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FATS, FARMING AND FOOD

Briefing by Compassion in World Farming, 2014

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INTRODUCTION TO THE FAT QUESTION

We all need fat in our bodies for optimum health. We can produce some fats ourselves. Conversely, eating too much of certain kinds of fat can result in poor health and contribute to disease.

If we eat meat and dairy products it should come as no surprise to find that the products we eat may contain different ratios of healthy/unhealthy fats depending on how the animals themselves were reared and the food they consumed.

TYPES OF FAT

Fats come in various types, saturated, unsaturated (polyunsaturated and monounsaturated) and trans fats.

Saturated Fats

The American Heart Association says: *"Saturated fats occur naturally in many foods. The majority come mainly from animal sources, including meat and dairy products. Examples are fatty beef, lamb, pork, poultry with skin, beef fat (tallow), lard and cream, butter, cheese and other dairy products made from whole or reduced-fat (2 percent) milk. These foods also contain dietary cholesterol.*

"In addition, many baked goods and fried foods can contain high levels of saturated fats. Some plant foods, such as palm oil, palm kernel oil and coconut oil, also contain primarily saturated fats, but do not contain cholesterol" (American Heart Association, 2014 (a)).

Even "healthy" foods like chicken and nuts do contribute some saturated fat to the diet, though they are much lower in saturated fat than beef, cheese, and ice cream.

All mammals can produce saturated fat in their bodies, so we do not need to eat such fats at all.

Too much saturated fat in the diet is associated with raised cholesterol levels which can lead to heart disease. Too much saturated fat is also linked with being overweight, which is associated with type-2 diabetes, high blood pressure and cardiovascular disease. (NHS Livewell, 2013.)

Medical, heart-health, and governmental authorities, such as the World Health Organization, the American Dietetic Association, the Dietitians of Canada, the British Dietetic Association, American Heart Association, the British Heart Foundation, the World Heart Federation, the National Health Service, the United States Food and Drug Administration, and the European Food Safety Authority advise that saturated fat is a risk factor for cardiovascular disease (CVD).

Trans Fats

Artificial trans fats are regarded as the most unhealthy types of fat. They can be formed when oil goes through a process called hydrogenation, to make it more solid, as used to be the case in some margarines. Trans fats can be found in some processed foods such as biscuits and cakes. In recent years many food manufacturers have removed trans fats from their products.

Trans fats can also be found naturally in some foods at low levels, such as meat and dairy products from ruminant animals.

Consuming a diet high in trans fats can lead to high levels of damaging cholesterol in the blood, which can lead to conditions such as heart disease, heart attacks and strokes (NHS, 2013 (a)).

Unsaturated Fats

There are two types of unsaturated fats:

- **Monounsaturated fats** are found in high concentrations in olive, peanut, and canola (rape) oils; avocados; nuts such as almonds, hazelnuts, and pecans; and seeds such as pumpkin and sesame seeds. **We can produce these fats in our bodies.**
- **Polyunsaturated fats (PUFAs)** are found in high concentrations in sunflower, corn, soybean, and flaxseed oils, and also in foods such as walnuts, flax seeds, and fish; canola oil, though higher in monounsaturated fat, is also a good source of polyunsaturated fat. **We cannot produce these fats in our bodies, so we are reliant on external food sources.**
- Polyunsaturated fats are especially valued as they contain the essential fatty acids Omega-3 and Omega-6.

The Omegas

Omega-3 fatty acids are an important type of polyunsaturated fat. These are essential fats and can help prevent heart disease and stroke, may help control lupus, eczema, and rheumatoid arthritis, and may play protective roles in cancer and other conditions. There are three main omega-3s:

- Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) come mainly from fish, so they are sometimes called marine omega-3s.

- Alpha-linolenic acid (ALA), the most common omega-3 fatty acid in most Western diets, is found in vegetable oils and nuts (especially walnuts), flax seeds and flaxseed oil, leafy vegetables, and some animal fat, *especially in grass-fed animals*.

- An excellent way to get omega-3 fats is by eating fish two or three times a week. Good plant sources of omega-3 fats include chia seeds (sold as Salvia), flax seeds, walnuts, and oils such as flaxseed, canola, and soybean and leafy vegetables.

Omega-6 fatty acids play a crucial role in brain function, as well as normal growth and development. They help stimulate skin and hair growth, maintain bone health, regulate metabolism, and maintain the reproductive system.

There should be a balance between omega-6 and omega-3 fatty acids. The typical American diet tends to contain 14 -25 times more omega-6 fatty acids than omega-3 fatty acids! The ratio should be in the range of 2:1 - 4:1, omega-6 to omega-3. The average diet provides plenty of omega-6 fatty acids, so supplements are usually not necessary.

However omega-6 fatty acids are available in supplemental oils that contain linoleic acid (LA) and gamma linolenic acid (GLA), such as evening primrose and black currant oils. Spirulina (often called blue-green algae) also contains GLA.

CHOLESTEROL – WHAT'S THE CONNECTION?

Cholesterol is a waxy substance which is made in the body by the liver but is also found in some foods. It plays a vital role in how every cell works and is also needed to make Vitamin D, some hormones and bile for digestion. However, too much cholesterol in the blood can increase the risk of heart and circulatory disease.

There are two main forms of cholesterol, LDL (low density lipoprotein) and HDL (high density lipoprotein). LDL carries cholesterol from your liver to the cells that need it. If there is too much cholesterol for the cells to use, it can build up in the artery walls, leading to disease of the arteries. LDL cholesterol is often referred to as "bad cholesterol" because too much is unhealthy.

HDL carries LDL cholesterol away from the cells and back to the liver, where it is either broken down or passed out of the body as a waste product. HDL is often referred to as "good cholesterol" because it is protective.

Eating too much saturated fat (or trans fats) raises levels of "bad" LDL cholesterol. However, research has shown that cutting down on saturated fat and replacing it with foods that contain more unsaturated fat can improve our cholesterol levels (NHS 2013 (b)).

MEAT AND FAT

The World Cancer Research Fund and the American Institute for Cancer Research carry out a massive review of scientific evidence on diet and cancer every 10 years. Their 2007 Report concluded that although fat intake doesn't seem to increase colon cancer risk, there is convincing evidence that high consumption of red meat (beef, pork and lamb) and processed meat (hot dogs, bacon and deli meats) does increase colon cancer risk. The Report's dietary recommendations include: *"Eat mostly foods of plant origin"* and *"Limit intake of red meat and avoid processed meat"* (WCRF/AICR, 2007).

The report is continuously updated but these recommendations have not been changed.

A 2012 paper based on a large cohort study stated: *"We estimated that substitutions of 1 serving per day of other foods (including fish, poultry, nuts, legumes, low-fat dairy, and whole grains) for 1 serving per day of red meat were associated with a 7% to 19% lower mortality risk. We also estimated that 9.3% of deaths in men and 7.6% in women in these cohorts could be prevented at the end of follow-up if all the individuals consumed fewer than 0.5 servings per day (approximately 42 g/d) of red meat"*.

The authors concluded: *"Red meat consumption is associated with an increased risk of total, CVD, and cancer mortality. Substitution of other healthy protein sources for red meat is associated with a lower mortality risk"* (Pan *et al*, 2012).

All meat has a high omega 6 to omega 3 fatty acid ratio although beef from grass-fed animals has a more favourable omega-6 to omega-3 ratio.

The UK Department of Health advises people who eat more than 90 grams (cooked weight) of red and processed meat a day to cut down to 70 grams. (90 grams is the equivalent of about three thin-cut slices of roast beef, lamb or pork, where each slice is the about the size of half a piece of sliced bread.)

In 2010, Friends of the Earth UK published a paper by Dr Mike Rayner, which says that more than 45,000 lives a year could be saved if everyone began eating meat no more than two or three times a week. Widespread switching to low-meat diets would stop 31,000 people dying early from heart disease, 9,000 from cancer and 5,000 from strokes (Friends of the Earth, 2010).

The report recommends a total weekly meat intake not exceeding about 210g – the equivalent of half a sausage a day. (Note that this is less than half the amount currently advised by the UK Department of Health.)

Dr Rayner, the lead author of the Report, is Director of the British Heart Foundation Health Promotion Research Group, which is based within the Nuffield Department of Population Health of the University of Oxford.

The Harvard School of Public Health advice is: *It's best to limit red meat consumption to no more than twice a week, and to avoid processed meats* (Harvard, 2014).

Processed meats include ham, bacon, salami, pastrami, sausages and burgers, which are usually preserved using preservatives such as nitrates and nitrites.

THE CASE FOR PREFERRING GRASS-FED MEAT, DAIRY AND EGG PRODUCTION AND WILD-CAUGHT FISH

Compassion in World Farming commissioned a literature survey in 2012 regarding the fat content of meat, dairy and egg products from pasture-fed compared with intensively reared farm animals. The report concluded that:

"Pasture-reared beef contains between 25% and 50% less fat than intensively-reared beef and has a higher proportion of omega-3 fatty acids and a more favourable (lower) ratio of omega-6 to omega-3 fatty acids compared with intensively reared beef".
(Compassion in World Farming, 2012)

Milk from cows reared in pasture-based systems has a higher proportion of omega-3 fatty acids and a more favourable (lower) ratio of omega-6 to omega-3 fatty acids compared with milk from intensive systems.

Pig meat from free-range and organic systems has a higher proportion of omega-3 fatty acids and a more favourable (lower) ratio of omega-6 to omega-3 fatty acids compared with pig meat from intensive systems but the omega-6 to omega-3 ratio is relatively high in all systems.

Free-range and organic chicken meat often contains less fat than intensively-reared chicken meat, in some cases as much as 50% less. Meat from slower-growing chicken breeds also contains less fat than fast-growing breeds: generally around 10-30% less for medium-growing strains and around 20-65% less for slow-growing strains.

There are no consistent differences in total fat content between eggs from free-range / organic systems and cage systems. However, free-range and organic eggs generally have a higher proportion of omega-3 fatty acids and a more favourable (lower) ratio of omega-6 to omega-3 compared with eggs from caged hens.

Wild salmon generally contains between 40% and 60% less fat than farmed salmon, with a similar proportion of omega-3 fatty acids. Wild trout generally contains between 25% and 80% less fat than farmed trout and contains a higher proportion of omega-3 fatty acids. Both wild and farmed salmon and trout contain a high proportion of omega-3 fatty acids, including DHA, and can make a substantial contribution to meeting nutritional requirements for long-chain omega-3 fatty acids.

The 2014 Controversy

In March 2014, a paper was published which appeared to reverse the current health advice on fats. Its conclusion was: *"Current evidence does not clearly support cardiovascular guidelines that encourage high consumption of polyunsaturated fatty acids and low consumption of total saturated fats".* (Chowdhury R, 2014).

Many scientists immediately claimed there were several errors in the paper and the paper's authors had to make several corrections as a result.

For instance, the authors had taken one study on omega-3 fats to show a slightly negative effect while, in fact, it had shown a strong positive effect. The correction means that the meta-analysis **now** says people who report eating lots of this particular fat have significantly less heart disease; previously, it said there was no significant effect – which is a major difference.

The well-respected Professor Walter Willett, chair of the Department of Nutrition at Harvard School of Public Health, warns that because it contains multiple serious errors and omissions, the study's conclusions are misleading and should be disregarded. The Harvard School organised an expert meeting to discuss this Report and its conclusions are that we should still avoid saturated fats.

The British Heart Foundation, which helped to fund this research paper, says:" We think more research is needed before suggesting any major changes to healthy eating guidance" (British Heart Foundation, 2014).

The American Heart Association pointed out that the controversial study was an observational study and was not a proper clinically controlled study, on which their advice is based. The association has an excellent short film on their website to clarify the situation (American Heart Association, 2014 (b)).

WHAT THE EXPERTS SAY

The most up-to-date advice appears to agree with the Harvard School of Public Health's recommendation: *"It's time to end the low-fat myth"*. That's because the percentage of calories from fat that you eat, whether high or low, isn't really linked with disease. What really matters is the type of fat you eat (Harvard School of Public Health, 2014 (b)).

- Choose foods with healthy fats, limit foods high in saturated fat, and avoid foods with trans fat.
- "Good" fats – monounsaturated and polyunsaturated fats – lower disease risk. In place of butter, use liquid vegetable oils, rich in polyunsaturated and monounsaturated fats, in cooking and at the table. Olive oil, canola oil, sunflower oil, safflower oil, corn oil, peanut oil are great sources of healthy fat.
- Eat one or more good sources of omega-3 fats every day. Fish, walnuts, canola or soybean oil, ground flax seeds or flaxseed oil are excellent sources of omega-3 fats.
- "Bad" fats – saturated and, especially, trans fats – increase disease risk. Cut back on red meat and full-fat dairy foods. Avoid trans fats altogether.
- Eating good fats in place of saturated fat lowers the "bad" LDL cholesterol, and it improves the ratio of total cholesterol to "good" HDL cholesterol, lowering the risk of heart disease.

Most experts warn that simply cutting out fats is not the answer on its own, as when food manufacturers take out fat, they often replace it with carbohydrates from sugar, refined grains or starch. So low-fat foods may be unduly high in sugar for example. Our bodies digest these refined carbohydrates and starches very quickly, causing blood sugar and insulin levels to spike and then dip, which leads to hunger, overeating, and weight gain.

The Harvard advice is: *"When you cut back on foods like red meat and butter, replace them with fish, beans, nuts, and healthy oils – not with refined carbohydrates"* (Harvard School of Public Health, 2014 (b)).

The World Health Organization is clear on the fat issue: *"An unhealthy diet is one of the major risk factors for a range of chronic diseases, including cardiovascular diseases, cancer, diabetes and other conditions linked to obesity. Specific recommendations for a healthy diet include: eating more fruit, vegetables, legumes, nuts and grains; cutting down on salt, sugar and fats. It is also advisable to choose unsaturated fats, instead of saturated fats and towards the elimination of trans-fatty acids"* (World Health Organization, 2014).

To sum up: choose foods with healthy fats, limit foods that are high in saturated fat, and avoid trans fats.

THE MEDITERRANEAN DIET

The Mediterranean diet still seems to be the kind of diet most favoured by the experts as it does not include much meat, has a healthier balance between omega-3 and omega-6 fatty acids and emphasises foods rich in omega-3 fatty acids, including whole grains, fresh fruits and vegetables, fish, olive oil and garlic, as well as moderate wine consumption. Many studies have shown that people who follow this diet are less likely to develop heart disease.

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Compassion in World Farming
River Court, Mill Lane,
Godalming,
Surrey,
GU7 1EZ, UK

Web: ciwf.org
Tel: +44 1483 521 950
Email: compassion@ciwf.org

Registered Charity No. 1095050.

July 2014