



Q&A

Dietary fats, dietary cholesterol and heart health

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Key messages

1. Fats are an important part of a healthy balanced diet and you should not exclude them. Instead of cutting all fats from your diet, make sure that you eat less saturated and trans fats (the less healthy fats) and replace them with polyunsaturated and monounsaturated fats (the healthier fats).
 - Use spreads and margarines made from canola, sunflower or olive oil and dairy blends that have earned the Heart Foundation Tick instead of butter every day. Other foods, such as avocado or hommus, can be used as an alternative to spreads and margarine two to three times a week.
 - Choose from a variety of vegetable and seed oils when you are preparing food. Healthier choices include canola, sunflower, soybean, olive, sesame and peanut oils.
 - Use salad dressings and mayonnaise made from canola, sunflower, soybean, olive, sesame and peanut oils.
 - Eat two to three serves of oily fish a week. A serving size of fish is 150 grams or approximately the size of your whole hand. Use fish oil capsules and omega-3 enriched foods and drinks to supplement your intake of omega-3 fats.
 - Select lean meat and poultry (meat trimmed of all visible fat and chicken without skin). Try to limit processed meats (e.g. sausages) and deli meats (e.g. salami). Choose deli meats that have earned the Heart Foundation Tick where available. Limit foods such as liver, kidneys and pâté.

- Try to limit take-away foods, such as pastries, pies, pizza, fried fish, hamburgers, hot chips and creamy pasta dishes to once a week. Healthier take-away choices include sushi or sashimi, Asian stir-fries, tomato-based pasta dishes, grilled fish, chicken and lean meat.
2. Cholesterol in food has only a small effect on low density lipoprotein (LDL or 'bad') cholesterol. Saturated and trans fats in food causes a much greater increase in LDL cholesterol. Therefore it is alright to include eggs as part of a healthy balanced diet that is low in saturated fat.
 - A healthy balanced diet can include a serve of eggs (two eggs) in two to three meals a week.
 3. An easy way to reduce your saturated and trans fat intake is to choose reduced, low or no fat dairy foods or 'calcium added' non-dairy foods every day.
 - Consume reduced, low or no fat milk, yoghurt, custard and desserts.
 - Include small portions of cheese (one to two slices or 20–40 grams) up to four times a week. Lower fat cheeses, such as light tasty cheddar, ricotta, cottage and light mozzarella, are healthier choices.
 - A healthy balanced diet can include a serve of plain ice cream (1½ scoops or 50 grams) up to three times a week. Lower fat plain varieties are healthier choices.

Key findings

The findings from the Heart Foundation's 1999 dietary fats paper¹ were largely upheld. New scientific evidence has led to stronger evidence for the negative impact of trans fats on heart health.

The main findings are outlined below.

Saturated fats

- Saturated fat intake is associated with heart disease.
- Increasing saturated fat intake increases total blood cholesterol and LDL cholesterol.
- Lowering saturated fat in the diet to less than 7% of energy intake will lower LDL cholesterol.

Trans fats

- Trans fat intake is associated with an increased risk of heart attack.
- Trans fat intake is associated with increased incidence and risk of heart disease.
- Trans fat intake increases LDL cholesterol and decreases high density lipoprotein (HDL) cholesterol ("good" cholesterol).

Omega-6 polyunsaturated fats

- Omega-6 polyunsaturated fat intake lowers LDL cholesterol.

Total fat

- Total fat intake does not directly increase the incidence of heart disease.

¹ National Heart Foundation of Australia: A review of the relationship between dietary fat and cardiovascular disease. *Nutrition and Dietetics*. 56: S1-S22, 1999

Dietary cholesterol

- Dietary cholesterol increases total cholesterol and LDL cholesterol, but significantly less than saturated and trans fats do.

Specific foods

- In a healthy balanced diet low in saturated fat, individuals can consume up to six eggs per week without adversely affecting cardiovascular disease outcomes.

The Heart Foundation stance

While fats are an essential part of a healthy balanced diet you should avoid consuming too much saturated and trans fat. It's important to have some fat in your meals because fat helps your body to absorb some vitamins. It's also a good source of energy and of the essential fatty acids that your body can't make.

Too much saturated and trans fat contributes to the build up of fatty material (plaque) on the inside of your blood vessels (arteries). This process is called atherosclerosis and is a major cause of heart disease. Saturated and trans fats increase LDL cholesterol in your blood, which leads to plaque. Polyunsaturated and monounsaturated fats reduce LDL cholesterol and increase HDL cholesterol.

Cholesterol in food has only a small effect on LDL cholesterol. Saturated and trans fats in food causes a much greater increase in LDL cholesterol.

Frequently asked questions

Why did the Heart Foundation examine the evidence around dietary fats?

The Heart Foundation wanted to review all of the latest evidence around the cardiovascular health benefits of polyunsaturated and monounsaturated fats and the negative health impacts of saturated and trans fats.

How much fat should I consume?

The *2006 Nutrient Reference Values for Australians and New Zealanders*² recommend a moderate total fat intake between 20% and 35% of energy for adults to meet varying daily energy and nutritional needs while minimising risk of chronic disease.

The Heart Foundation recommends:

- increasing omega-3 polyunsaturated fat (marine source) to 500 milligrams per day.
- increasing omega-3 polyunsaturated fat (plant source) to 2 grams per day.
- keeping omega-6 polyunsaturated fat to 8–10% of total energy intake.
- reducing saturated fat to less than 7% of total energy intake.
- reducing trans fat to less than 1% of total energy intake.

For Australians, it is estimated that the percentage of total energy derived from saturated and trans fat combined is between 13% and 17%,³ twice the recommended level. Even if all trans

² National Health and Medical Research Council: Nutrient Reference Values for Australia and New Zealand including Recommended Dietary Intakes, NHMRC, 2006.

fats were removed from our food supply, our intake of saturated fat would still exceed the Heart Foundation's recommendation.

Remember that **all** fats are equally high in energy (37 kJ per gram). That's twice the kilojoule value of carbohydrates or protein. Keep in mind that even healthy fats contain 37 kJ per gram, so consume all fats in moderation.

How can I put these recommendations into practice?

See our healthy eating tips at http://www.heartfoundation.org.au/HEALTHY_LIVING/EATING_AND_DRINKING for ideas to help you to follow a healthy balanced diet low in saturated and trans fat.

Isn't total fat intake important any more?

From our previous review of dietary fat and overweight/obesity, we know that a reduction in total fat intake is one way to help to reduce total kilojoule intake. However, to achieve the optimal intake of polyunsaturated and monounsaturated fats to reduce the risk of heart disease, the Heart Foundation recommends reducing saturated and trans fat, rather than all fats.

Saturated and trans fats

What is saturated fat?

Saturated fat is a type of fat that raises LDL cholesterol in your blood, which increases your risk of heart disease.

Where is saturated fat found?

The majority of saturated fat comes from full fat milk and cheese, prepared potatoes (such as potato patties, potato salad, mashed potato and hot chips), pastries, meat and butter.

Some plant foods, such as palm and coconut oils and their products, palm kernel oil, coconut milk, coconut cream and copha, also contain high levels of saturated fat and should be avoided.

Many fast foods and take-away foods, commercial cakes, doughnuts, pastries and fried foods can contain high levels of saturated (and trans) fat because of their ingredients and the type of oils used to cook them.

How much saturated fat can I consume on average each day?

The Heart Foundation recommends limiting the amount of saturated fat that you eat to less than 7% of your total daily energy. That means, for example, that if you consume about

³ Food Standards Australia New Zealand: trans fatty acids in the New Zealand and Australian food supply. Canberra, FSANZ, 2007.

8700 kJ per day, no more than 609 kJ should come from saturated fat. That's a maximum of 16 grams of saturated fat per day.

For information on how to read the amount of saturated fat on nutrition information panels, see http://www.heartfoundation.org.au/Healthy_Living/Eating_and_Drinking/Reading_Food_Labels.

What is trans fat?

Trans fat is a type of unsaturated fat that behaves like a saturated fat because of its chemical structure. There are two types of trans fats.

Naturally occurring trans fats are caused by the way that some animals, such as cattle, sheep and goats, digest their food (the 'ruminating' process). They are found in small amounts in dairy products, beef, veal, lamb and mutton.

Artificial, synthetic, industrial or manufactured trans fats are caused by the way some fats and oils are processed. They are found in foods that use hydrogenated or partially hydrogenated vegetable fats, such as deep-fried and baked foods.

Trans fat provides no known benefit to human health.

Trans fat raises your total and LDL cholesterol and reduces your HDL cholesterol. While it is important that you reduce the amount of trans fat you eat, Australians eat a lot more saturated fat than trans fat. Saturated fat also contributes to heart disease, so you should choose foods with lower levels of both saturated and trans fat.

Where is trans fat found?

Trans fat occurs naturally at very low levels in beef, veal, lamb and mutton, and in full fat dairy foods.

Industrially produced trans fat is formed during the partial hydrogenation of liquid oils to semi-solid fats.⁴ Fats used in the food industry, such as for deep frying and pastry dough, may contain some trans fat. In the supermarket, you will most likely find trans fat in baked products, including pies, pastries, cakes, biscuits and buns. Trans fat is also found in fats used to fry fast food and in some take-away meals. Most margarines in Australia now have very low or trace levels of trans fat.

Foods with the Heart Foundation Tick are subject to ongoing random testing to make sure that they remain compliant with strict nutrition standards, including tough limits on trans fat.

There is currently no law to enforce companies to list these fats on food labels in Australia. The Heart Foundation is lobbying government for mandatory labelling of trans fat.

Food manufacturers must include trans fat on the nutrition information panel only when a nutrition claim is made for cholesterol, saturated fat, trans fat, polyunsaturated fat, monounsaturated fat, omega-3, omega-6 or omega-9.

⁴ FSANZ Trans fatty acid fact sheet 2005.

<http://www.foodstandards.gov.au/newsroom/factsheets/factsheets2005/transfattyacids12apr2869.cfm>

Trans fats are sometimes called different things on the ingredients lists on nutrition information panels. To identify trans fat in an ingredients list look for:

- hydrogenated oil
- partially hydrogenated vegetable oil
- partially hydrogenated oil.

How can I reduce my saturated and trans fat intake?

It is important for you to reduce your intake of both saturated and trans fat, so choose foods with **lower** levels of **both** saturated and trans fat in them.

Replace foods that contain saturated fats with foods that contain monounsaturated and/or polyunsaturated fats. This means eating foods prepared with liquid vegetable or seed oils instead of coconut or palm oils, and including oily fish, eggs and nuts. You could also try to extend or replace some meat meals with beans or legumes.

Here are some simple tips for achieving a healthy balanced diet low in saturated and trans fat.

- Use spreads and margarines made from canola, sunflower or olive oil and dairy blends with the Heart Foundation Tick instead of butter. Spread thinly so you can still see the bread.
- Cook with polyunsaturated or monounsaturated oils, such as canola, sunflower, soybean, olive, sesame and peanut oils. Measure out your oil with a teaspoon or use a spray oil.
- Grill, bake, poach, steam or stir fry rather than shallow or deep frying and roasting in oil so that you don't need to use a lot of fat.
- Select lean meat, poultry and game. Try to trim all visible fat from the meat before cooking. Remove the skin from chicken and turkey.
- Use reduced, low or no fat dairy foods. Opt for cheeses that are lower in saturated fat, such as cottage cheese, ricotta and light tasty cheddar.
- Try to limit deep fried foods and fatty take-away foods to no more than once a week.
- Try to limit fatty snacks, such as crisps, cakes, pastries, biscuits and chocolate, to once a week.
- Choose foods with the Heart Foundation Tick where available.

Do Tick approved products have trans fat in them?

To qualify for the Tick, vegetable oils and margarines are only allowed a maximum of 1% trans fat as part of their total fats. This is among the lowest levels in the world and half the amount allowed by Denmark, the first government to take a hard line on trans fat.

All other foods with the Tick must meet the Heart Foundation's strict standard of no partially hydrogenated fat and less than 0.2 grams of trans fat per 100 grams.

Does margarine contain trans fat?

Margarines in other countries may have significant amounts of trans fat in them but in Australia, in the vast majority of margarines on the market, less than 1% of total fat is trans fat. This is due to a change in production methods in the mid 1990s (from hydrogenation to the process of inter-esterification needed for spreadability). Butter contains 54 grams of saturated fat per 100 grams, while Australian margarines only contain about 13 grams per 100 grams.

What does ‘virtually trans fat free’ mean?

‘Virtually trans fat free’ means less than 1% of a food’s total fat is trans fat. In some countries, they are permitted to call this ‘trans fat free’. In Australia, if a food is labelled ‘trans fat free’ it must contain zero trans fat.

What is palm oil?

Palm oil is a vegetable oil derived from the oil of the palm plant and does not contain any cholesterol. However, palm oil is one of the two tropical oils that the Heart Foundation recommends to avoid (the other is coconut oil). Palm oil contains 55% saturated fat, 8% polyunsaturated and 37% monounsaturated. While it contains no trans fat, it contains too much saturated fat and not enough unsaturated fat to be recommended by the Heart Foundation.

Monounsaturated and polyunsaturated fats

What is monounsaturated fat?

Monounsaturated fat helps to lower LDL cholesterol if you follow a healthy balanced diet low in saturated fat.

From a chemical perspective, monounsaturated fats are fats that have only one double-bonded (unsaturated) carbon in their molecule.

Olive and canola oils are examples of oils that contain monounsaturated fats.

What are some foods that are high in monounsaturated fat?

Most foods contain a mixture of different fats. Examples of foods containing higher amounts of monounsaturated fats include fish, tahini, avocados, margarine spreads based on olive and canola oils, canola oil, olive oil, pine nuts, hazelnuts, almonds, cashews, peanuts, macadamias, pecans and pistachios.

What is polyunsaturated fat?

All polyunsaturated fat helps to lower LDL cholesterol levels in your blood, which in turn reduces your risk of heart disease.

From a chemical perspective, polyunsaturated fats are fats that have more than one double-bonded (unsaturated) carbon in the molecule.

There are two different types of polyunsaturated fats that influence heart health – omega-3 and omega-6.

Omega-3 fats come from marine, animal and plant sources. You should aim to include all of these sources as part of a healthy balanced diet to lower your risk of heart disease.

Marine omega-3 is found primarily in oily fish, such as Atlantic and Australian salmon, blue-eye trevalla, blue mackerel, gemfish, canned sardines, canned salmon and some varieties of canned tuna. Other fish such as barramundi, bream and flathead, and seafood, including arrow squid, scallops and mussels, are also good sources of omega-3.

For more information on getting your omega-3s, see http://www.heartfoundation.org.au/Healthy_Living/Eating_and_Drinking/Fish.

Some **omega-6 fats** are essential to help you to function properly and be healthy. It is important to include them in a healthy balanced diet because your body is not able to manufacture them itself.

Consuming more omega-6 fatty acids instead of saturated and trans fats is associated with a decreased risk of heart disease.

What are some foods that are high in polyunsaturated fat?

Foods that contain omega-6 polyunsaturated fat include:

- polyunsaturated margarine spreads
- vegetable and seed oils, such as canola, sunflower, soybean, peanut and sesame oils
- nuts, such as walnuts, pecans, peanuts, brazil and pine nuts
- seeds, such as sunflower seeds
- fish.

Why can't I see monounsaturated and polyunsaturated fat on the nutrition information panel?

There is currently no law to enforce companies to list these fats on food labels in Australia. However, food manufacturers must include monounsaturated and polyunsaturated fats on the nutrition information panel when a nutrition claim is made for cholesterol, saturated fat, trans fat, polyunsaturated fat, monounsaturated fat, omega-3, omega-6 or omega-9. There are some food manufacturers who do list these fats in the nutrition information panel voluntarily.

Why is the Heart Foundation recommending canola?

Canola is a general purpose cooking oil, suitable for shallow frying and roasting. It provides essential omega-6 and omega-3 polyunsaturated fats and is also a good source of alpha-linolenic acid (omega-3 plant source).

The canola plant has been developed from the rapeseed plant through natural plant breeding methods over many years and not through genetic modification.

In Australia, genetically modified canola (modified to reduce insect attack) has been introduced into some areas. Food Standards Australia and New Zealand (FSANZ) are responsible for approving food that is safe for consumption in Australia. If you have concerns about genetically modified food, read the product label or check with the manufacturers to find out if oil is sourced from non-genetically modified crops.

Dietary cholesterol

How does cholesterol in food affect my blood cholesterol?

Blood cholesterol is a fatty substance found in the blood and is often referred to as 'blood fat' or 'blood lipid' (the medical term). High total blood cholesterol is a major risk factor for heart disease. The higher your total blood cholesterol level, the higher your risk of heart disease.

Cholesterol in food (dietary cholesterol) has only a small effect on LDL cholesterol. Saturated and trans fats in food causes a much greater increase in LDL cholesterol.

Australians can include some cholesterol-rich foods, such as offal (e.g. liver, pâté and kidney) and prawns, as part of a healthy balanced diet low in saturated fat.

Why do I need to be concerned about high blood cholesterol levels?

High total blood cholesterol can gradually clog the blood vessels that supply blood to your heart and other parts of your body. If your blood vessels become clogged, it can reduce the blood flow to your heart and lead to symptoms such as angina. If a blood clot forms in the narrowed blood vessel and completely blocks the blood supply to part of your heart, it can cause a life-threatening heart attack.

Your genetics also affect your blood cholesterol. Some people will still have a high total blood cholesterol level even if they follow a healthy balanced diet low in saturated fat. These people may need to take cholesterol-lowering medicine as prescribed by their doctor.

Can I eat eggs?

Yes, you can eat eggs. All Australians, including those with type 2 diabetes or metabolic syndrome, can eat up to six eggs a week as part of a healthy balanced diet low in saturated fat without increasing their risk of heart disease.

A healthy balanced diet low in saturated fat is one that includes:

- spreads and margarine made from canola, sunflower or olive oils and dairy blends with the Heart Foundation Tick rather than butter
- polyunsaturated and monounsaturated cooking oils made from plants or seeds, such as canola, sunflower, soybean, olive, sesame and peanut oils
- lean meat, poultry and game
- two to three serves of oily fish a week
- reduced, low or no fat dairy foods
- deep fried foods, fatty take-away foods and fatty snacks no more than once a week.

Ideally eggs should be boiled, poached or scrambled using reduced, low or no fat milk.

An egg contains approximately 5 grams of fat, which is mostly made up of the healthy unsaturated fat we need to include in a healthy balanced diet. An egg contains only about 1.5 grams of saturated fat and no trans fat. Eggs also carry the Heart Foundation Tick.

Australians with type 2 diabetes can enjoy up to six eggs a week as part of a healthy balanced diet low in saturated fat, but should take care not to exceed this amount.

How do I know if I'm sensitive to dietary cholesterol?

Some people are more sensitive to dietary cholesterol. This means that their total blood cholesterol levels rise from eating foods with dietary cholesterol more than other people's does because it's more easily absorbed. There are considerably more Australians who are **not** sensitive to dietary cholesterol than those that are.

If you are not sure or have a problem managing your blood cholesterol levels, talk with your doctor and/or an accredited practising dietitian for individual advice. Meanwhile, limit the amount of saturated and trans fats you eat and replace it with moderate amounts of polyunsaturated and monounsaturated fats. You could also choose plant sterol enriched foods, such as margarine spreads, milk and yoghurt to help to lower your total blood cholesterol level.

People at risk of heart disease

What does the Heart Foundation recommend for Australians with heart disease?

People with heart disease should follow the advice for all Australians and also:

- consume **1000 milligrams per day** of omega-3 polyunsaturated fat (marine source) by consuming a combination of two to three servings of oily fish per week, omega-3 enriched food and drinks, and fish oil supplements.

What does the Heart Foundation recommend for Australians at high overall risk of cardiovascular disease, high LDL cholesterol, familial hypercholesterolaemia or diabetes?

People with these conditions should follow the advice for all Australians and also:

- consume two to three grams of phytosterols per day from margarine; reduced, low or no fat yoghurt; and/or milk enriched with phytosterols (approximately two to three serves per day)⁵ – people taking these products should consume at least one serve of fruit or vegetable high in beta-carotene every day, such as yellow, orange, red and dark green coloured foods, including carrots, pumpkin, broccoli, corn, red capsicum, spinach
- include phytosterol enriched foods in addition to statin therapy
- continue taking their cholesterol-lowering medicine as prescribed by their doctor.

What does the Heart Foundation recommend for people with elevated triglycerides?

People with elevated triglycerides should follow the advice for all Australians and also:

- in consultation with your doctor, choose fish oil and omega-3 enriched foods and drinks as an alternative to drug therapy. We recommend to start supplements at 1200 milligrams of omega-3 per day and then increase up to 4000 milligrams per day as managed by your doctor who will monitor your triglyceride levels.

⁵ Individuals with sitosterolaemia should restrict their intake of phytosterols. In general, children (other than those with familial hypercholesterolaemia) and lactating or pregnant women do not need phytosterol enriched foods.

Reducing saturated and trans fats

What sort of fat should I use in my cooking?

If you use saturated fats in your cooking, replace them with healthier alternatives. For example, replace butter with a margarine spread or a dairy blend that has earned the Heart Foundation Tick. You could also try healthier cooking methods, such as grilling, baking, poaching, steaming or stir frying rather than deep or shallow frying, to avoid excess fat.

Does overheating make oil/fat unhealthy?

Oils will develop 'off' odours and flavours if you don't treat them properly. When you choose cooking oil, try to match the oil to its recommended use. For example:

- oils that are suitable for high-temperature frying (above 230°C/445°F) because of their high smoke point include canola, sunflower, soybean, peanut and sesame oils
- olive oil is suitable for medium-temperature frying (above 190°C/375°F).

Does the polyunsaturated fat in canola oil change to trans fat during cooking?

In home cooking, **where the temperature is not as high and oils ideally are used only once (such as in stir frying or baking)**, canola oil does not produce trans fat. Even in commercial settings where oils are used repeatedly, canola oil would normally be discarded before trans fat formed. Trans fat is created naturally in ruminant animals (animals with more than one stomach) and by the industrial process of hydrogenation.

Can I reheat my cooking oil?

If oil is used **repeatedly** for frying, the amount of nutritional components, such as linoleic acid (an essential fatty acid) and tocopherols (natural antioxidants), can decrease. This will only happen when the same oil is used many times for frying at too high a temperature.

If you are using oil to fry one batch of food, such as in stir-frying or even for a few batches of food, then the nutritional benefits of the oil will not change.

Why do some foods that are high in fat have the Heart Foundation Tick?

The Heart Foundation Tick can be found on everyday foods and sometimes foods. To make a difference to the health of all Australians, the Heart Foundation Tick challenges food manufacturers to provide healthier options for many foods and then it highlights these foods to consumers.

Some foods may be high in healthier unsaturated fats and still have a Tick because they are lower in saturated and trans fats. For example, canola and olive oils are high in fat but that fat is mostly polyunsaturated and monounsaturated.

What is being done to remove trans fat from the food we eat?

The Heart Foundation, through its Tick on foods in supermarkets and meals eaten out, has been successfully challenging the food industry to remove trans fat from the foods they produce.

Since 2006, the Heart Foundation has been working with the Federal Government through the Quick Service Restaurant Roundtable to make sure that reducing the amount of saturated **and** trans fats in foods is considered in any food industry initiatives. We support the removal of trans fat from fast food in Australia and we will continue to lobby government for the mandatory labelling of trans fats on foods in supermarkets, fast food outlets and restaurants.

The Heart Foundation's *3-Step Guide* helps the food service industry to reduce the level of saturated and trans fats in the food they prepare and serve to Australians. It explains why these fats should not be used in food preparation, where they are found on menus, and the simple steps that can be taken to reduce them. The *3-Step Guide* will be updated regularly to include new products that become available. It is available to download from www.heartfoundation.org.au/SiteCollectionDocuments/Tick%203%20Steps%20Guide%20New.pdf.

Further information

For more information, call our Health Information Service on 1300 36 27 87 (local call cost), email health@heartfoundation.org.au or visit www.heartfoundation.org.au.

For a detailed discussion of the evidence, please see *Summary of evidence. Dietary fats and dietary cholesterol for cardiovascular health* available at www.heartfoundation.org.au/Professional_Information/Lifestyle_Risk/Nutrition.

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