, called the PURE study, found that there were no significant differences between the type of fat consumed and the risk of cardiovascular events and that lower intakes of saturated fat were associated with an increased risk of stroke.⁸ Although these are interesting results, it is important to remember that no causal relationship can be assumed due to the observational design of this study. Another limitation is the potential confounding effect of socio-economic status. Although education status was corrected, the PURE study was predominantly carried out in low and middle income countries and the researchers themselves state that, 'high-carbohydrate and low-fat diets might be a proxy for poverty or access to healthcare'.⁸

In the UK, we currently consume more free sugars and less fibre than recommended levels.

ARGUMENT TWO

The initial research about saturated fat intake and heart disease was flawed

The Seven Countries Study (SCS) by Ancel Keys et al which started in 1958, was a landmark study which identified an association between saturated fat intake and heart disease. A recent white paper report which was issued by 'The True Health Initiative' addressed the numerous recent criticisms related to the SCS which mainly focus on reported issues with the methodology of the study.⁹ This paper concluded that, as with every scientific study, the SCS had limitations, especially as it was an observational study which should be viewed within the wider context of epidemiological evidence.⁹ However, the overall body of evidence which has emerged since the SCS was published, including the famous Framingham Heart Study and the studies discussed above, supports the link between saturated fat intake and heart disease risk.^{5-7,9,10}

ARGUMENT THREE

The French eat high levels of saturated fat, yet have low levels of heart disease

Shortly after this 'French Paradox' theory was suggested in the 1980s, it was proposed that this may have been caused by the under-classification of CVD in France and the time-lag between the increased consumption of saturated fat in France (which was relatively recent at the time) and the subsequent increase in CVD levels.¹¹ Based on recent statistics, the average intake of saturated fat in France remains high at 14.6% of total energy intake. However, France does not have a low prevalence of heart disease anymore.¹² The age-adjusted average prevalence of CVD in France in 2015 was 6,101 per 100,000 for males and 4,666 per 100,000 for females, which was close to the EU average and was also very similar to the UK average, despite the higher obesity levels found in the UK.¹³

There are currently many other countries with a lower prevalence of CVD in Europe, including countries which have a lower average saturated fat intake than France, such as Italy, Portugal, Switzerland, Ireland, Spain etc.¹³⁻¹⁴

ARGUMENT FOUR

Sugar and carbohydrates are the problem, not saturated fat

There is a grain of truth to this argument, as recent studies have shown that replacing fats with refined carbohydrates does not have a cardio-protective effect (as discussed above).^{3,5-8} However, vilifying carbohydrates as a whole ignores the numerous health benefits of wholegrains and fibre, which include a reduced risk of: cardiovascular disease, diabetes and colorectal cancer.¹⁵

In the UK, we currently consume more free sugars and less fibre than recommended levels, therefore, current public health guidelines advise us to gain 'a greater proportion of total dietary energy from foods that are lower in free sugars and higher in dietary fibre whilst continuing to derive approximately 50% of total dietary energy from carbohydrates'.¹⁵

As with argument number two, there can often be a conspiracy theory element to the 'sugar vs fat' argument which may blame certain governments and the sugar industry. Drastic claims such as these should be assessed critically as to how they could have occurred on such a large scale, considering the knock-on effect they have on healthcare systems and taxpaying workforces. Furthermore, sugar has never been promoted in public health guidelines and there has been a recent emphasis on reducing sugar intake worldwide.¹⁵⁻¹⁶

Overall, this argument creates a false dichotomy as it suggests that a diet which has a lower saturated fat intake will result in an increased intake of refined carbohydrates, which isn't the case, as, ideally, some saturated

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fat should be replaced with heart healthy alternatives such as: wholegrains, unsaturated fats, fruit, vegetables and legumes.

ARGUMENT FIVE

All saturated fats are not equal

Saturated fats can be classified as odd-chain or even-chain depending on the number of carbon atoms attached to the molecule. There is some emerging research which has found that odd-chain saturated fatty acids (which are generally found in full-fat dairy products) may have a protective effect against cardiometabolic disorders.^{3,17-19} However, it has also been suggested that the 'whole food effect' of dairy and other nutrients which it contains may contribute to this association, such as CLA (a naturally occurring form of trans fat), protein, the numerous vitamins and minerals present and the fact that some sources also contain probiotics.²⁰

Although this is a fascinating area, more randomised controlled trials are needed before it can be stated that there is a causal relationship between individual types of saturated fat and health outcomes.

ARGUMENT SIX

Coconut oil is good for your heart

Due to its high saturated fat content (82% compared to butter which is 63% and olive oil which is 14%), the UK department of health advises to consume only small amounts of coconut oil.²¹⁻²² Some argue that coconut oil is healthy because it contains medium chain triglycerides (MCTs). However, less than 16% of the fats present in coconut oil are MCT as the main fat present is lauric acid which is a long chain triglyceride (LCT).²³

There are some studies which have found that a high intake of coconut was not associated with an increased risk of heart disease.²³ However, no conclusions can be made about

coconut oil based on this, as these studies were observational and were also based on the consumption of coconut flesh and coconut milk rather than the extracted oil.

There is a lack of human research in relation to coconut oil and health, but the best available evidence indicates that coconut oil consumption is associated with an increase in total and LDL cholesterol when compared to consumption of unsaturated vegetable oils.^{22,24} Overall, coconut oil is fine to have in small amounts as part of a balanced diet. Nevertheless, there is currently no good evidence that it adds any specific health benefits.

THE BOTTOM LINE

Although moderate amounts of total fat in the diet should not be vilified, the current body of evidence in relation to heart disease risk supports limiting saturated fat intake and consuming the majority of fat from unsaturated sources.²⁵ It is also important to remember that on average in the UK we currently exceed the recommended intake of saturated fat which is <11% of total dietary energy.²⁵ Whilst there is some emerging research in relation to how individual types of saturated fat may affect the risk of heart disease in different ways, more high quality research is needed to investigate this.

Although the saturated fat and heart disease debate is often an emotive one, it is crucial to be guided by the best available evidence and to be wary of the potential appeal of conspiracy theories. It is also important to acknowledge that, as with all areas of science, nutrition is a complex and constantly evolving area which rarely provides one black and white answer to a topic such as this.

It will be interesting to see whether we gain more clarity about this debate when the Scientific Advisory Committee on Nutrition (SACN) publish its upcoming review of saturated fat.²⁶