

## **Triglycerides**

Triglycerides are the natural form of fats that exist in nature and in the bloodstream. People with high triglycerides often have high total cholesterol, high LDL (bad) cholesterol and a low HDL (good) cholesterol level. Many people with heart disease also have high triglyceride levels. Several clinical studies have shown that people with above-normal triglyceride levels (greater than or equal to 200 mg/dL) have an increased risk of heart disease. People with diabetes or who are obese are also likely to have high triglycerides.

<b>Triglyceride Level Classification</b>	
Less than 150 mg/dL	Normal
150-199 mg/dL	Borderline-high
200-499 mg/dL	High
500 mg/dL	or higher Very high

### **Triglycerides and the risk of stroke**

Studies have linked high levels of blood fats called triglycerides to an increased risk of strokes (1).

When the researchers accounted for other risk factors for strokes, people with more than 200 mg of triglycerides per dl of blood were nearly 30% more likely to have an ischemic stroke or TIA than people with lower levels of triglycerides.

Ischemic strokes, which occur when a blood clot or narrowed artery cuts off the brain's blood supply, account for about 80% of all strokes. The other 20% of strokes are caused by a rupture in blood vessels in the brain.

High triglycerides and the low levels of HDL - the 'good' - cholesterol which usually co-exist are important risk factors for the main type of stroke - ischemic strokes - among patients with heart disease.

It is important to note that triglycerides are only really accurately measured after an 8 to 12 hour fast.

It is believed that the triglycerides/HDL ratio is one of the most potent predictors of heart disease. It is generally considered that if this number is below 2 the person is generally at a low risk of heart disease. So, the lower your triglycerides, or the higher your HDL, the smaller this ratio becomes.

Several studies (2,3) suggest that the level of triglycerides in the blood may help predict heart attack risk as accurately as other, more well-known, blood fats such as HDL and LDL cholesterol levels. High triglycerides alone increased the risk of heart attack nearly 3-fold, according to a report in a 1997 issue of "Circulation" (3). And

people with the highest ratio of triglycerides to HDL cholesterol had a risk of heart attack 16 times higher than those with the lowest ratio of triglycerides to HDL in this study of 340 heart attack patients and 340 of their healthy, same age peers. "The ratio of triglycerides to HDL was the strongest predictor of a heart attack, even more accurate than the LDL/HDL ratio," reported the Harvard lead study author.

### **Lowering your triglycerides level**

Fortunately, elevated triglycerides are one of the easiest problems to correct with the appropriate diet. Simple restriction of all sugars and grains.

Sugars and grains require insulin secretion, which is a potent stimulus to the liver to produce triglycerides, and sugars and grains must be reduced if you are looking to lower your triglycerides.

*High triglycerides in the blood are often seen in overweight people. But even people who are not overweight may have stores of fat in their arteries as a result of insulin resistance. These triglycerides in the blood are the direct result of carbohydrates from the diet being converted by insulin. These triglycerides do not come directly from dietary fats. They are made in the liver from any excess sugars which have not been used for energy.*

The grains are rapidly metabolized to simple sugars, which studies have clearly associated with elevated triglyceride levels. (4) The right approach is to radically reduce consumption of all simple sugars and grains. In contrast to the drug options which are traditionally applied, it is inexpensive and simple to substitute green leafy vegetables, which have a low glycemic index, for sugars and grains, and there are no toxic effects.

There is an almost direct correlation between triglyceride levels and insulin levels, although more in some people than others. The way you control blood lipids is by controlling insulin. By getting the insulin levels down, you achieve a reduction in the triglycerides levels. And you get the insulin levels down through diet and exercise.

Contrary to popular belief, a low fat diet is NOT the solution to lowering high triglycerides levels. The researchers Van Horn and Lichtenstein extensively reviewed the low-fat approach a few years ago (5). Their research suggests that a low-fat diet will produce a result opposite to the desired effect: triglyceride levels will actually increase. This phenomenon is not surprising if one considers that insulin resistance may be one of the driving factors behind elevated triglyceride levels. In fact, insulin resistance may be the cause of many of the problems observed in high-triglyceride states. (6,7)

### **Triglycerides and cholesterol**

If you just listen to the 'experts', you would think that cholesterol is an evil substance and that most of us would benefit from lowering our cholesterol as low as possible.

But it's not so. Cholesterol is a vitally important substance which is used for building our cell membranes and producing several of our hormones. If our cholesterol level drops too low, we are actually at increased risk for depression. (8)

What about the heart drugs? There are likely to be some people who benefit from them, such as people with total cholesterol above 350 who have inherited liver processing problems, but it is probably less than 5% of the people who are currently taking them.

People taking the statin drugs however, should also take Coenzyme Q10, which is important for the health of the heart and is reduced when one takes these statin drugs. The proper way for nearly everybody else to control their triglycerides and cholesterol levels is by reducing their sugar and grain intake. Starting a juicing program which emphasizes raw vegetables is a great way to do this.

#### References

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- (2) Circulation (1997;96:2520-2525)
- (3). Gotto AM Jr. Triglyceride: the forgotten risk factor. Circulation 1998;97(11):1027-8.
- (4). Ostos MA, Recalde D, Baroukh N, Callejo A, Rouis M, Castro G, et al. Fructose intake increases hyperlipidemia and modifies apolipoprotein expression in apolipoprotein AI-CIII-AIV transgenic mice. J Nutr 2002;132(5):918-23.
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- (8) Psychosomatic Medicine 2000;62.

## **COMMON QUESTIONS ABOUT TRIGLYCERIDE.**

- 1. What type of diet is best for optimal triglyceride levels?**
- 2. What drug treatments are recommended for uncontrolled triglyceride levels?**
- 3. Can exercise help with triglyceride levels?**
- 4. Can I monitor triglyceride levels at home?**
- 5. What is VLDL and how does it relate to triglyceride?**

### **1. What type of diet is best for optimal triglyceride levels?**

Since triglycerides are circulating forms of fat, you might think that a high fat diet will raise triglycerides and a low fat diet would lower triglycerides. However, [carbohydrate](#) appears to be the most important dietary predictor of triglycerides. Diets high in carbohydrates, especially sugar, lead to increases in triglycerides.

### **2. What drug treatments are recommended for uncontrolled triglyceride levels?**

For many people, uncontrolled triglycerides are caused by another disorder - like [diabetes](#), obesity, renal failure, or [alcoholism](#). Therefore the treatment strategy is to treat the primary cause. When high triglycerides are not caused by another disorder, they are often seen together with high [cholesterol](#). Treatment is directed toward lowering both cholesterol and triglycerides. If diet fails, drug treatment is generally recommended.

### **3. Can exercise help with triglyceride levels?**

Yes. Exercise is especially helpful in lowering triglycerides and raising [HDL](#) (which tends to decrease when triglycerides increase). Exercise also helps diabetics minimize their need for insulin. The metabolic changes that occur with exercise reflect better utilization of energy by body tissues. Even in the absence of weight loss, exercise will help you lower both [LDL cholesterol](#) and triglycerides, while raising HDL cholesterol.

### **4. Can I monitor triglyceride levels at home?**

Several products are available to test triglycerides at home. There are two types of tests--those where you collect the sample at home and then mail it away to a laboratory for testing and those where you conduct the test yourself at home (self-monitoring). The American Heart Association hasn't taken a position on the use of home testing devices for measuring cholesterol levels. Before making the decision to use one of these products, you may want to review the article about home testing on this site: [With Home Testing, Consumers Take Charge of Their Health @ http://www.labtestsonline.org/understanding/features/hometesting.html](http://www.labtestsonline.org/understanding/features/hometesting.html)

### **5. What is VLDL and how does it relate to triglyceride?**

Very Low Density Lipoprotein (VLDL) is one of three major lipoprotein particles. The other two are high density lipoprotein (HDL) and low density lipoprotein (LDL). Each one of these particles contains a mixture of cholesterol, protein, and triglyceride, but in varying amounts unique to each type of particle. LDL contains the highest amount of cholesterol. HDL contains the highest amount of protein. VLDL contains the highest amount of triglyceride. Since VLDL contains most of the circulating triglyceride and since the compositions of the different particles are relatively constant, it is possible to estimate the amount of VLDL cholesterol by dividing the triglyceride value (in mg/dL) by 5. At present, there is no simple, direct way of measuring VLDL-cholesterol, so the estimate calculated from triglyceride is used in most settings. This calculation is not valid when the triglyceride is greater than 400 mg/dL.