Dietary Fats And Heart Disease:

Are The Recommendations Changing?

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Fats and oils are essential in a healthy diet, providing energy and carrying fat soluble vitamins and bioactives. Whilst global concern with obesity has led to a recommendation to reduce total dietary fat to 25-35% of energy, it's important the correct balance of various unsaturated fats is achieved for optimal health (*Aranceta, 2012*). Current advice to reduce saturated fat has evolved over many years as sound evidence accumulates. Despite this, in New Zealand we have seen books published and media reports that the 'scientists got it all wrong' and we can all eat as much saturated fat as we desire. There have been unsubstantiated and erroneous claims made for coconut oil. The NZ Ministry of Health has been critical of these claims following its recent updated dietary guidelines (*Ministry of Health, 2015*).

The evolution of dietary fats

'The lipid hypothesis' states a high intake of saturated fat adversely affects serum lipid levels and this increases the risk of morbidity and mortality from coronary heart disease (CHD). Since Ansell Keys' controversial paper was published in the 1950s linking dietary saturated fat to cholesterol levels and heart disease there have been years of debate regarding the role of fat in cardiovascular disease.

In 1968, New Zealand recognised a major epidemic of heart disease which led the medical fraternity to lobby government for a law change to allow the introduction of polyunsaturated margarine of a defined composition with minimal saturates and high concentrations of polyunsaturated fatty acids (Margarine Amendment Act 1972). Since then saturated fat consumption has fallen dramatically, unsaturated fat consumption (predominantly from plant based oils and spreads) has increased and we have seen a 90% reduction in mortality rates from heart disease (*Skeaff, 2011*). Trans fatty acids were also shown to have a negative impact on serum lipid levels (*Teegala, 2009*) and have subsequently been reduced in the Australasian food supply.

The reduction in CHD rates has coincided with a fall in the average cholesterol levels of the public (*Skeaff, 2010*).

The controversy: Why are we getting confused?

Polyunsaturated fatty acids (PUFAs) have been shown to improve serum lipid chemistry and reduce CHD events in prospective cohort studies and randomised controlled trials (RCT) when used to replace saturated fat in the diet (*Astrup, 2011*). Overall, dietary changes reducing saturated fat can lead to a reduction of cholesterol of around 5-10% (*Hodson et.al., 2001*). Part of the reason the effects of replacing saturated fat with PUFA seen in RCTs do not carry through to population studies may be because not all saturated fats are equal and many of the studies have not separated the different types of saturated fat. Differences in saturated fat chain length can result in different effects on serum cholesterol (*Mensink, Zock, Kester & Katan, 2003*). For instance stearic acid is seen as neutral whilst lauric, myristic and palmitic acids are seen as having the strongest effect in raising total and LDL-cholesterol (*Astrup, 2011*). Research on different effects of saturated fatty acids with varying chain lengths is still in its infancy and controlled trials are both costly and difficult to carry out effectively. The overall message around replacing saturated fat with polyunsaturates has recently been reinforced by a peer respected group at Harvard University (*Yanping, 2015*).

Where to from here: The Mediterranean diet and the Lyon heart study

Of all the recommended dietary patterns, the Mediterranean diet, low in saturated fat, stands the test of time and leads to a reduction in lipid biomarkers and mortality.

In the Lyon Diet Heart Study, 605 post-MI patients followed a Mediterranean diet, including margarine supplemented with ALA (1.1 g/d), compared to patients on a low-fat diet (*Lorgeril, 2001*). Over a mean follow-up of 27 months, the intervention group experienced a markedly lower incidence of CHD. The study reinforces the strategy of replacing saturated fat with polyunsaturated fats and oils.

Recommendations

Despite recent media interest, lowering LDL-cholesterol remains an important method of CHD risk reduction. Sensible advice for cholesterol management is to adhere to a diet that is low in saturated fat, includes plenty of fibre and fruit and vegetables and also healthy unsaturated fats and oils. For those who have clinically elevated LDL-cholesterol, a low saturated fat diet, high PUFA and inclusion of sterols is synergistic with the use of statins for lowering LDL-cholesterol levels to low risk (*WHO, 2003*).

Role of plant sterols

Plant sterols are natural lipid materials found in vegetable oils, nuts and seeds and have been extracted and concentrated for application in foods.

Well-documented studies in the past decade have repeatedly shown plant sterols at 2-3g per day have stood up against scientific scrutiny in being effective at lowering total and LDL cholesterol by 10-13% (*Genser, 2012*).

A surprising aspect of plant sterols' effect on cholesterol is they seem to impact everyone, regardless of their cholesterol profile or any other factor. Plant sterol or stanol esters, can easily be added to a healthy diet using plant-based spreads as a vehicle and their effect is additional to the cholesterol lowering effect of moving to a low saturated fat diet.

The new Health Claims Standard 1.2.7 and 1.2.8 addresses fats and oils and health claims are now pre-approved for foods meeting composition requirements with regards to plant sterols and saturated fat (*FSANZ, 2015*).

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