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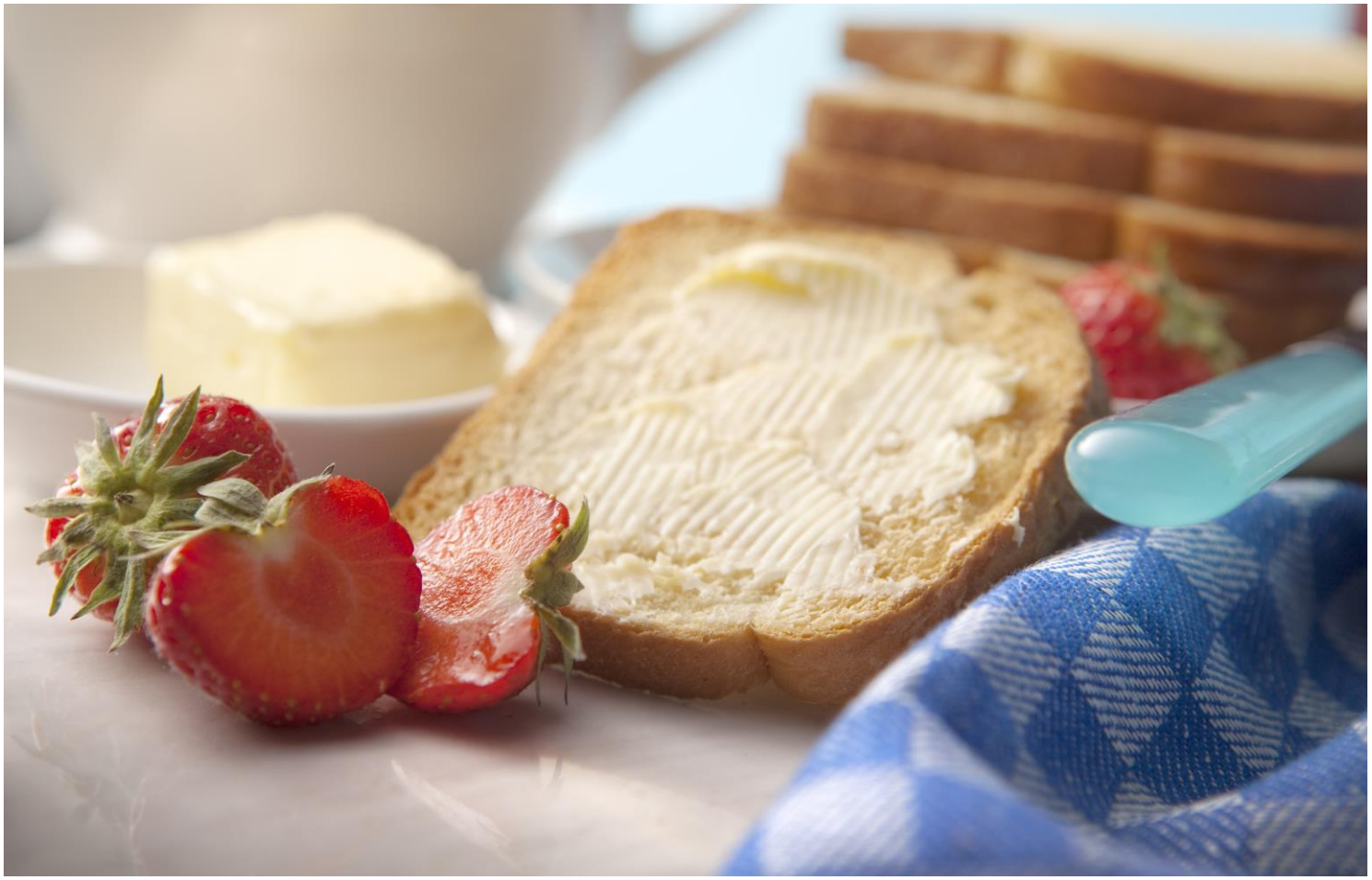

Get the Facts on Fat

A Review of Current Research and Recommendations

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A Leatherhead Food Research white paper

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Get the Facts on Fat: A Review of Current Research

The general consensus for many years has been that dietary intakes of saturated fat should be limited to help prevent conditions such as high blood cholesterol and cardiovascular disease. More recently, the media has profiled research which suggests that some saturated fatty acids may be beneficial to our health, leaving consumers confused as to what to eat and what not to eat. In this white paper, Jenny Arthur, summarises what you need to know about the current research and recommendations.

The food and beverage industry is working harder than ever to keep up with consumer demands, while adhering to public health guidelines and strict regulatory standards. From an industry and consumer point of view, changes to nutrition recommendations can cloud already muddy waters. The recent report produced by the National Obesity Forum and the Public Health Collaboration which appeared to question current guidelines around leading low-fat diets has further added to the current confusion about fat.

The role of fat in the diet

The fundamental fact that we need to consume some fat as an essential part of a healthy, balanced diet, has not changed. Fats help us to absorb the fat-soluble vitamins A, D and E. Regardless of the type, fats are high in energy providing 9 kilocalories per gram.

Frequently eating more energy than you need, however, whether it's from fat, carbohydrate or protein, increases your risk of becoming overweight or obese, which can increase your blood cholesterol, a chemical building block found naturally within the cells in the body.

Cholesterol is needed to make steroid hormones and vitamin D, as well as bile acids which help the gut digest and absorb dietary fat, but too much can be detrimental to our health[1].

Cholesterol is carried in the blood in two ways: as low density lipoprotein (LDL) and high density lipoprotein (HDL). LDL cholesterol is often referred to as 'bad cholesterol' as too much can lead to fatty deposits developing in the arteries, which can restrict the flow of blood to the heart and brain, increasing the risk of heart disease and stroke. HDL cholesterol is often referred to as 'good cholesterol' as it is protective, taking cholesterol from parts of the body where there

[1] British Dietetic Association – Food facts: cholesterol https://www.bda.uk.com/foodfacts/cholesterol.pdf

is too much of it, to the liver, where it is disposed of[2].

The A-Z of fats

Fats can be broadly split into four groups:

- Monounsaturated fat
- Polyunsaturated fat
- Saturated fat
- Hydrogenated trans fat

The latter, trans fats, are found naturally at low levels in some foods, such as meat and dairy products but they can also be found in hydrogenated vegetable oil. It is recommended that this type of fat, associated with high cholesterol, should make up no more than 2% of the energy we get from our diet. For adults, this is no more than about 5g a day. However, most of the supermarkets in the UK have removed hydrogenated vegetable oil from all their own-brand products and the majority of people consume less than half the recommended amount of trans fat[1,2].

Monounsaturated fats, found in olive and rapeseed oils and spreads, avocados, almonds, brazil nuts and peanuts, maintain levels of 'good cholesterol' (HDL) while reducing levels of 'bad cholesterol' (LDL).

There are two types of polyunsaturated fats: omega-3 and omega-6, both of which can help lower levels of bad cholesterol. Omega-6 fats are found in vegetable oils (e.g. rapeseed, corn, sunflower) and some nuts, whilst omega-3 fats are found in oily fish (e.g. mackerel, kippers, herring, trout, sardines, salmon and fresh tuna). The majority of the UK population consumes sufficient omega-6, mostly from cooking oil, but many aren't eating enough omega-3-containing food[3] and we are advised to consume at least two portions of fish a week, one of which should be oily. Vegetable sources of omega-3 fats are not thought to have the same benefits on heart health as those found in fish[2].

Saturated fats are predominantly from animal sources, including meat and dairy products, as well as some plant foods such as palm oil. Most people are now aware of the types of foods considered 'high' in saturated fats, including: fatty cuts of meat, meat products (e.g. sausages and pies), butter, ghee and lard, cheese, cream, ice cream, some savoury snacks (e.g. crisps), chocolate, biscuits, cakes and pastries, palm oil, coconut oil and cream[1,2]. Based on UK-wide data-gathering studies, such as the National Diet and Nutrition Survey (NDNS), it is clear to see that people in the UK eat too many foods containing saturated fat. We are currently getting around 12.6% of our energy (kilocalories) from saturated fats which is above the 11% maximum recommended by the government[2].

Current public health guidelines

It is essential that we include some fat in our diet but like all food groups, eating too much increases the risk of becoming overweight which in turn increases our likelihood of developing health problems. One size doesn't fit all so there will be variation between

[2] British Dietetic Association – Food facts: fat: https://www.bda.uk.com/foodfacts/FatFacts.pdf
[3] British Nutrition Foundation – Fats: http://www.nutrition.org.uk/nutritionscience/nutrients/fat.htm

individuals in terms of healthy intakes but it is recommended that no more than one third of our total fat intake should come from saturated fat; for men this would be no more than 30g/day and for women 20g/day. Trans-fats should make up no more than 2% of our total energy intake – roughly 5g each day for adults. Unsaturated fats (poly or mono) should provide the rest of our fat intake and this includes the omega-3 fats.

In order to be mindful about the amount of fat we are consuming, food labelling can be very helpful. You will now see many items with 'Reference Intakes' (RIs) for fats and calories, which (unless the label says otherwise) are based on an average-sized woman doing an average amount of physical activity, as below. This is a guide and will vary from person to person and from day to day[2].

Reference Intakes for Calories and Fats	
Energy	8,400 kJ/2,000kcal
Total Fat	70g
Saturates	20g

Table 1. Daily nutritional guidelines for an average-sized woman doing an average amount of physical activity

Front-of-pack labelling (e.g. traffic light system) can also help consumers to distinguish those foods which are considered high in saturated fat (i.e. more than 5g of saturates per 100g), low in saturated fat (i.e. 1.5g of saturates or less per 100g or 0.75g per 100ml for liquids) or saturated fat-free (i.e. 0.1g of saturates per 100g or 100ml)[4].

Should we review the guidelines regarding saturated fats?

When typing "saturated fat" into a publications database, many of the 499,000 search results also contain the words "cardiovascular disease", "cholesterol" and/or "obesity" in the title. Since the 1940s/50s a vast amount of research has been generated surrounding saturated fat and many associated health conditions.

Recently, however, there has been talk of research which suggests saturated fat isn't as bad as we first thought. Does this mean we should be consuming butter by the bucket load and start drinking bottles of ghee? No. While there may have been some research developments suggesting specific saturated fatty acids may have beneficial properties, this research is still in its infancy and the bottom line remains the same as it always has – too much of any food group, and in particular refined and processed foods, can lead to weight gain and associated diseases.

The majority of guidelines recommend a reduction in saturated fats as key to reduce incidence and mortality of cardiovascular disease. Recent meta-analysis[567] and

[4] NHS Choices – Fats: the facts: http://www.nhs.uk/Livewell/Goodfood/Pages/Fat.aspx
[5] Astrup A (2014) A changing view on SFAs and dairy: from enemy to friend. Am J Clin Nutr doi: 10.3945/ajcn.114.099986
[6] Siri-Tarino PW Sun Q, Hu FB and Krauss RM (2010) Meta-analysis of prospective cohort studies evaluating the association of saturated fat with cardiovascular disease. Am J Clin Nutr doi: 10.3945/ajcn.2009.27725
[7] Astrup A, Dyerberg J, Elwood P, Hermansen K, Hu FB, Jakobsen MU, Kok FJ, Krauss RM, Lecerf JM, LeGrand P, Nestel P, Risérus U, Sanders T, Sinclair A, Stender S, Tholstrup T and Willett WC (2010) The role of reducing

research carried out by Cambridge University[8], has raised some doubts about the scientific substantiation for this advice, suggesting that a new approach to research is needed. It is important to note, however, that whilst some results may be conflicting, a vast amount of evidence, past and present, supports the current recommendations.

Leatherhead continue to monitor the latest nutrition research to ensure our members are kept up-to-date with current guidelines.

Summary

- Fat is made up of different types of fatty acids, some of which are essential for health in small amounts
- Fatty acids are usually classified as saturated, monounsaturated or polyunsaturated, depending on their chemical structure
- These structural differences directly influence health effects, with mono and polyunsaturates usually being associated with health benefits when consumed as part of a varied diet. The exception to this is trans fatty acids, which are unsaturated in terms of their structure but behave in the body like saturated fatty acids
- Fat provides energy; 1 gram provides 37 kJ (9 kcal). Foods that contain a lot of fat provide a lot of energy. Fat is a carrier of fat-soluble vitamins and is necessary for their absorption
- A high intake of saturated or trans fatty acids can have adverse effects on health
- In the UK, saturates currently contribute 12.7% of food energy in adults, which is above the recommendation of 11%, whereas average total fat intake is close to the 35% of food energy recommended for the population
- Intake of trans fatty acids is now well below the population recommendation of no more than 2% of food energy, at 0.7%
- In the UK, intakes of omega-6 polyunsaturated (principally linoleic acid) are close to the recommendation of 6.5% of dietary energy, but intakes of the long chain omega-3 fatty acids found in fish oils are low compared to recent recommendations

intakes of saturated fat in the prevention of cardiovascular disease: where does the evidence stand in 2010? Am J Clin Nutr 2011;93:684–8

[8] Chowdhury R, Warnakula S, Kunutsor S, Crowe F, Ward HA, Johnson L, Franco OH, Butterworth AS, Forouhi NG, Thompson SG, Khaw KT, Mozaffarian D, Danesh J and Di Angelantonio E. (2014) Association of Dietary, Circulating, and Supplement Fatty Acids With Coronary Risk: A Systematic Review and Meta-analysis. Ann Intern Med 160(6):398-406.

How Leatherhead can help

Need nutrition intelligence to help keep your business up-to-date with what is happening in nutrition, be it in the UK, EU or worldwide? Want to test the glucose or insulin response of your product or ingredient to understand what happens to consumers' blood sugar levels? Need to understand more about appetite control or weight loss and maintenance? Leatherhead's nutrition department can help with all these questions.

About the author

Jenny Arthur is the Director of Nutrition at Leatherhead. She is a Marketing Professional and a Nutritionist. She has worked for a range of private sector companies, including Marks & Spencer as their Company Nutritionist, and for the Department of Health running their nutrition programme. Jenny has repositioned the Leatherhead Nutrition offering to focus on Nutrition Intelligence desk based research, Glyceamic Index/Response studies and Weight Management studies.

About Leatherhead Food Research

Leatherhead Food Research provides expertise and support to the global food and drink sector with practical solutions that cover all stages of a product's life cycle from consumer insight, ingredient innovation and sensory testing to food safety consultancy and global regulatory advice. Leatherhead operates a membership programme which represents a who's who of the global food and drinks industry. Supporting all members and clients, large or small, Leatherhead provides consultancy and advice, as well as training, market news, published reports and bespoke projects. Alongside the Member support and project work, our world-renowned experts deliver cutting-edge research in areas that drive long term commercial benefit for the food and drink industry.

Leatherhead Research is a Science Group (AIM:SAG) company. Science Group provides independent advisory and leading-edge product development services focused on science and technology initiatives. It has six offices globally, two dedicated, UK-based R&D innovation centres and more than 350 employees. Other Science Group companies include Oakland Innovation, Sagentia and OTM Consulting.

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