

M) Triglycerides

What are triglycerides?

Triglycerides are fats which are found in foods such as meats, dairy produce and cooking oils. The fat which the human body stores in tissues, is also comprised of triglycerides. Those eaten in foods are absorbed in the intestines and transported in the bloodstream to tissues where they are stored as fat or used to provide energy. Triglycerides are also made in the liver. For example, when more calories are consumed than your body requires, the liver forms triglycerides that are then stored as fat.



When are triglycerides measured?

Triglyceride levels are usually measured at the same time as those for blood cholesterol. To get an accurate reading the test for triglycerides should be performed when the body is in a fasting state - excluding water, no food or drink for at least 12 hours beforehand. This is because triglyceride levels are influenced by a host of factors including recent food intake, exercise, medication or hormone levels.

It is therefore advisable to obtain two fasting samples which should be taken at different times if diagnosis of hypertriglyceridaemia (high triglyceride levels) is suspected. Levels exceeding 2.0 mmol/l may be associated with increased risk of CHD.

How triglycerides affect health

High blood triglycerides are associated with an increased risk of developing coronary heart disease. This risk is further increased by the presence of other cardiovascular risk factors, particularly raised blood cholesterol, high blood pressure, smoking, obesity or an adverse family history. A low level of HDL cholesterol, the beneficial kind of cholesterol that clears cholesterol from the bloodstream, often accompanies raised triglycerides. A low HDL level is below 1.0 mmol/l.

Furthermore, LDL cholesterol, the bad kind, tends to form smaller particles if the triglycerides are also high which promote more easily the process of atherosclerosis, whereby arteries become blocked by cholesterol deposits in their walls.

People with hypertriglyceridaemia may also have disturbances of their blood clotting mechanisms. Abnormalities have been described both in coagulation factors and the mechanisms involved in breaking down clots which, if allowed to form in coronary arteries, can lead to a heart attack or stroke.

When do raised triglycerides occur?

The level of triglycerides in the blood rises after a meal. It is also noteworthy that blood is more prone to clotting after consuming a fatty meal. In order to avoid surges in circulating triglyceride levels, it is advisable to spread one's intake of dietary fat throughout the day.

In some instances triglycerides can be raised not because of a lipid disorder but as a secondary effect of such conditions as diabetes mellitus or obesity. Controlling the obesity or diabetes can often result in lowering of triglyceride levels. Other factors that can elevate triglycerides are consumption of alcohol, foods high in sugar or certain medications, such as hormone replacement therapy (HRT) in tablet form. However, it should be noted that oestrogen only HRT in tablet form does not cause raised triglycerides, whereas oestrogen and progesterone HRT in tablet form can do. Rarely individuals are born with genetic defects of triglyceride metabolism. These are not always associated with a susceptibility to heart disease; indeed for many the danger can be pancreatitis (inflammation of the pancreas gland).

Recommendations for the lowering of triglycerides

As with all lipid disorders, diet and lifestyle measures are the cornerstones of treatment. Triglycerides tend to be very responsive to changes in diet and health behaviours such as the following:

- Achieve and maintain a healthy body weight. The combination of regular exercise and loss of excess weight can often result in significant lowering of triglyceride levels.
- Drink alcohol moderately, if at all. In susceptible people even small amounts of alcohol can raise triglycerides.
- Reduce consumption of high-sugar food and drinks.
- Try to follow a diet low in saturated fat and total fat, with less than 30% of daily calories from total fat.
- Enjoy several meals of oil-rich fish per week. The omega-3 fatty acids, which are found in fish oils, can have a beneficial effect on triglycerides. Examples of oil-rich fish are mackerel, salmon, sardines and herring.



Beyond diet

If lifestyle measures are ineffective in lowering triglyceride levels, drug therapy may be indicated. Agents which may be prescribed include: a class of drug called fibrates; nicotinic acid or its derivatives; omega-3 fatty acids or a combination of the above. A further group of drugs called statins may be useful in patients with high triglyceride levels.

A discussion of these options is beyond the scope of this fact sheet. Individuals who require medication for treatment of hypertriglyceridaemia are encouraged to seek further information from their GP, specialist, practice nurse or pharmacist.

References

Guidelines of the European Atherosclerosis Society
Albert KGMM et al. *Diabetic Medicine* 1998; 5: 275/281.