

## Fats and Oils – what does the science really tell us to eat?

In our last edition a summary of a white paper on dietary fats and oils was published. The key conclusions of this review of the latest science on the subject were (with a caveat that this can change as our knowledge advances):

- Replacing saturated fatty acids (SFA) with poly-unsaturated fatty acids (PUFA) is associated with improved blood lipid parameters and a lower risk of Coronary Heart Disease (CHD).
- Replacing SFA with largely refined carbohydrates does not seem to provide a benefit or may even increase risk of CHD.
- Mono unsaturated fatty acids (MUFA) have a beneficial effect on blood lipid parameters, but does not appear to be associated with a lower risk of CHD
- Fish and *n*-3 Long Chain Polyunsaturated Fatty Acid (LCPUFA) consumption is associated with a lower risk of CHD.
- Trans Fatty Acid (TFA) consumption is associated with adverse effects on blood lipids and an increased risk of CHD, though maybe not that from dairy products. TFA intake is low in New Zealand.
- The total matrix of a food may be more important than just its fatty acid content when predicting the effect of a food on CHD risk. For example, dairy products are a main contributor to SFA intake in the New Zealand diet, but research findings do not suggest that dairy products are associated with an increased risk of CVD.
- Recommendations should make clear replacing SFA with PUFA is beneficial for cardiovascular health, whereas replacing SFA with carbohydrates is not.

In the article below DR. Laurence Eyres, our fats and oils expert gives us a lesson in how to explain to people without a science background what these conclusions mean.

### Background

With regard to fats and oils the diet and heart disease hypothesis states the following:

1. Dietary saturated fat and trans-fat raises blood cholesterol in all its forms.
2. Elevated blood lipid levels (apart from HDL) including triglycerides increases the risk of having a heart attack.
3. New Zealand Primary Care guidelines say, for people at risk of heart disease, optimal cholesterol levels are:
  - Total cholesterol less than 4 mmol/L
  - HDL cholesterol more than 1.0 mmol/L
  - LDL Cholesterol less than 2.0 mmol/L
  - Total cholesterol: HDL ratio less than 4
  - Triglycerides less than 1.7mmol/L

High triglycerides (free fat in the bloodstream) are emerging as a major risk factor.

4. Therefore increasing saturated fats raises the risk of heart disease.

This does not mean a total ban on eating saturated fats. The overall picture is complicated as there are other risk factors which play a major part, including badly oxidised fats, family history, smoking, lifestyle, obesity, diabetes, levels of inflammation (c-reactive protein) and blood pressure.

Back in 1965 New Zealand had a heart disease epidemic which led to the introduction of previously banned polyunsaturated margarine. In 1965 New Zealanders consumed lots of meat and dairy products with very little unsaturated oils such as olive oil and the polyunsaturated oils. Since 1972 the consumption of unsaturated spreads and oils has increased markedly. In parallel other factors have impacted such as a reduction in smoking and an increase in the prescription of statins. However the fact remains that death from heart disease has halved in that 40 years.

### **Types of fatty acids**

#### Saturated short chain, medium chain and long chain fatty acids.

Saturated short and medium chain fatty acids are found in butter, coconut and palm kernel oils. Long chain saturates are found in tallow and palm oil. It is advised to consume these fats in moderation. There is no evidence to suggest you can call coconut oil “healthy”.

#### Trans-fatty acids

Trans-fatty acids are formed by hydrogenation and natural trans-fatty acids are found in ruminant fats such as butter and dripping.

Chemically produced trans-fats are no longer used in Australasia and it looks like there will be a total ban on their use in the USA and UK. They may still be found in imported food products.

#### Monounsaturated fatty acids

Monounsaturated oils (oleic) such as olive, avocado, macadamia, and canola should be the major fat intake. These should be fresh and away from the light to prevent oxidation.

#### Polyunsaturated fatty acids

Polyunsaturated fats divide into:

- 18 carbon omega-3 such as alpha linolenic acid (ALA) in flaxseed, canola, walnut and canola oils.
- Long Chain >C20 fatty acids, eicosapentaenoic acid (EPA) and docosahexanoic acid (DHA) found in seafood, algae and dietary supplements. It is suggested we need a minimum of 1 g per day.

- Omega-6 fatty acids, mainly linoleic acid found in soybean, sunflower, safflower grapeseed and maize oils. Known as an essential fatty acid, we need some but not in excess.

All fats and oils contain the above in various proportions. It is probably not good practice to focus just solely on one nutrient source.

Various researchers have tried to give recommendations on what should be a typical daily intake. The following is a list of practical alternatives - but this is not a prescription.

For an intake of 2000 calories (8400 kJ) per day with 30-35% of energy from fats/ oils, the intake of total fat is 65-75 g. This approximately should consist of:

- Saturated and trans fats: < 16 g;
- Polyunsaturated fats:
  - < 10 g omega-6 Fats.
  - 2 g ALA and 1 g EPA and DHA, to achieve an omega-6: omega-3 ratio of around 4-5:1 (similar to that in a typical Japanese diet);
- Monosaturates: 42 g, preferentially from extra virgin olive oil.

To give some idea of these quantities in food:

- (15 g of olive oil has only 2.2 g saturated fat)
- 15 g butter (1 tablespoon) has 12 g fat of which 7.6 g is saturated
- 15 g of coconut oil has 13.8 g saturated fat
- A 60 g bag of potato chips cooked in palm oil has 21 g fat of which 10 g is saturated fat.

So if you consumed just those latter three items every day you would be over the 16g suggested limit for saturated fat. Other foods such as cream (40% fat), cheese (35%), pastry (33%) contribute to your fat intake and your saturated fat load.

### **Oxidation and antioxidants**

Recent nutrition work points to the adverse effects of consuming heat abused oils and fats, particularly from deep frying sources. Light affected and rancid oils are also thought to be detrimental over a long term basis.

The word antioxidants, whilst commonly used, better describes bioactive cell protection agents such as those found in olives and olive oil (polyphenols), coloured fruits and vegetables (flavanoids), and nuts (Vitamin E).

Quality olive oil is high in polyphenols and when consumed with vegetables, fish and whole grain foods provides the basis of a good "Mediterranean" style diet.

Astaxanthin, lutein, beta carotene (from tomatoes) etc. are also potent "antioxidants" with different benefits. Astaxanthin is found in naturally pink salmon.

When taken as part of the overall diet these “antioxidants” may act as a defence mechanism against attacks on our health from inflammation, pollution, contaminants and oxidised species.

### **Some myths**

- Coconut oil is not a “healthy” oil and should not be the major oil /fat in our diet.
- You can cook and fry with quality extra virgin olive oil.
- Shallow pan frying does not produce significant amounts of trans-fats.
- Margarine is not similar to chemical plastics.
- Canola oil is low in saturates and forms a good oil to have as our dietary intake.
- “Light “and “pure” olive oil are misleading terms and confuse the consumer.

### **To summarize**

The media and vested interests are jumping on the fact there is not a clear and definite relationship between saturated fat intake and cardiovascular disease. However the fact remains, detailed trials demonstrate that replacing a large amount of the saturated fat intake by unsaturated oils does reduce risk.

A high intake of sugar and fructose is detrimental to health, as a risk factor for diabetes and then heart disease.

A whole of diet approach is sensible with fruits, vegetables and fish being a core part of the daily diet and also utilising whole grain foods. It is known that foods containing glucan such as oats and barley can help to reduce LDL cholesterol.

Virgin Olive oil has centuries of tradition and a wealth of health studies to back up its use with other whole foods. It should be fresh, not oxidised and contain significant amounts of polyphenols

**From Nutrition News June 2015**