



What is cholesterol?

Cholesterol is a type of lipid (fat) found in all animal cells. It is essential to many body functions, and essential for life! Cholesterol makes up about 20% of all cell membranes, provides the building blocks for important hormones such as testosterone, oestrogen and progesterone, as well as increasing nerve conduction velocity 100 fold (we would think and act slowly without it!).

The body can manufacture cholesterol, so there is no requirement to obtain it from dietary sources. In fact eating too much cholesterol rich food, and/ or foods high in saturated fats can lead to a chronic elevation in blood cholesterol. This can cause fatty deposits to occur in important blood vessels such as the heart (leading to coronary heart disease), the brain (causing a stroke), the kidneys (renal failure), the eyes (blindness) – even the major arteries in the legs can suffer leading to gangrene requiring amputation.

This is known as atherosclerosis which is usually a long slow process that begins in adolescence, so the earlier one starts controlling cholesterol, the better – particularly if there is a family history of high cholesterol or heart disease. High cholesterol is caused by both genetic and lifestyle factors. Saturated fat consumption is the most common cause of high cholesterol in the population.

General food guidelines to improve your lipid profile

The following nutrition guidelines are based on the Australian Dietary Guidelines (2013).

1. Use spreads instead of butter or dairy blends.
2. Use a variety of oils for cooking, such as canola, sunflower, soybean & olive oil.
3. Use salad dressings and mayonnaise made from oils such as canola, sunflower, soybean & olive oil.
4. Choose low-fat or reduced-fat milk and yoghurt or calciumfortified soy beverages. Restrict cheese and ice cream to twice a week, or less.
5. Eat fish (fresh or canned) at least twice a week.
6. Select lean meat (trimmed off fat and chicken without skin), and limit fatty meals including sausages and delicatessen meats such as salami.
7. Snack on plain unsalted nuts/fruit.
8. Incorporate legumes (peas, beans – anything in a pod) into 2 meals a week.
9. Base meals around vegetables and grain-based foods such as bread, pasta, noodles and rice.
10. Limit takeaway foods such as pastries, pies, pizza, hamburgers and creamy pasta dishes to once per week.
11. Limit cakes, pastries and chocolate or creamy biscuits to once per week.
12. Limit cholesterol-rich foods such as egg yolks and offal.

What makes up your lipid profile?

Your lipid profile has four components – Total Cholesterol (TC), High Density Lipoprotein (HDL), Low Density Lipoprotein (LDL) and Triglycerides (TG).

Although studies have shown blood cholesterol increases cardiovascular disease risk, this is not entirely true. LDL Cholesterol increases risk by depositing cholesterol into the artery wall, whereas HDL does the opposite. So a high blood cholesterol level is only problematic when it is a result of high LDLs or triglycerides.

- HDL is the ‘good’ cholesterol. HDL helps to “scavenge” cholesterol from the artery walls. Levels of >1.0mmol/L are recommended*
- LDL is the ‘bad’ cholesterol. LDL deposits cholesterol in the artery walls, causing atherosclerosis which can ultimately lead to blockages. Levels of <2.5mmol/L are recommended for high risk patients*
- Triglycerides (TG) are another type of fat found in the bloodstream that contribute to your lipid profile. TG provide energy, however, high levels exacerbate atherosclerosis and increase the risk of cardiovascular disease.
- Levels of less than 1.5mmol/L are recommended
- If no other risk factors are present, your total cholesterol should be no higher than 5.5mmol/L

How to change your lipid profile

How to raise your HDL levels

1. Exercise regularly. Aim for 30 minutes of moderate intensity activity everyday. Regular physical activity helps lower cholesterol, increase HDL and improve overall heart function.
2. Include monounsaturated and polyunsaturated fats in your diet. These include options such as canola, sunflower, soybean and olive oils. Omega 3 fats from fish sources are also important in helping to raise HDL levels.
3. Drink alcohol only in moderate amounts. Alcohol consumption can increase your HDL levels. Too much alcohol however can be bad for your health and lead to increased TG levels, high blood pressure and weight gain. Limit to two standard drinks per day.

How to lower your LDL levels

1. Limit saturated fat intake. Saturated fats are found in animal foods such as fat around meat, chicken skin, full cream dairy products, butter, cream and processed goods such as cakes, pastries, pies and biscuits. Where possible, replace saturated fats with monounsaturated and polyunsaturated sources.

2. Increase soluble fibre in the diet. Soluble fibre helps soak up cholesterol in the intestines and lower LDL levels. Soluble fibre is found in fruits, cereals such as oats, peas, beans and lentils.
3. Use plant sterol margarines. A daily intake of 2-3g (1-1.5 tablespoons per day) of plant sterols are recommended to assist in lowering cholesterol. Margarine spreads made with plant sterols can be used to get the right amount of these in your diet. It is hard to get enough from natural sources alone.

How to lower your TG levels

1. Limit alcohol intake. If you have high TG levels, alcohol intake should be limited.
2. Include sources of Omega 3 in the diet. You should aim to eat fish at least twice per week. It can be of the canned or fresh variety.
3. Manage your stress. Stress can increase your total cholesterol and TG levels. Practice stress and relaxation techniques.
4. Manage your weight. Aim for a Body Mass Index (BMI) of < 25. Focus on lowering your energy (food) intake and increasing your levels of exercise.
5. Reduce your glycemic load. A low glycemic load can be achieved by eating fewer refined carbohydrates such as soft drinks, confectionary, cakes, biscuits and pastries.

Saturated fat increases bad cholesterol and should be limited in the diet through minimising the intake of:

- Animal foods such as visible fat around meat, chicken skin, full cream dairy products, cheeses, deli meats and butter
- Coconut milks and oils and palm oil (used in cakes, pastries, pies and biscuits) Polyunsaturated and monounsaturated fats can increase good cholesterol and can be maximised in the diet by including:
 - Raw or dry roasted, unsalted nuts
 - Avocados
 - Plant oils and dressings such as olive, canola, safflower, soybean, corn and sunflower oils
 - Nut butters, unsaturated spreads and margarines Omega 3 fats can help lower triglyceride levels. Increase your intake of these in the diet by regularly including:
 - Fish (fresh or canned)
 - Walnuts
 - Flaxseed and linseed oils
 - Canola oil
 - Omega 3-enriched products (e.g: bread, margarine, eggs)