

Cholesterol and You

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Cholesterol

Cholesterol is actually produced in every cell in the body, including the walls of the arteries with the major synthesis of cholesterol occurring in the liver. Cholesterol is required by the body for health as a vital precursor of hormones and is used by both the body and the brain for proper function. It is the component in the cell wall that keeps it flexible. Excess cholesterol is excreted by the liver, gall bladder and small intestines and eliminated in the feces. The more cholesterol in the diet, the less cholesterol the body makes. When cholesterol is either too high or too low there is cause for concern. High cholesterol is clearly linked to an increased risk of heart disease. Low cholesterol (less than 180) has been linked with an increase risk of hemorrhagic stroke and very low levels have been linked to aggressive behavior.

There are two types of cholesterol LDL and HDL. If the body has a large percentage of its cholesterol in the form of LDL cholesterol (low-density lipoprotein) it can potentially be deposited on the artery walls. Conversely, if a person's HDL (high-density lipoprotein) is in the correct proportion to the LDL then the HDL will actually clean the cholesterol out of the arteries and take it to the liver where it will be processed and removed from the body. Healthy cholesterol levels are considered to be in the range of 190-210 mg/dl with the ideal percentage being one part HDL to three parts total cholesterol.

An imbalance of nutrients in the diet can force the body to synthesize more cholesterol than it requires. Carbohydrates, in general and fructose in particular, seem to stimulate the production of cholesterol. Ordinary table sugar (sucrose) breaks in two to yield equal amounts of glucose and fructose. This causes insulin to be produced from the pancreas and when too much insulin is produced this leads to the deposition of fat (especially around the middle of the body) and also to the production of cholesterol. One study demonstrated that removing the fructose from the diet and replacing it with glucose as the only carbohydrate actually reduced cholesterol to normal levels within just four weeks. A change in diet that then replaced just 25% of the glucose with sucrose caused the cholesterol levels to rise to the pre-experimental levels within just one week.

The body will not make excess cholesterol or body fat if there is not an excess of carbohydrates in the diet. This is why a diet rich in fresh vegetables, fruits and healthy proteins with the right balance of essential fats is so important in helping to control cholesterol and heart disease. A healthy diet minimizes the use of highly refined carbohydrates and sugars – replacing these non-nutrient foods with whole grains that are satisfying and nutritious. These dietary changes have been shown to have a positive impact on balancing cholesterol levels in the body.

Essential Fats

Studies also show that a correct balance of essential fatty acids, especially Omega-3 fatty acids, EPA and DHA helps keep cholesterol levels normal while also being critical to good mental health, vision, learning ability and coordination. These fatty acids also help to reduce the stickiness of the blood while controlling blood cholesterol. Cod liver oil and other fish oils are high in these nutrients. (So, your grandmother knew what she was talking about after all!) Fishes high in these nutrients include cold water fish like salmon, mackerel, sardines and anchovies. Other good sources include beef, pork and leafy parts of vegetables. Plain yogurt, cottage cheese and flaxseed are also excellent sources for people who do not eat meat or fish.

Omega-6 fatty acids are also important but are plentiful in the American diet. Omega-6 fatty acids are found in vegetable seed oils like safflower, sunflower, corn and other seed oils. The balance of Omega-6 to Omega-3 should be about between 3 to 1 and 6 to 1. However, the average American diet is about 20 Omega-6 to 1 Omega-3 and is cause for alarm as these ratios spell a significant increased risk of heart disease.

There are three types of fats, saturated (found in meat, dairy and tropical oils), monosaturated fats (like olive oil and canola oil) and polyunsaturated fats (vegetable seed oils). Trans fats, another category, are fats that are hydrogenated so they become hard at room temperature (like margarine and shortening) and are often used for frying since they can withstand high temperatures without smoking. However, these fats are not naturally occurring fats and cannot be digested by the body. Recent studies also show that these fats interfere with absorption of minerals and potentially other good nutrients that the body needs.

Fats should comprise no more than 20-30% of your daily intake of calories. Saturated fats should not make up more than 6-7% of daily calories. Saturated fats have received a lot of bad press, but have recently been shown to be beneficial in protecting the liver against acetaminophen-induced liver damage and also have been shown to reverse alcoholic liver damage. A traditional Mexican diet, which uses lard regularly, has a very low rate of heart disease. There is also no conclusive evidence that eating eggs causes an increase in body cholesterol levels.

However, eating the right kind of fats is vital for your health. Essential fats reduce the risk of cancer, heart disease, allergies, Alzheimer's disease, arthritis, eczema, depression, fatigue, infections, and PMS; and the list grows larger each year. In fact, 60 % of the brain is made up of fat! So eating fats that are naturally found in fish, nuts and seeds is a good idea. Essential fatty acids (those not produced by the body) like the Omega-3 and Omega-6 family are required to keep the blood thin, lower blood pressure, maintain water balance, reduce inflammation and help insulin work properly; which in turn balances the blood sugar, energy levels and body weight – while also reducing the production of excess cholesterol.

Supplementation

Keeping a proper cholesterol balance requires other factors of diet and lifestyle also be considered. This means it is also important to have a good balance of vitamins and minerals. For example a deficiency in Vitamin C, is directly linked to heart disease. Studies have shown that increasing Vitamin C, lysine, antioxidants and fish oil supplementation are helpful in stopping arterial tissue from hardening, reducing bad LDL cholesterol, increasing good HDL cholesterol and lowering high blood pressure. If your HDL is low taking 1 gram of “no flush” niacin a day is recommended. A supplement of 1,000 mg of EPA fish oil is also a good consideration.

If your homocysteine levels are high (showing a risk for many degenerative diseases including heart disease) taking a good B-complex vitamin with extra Vitamins B6, B12 and folic acid has been shown to lower high homocysteine levels. A doctor can order blood work to check your homocysteine levels. Everyone should consider a good multivitamin and mineral supplement with ample antioxidants and Vitamin E. Minerals that are especially important to the heart include a proper balance of sodium, calcium, magnesium, potassium and zinc. Magnesium is probably one of the most important minerals, as a deficiency in it has been directly linked to increased heart attack risk.

In addition to any needed supplementation, it is important to work on improving diet. This can include eliminating excess fat and bad fats, reducing or eliminating refined foods and sugars that are non-nutrient calories and focus on nutritious foods eaten in a balanced way. Eating to keep the blood sugar constant; smaller meals or snacks on a more frequent basis; is recommended. Regular exercise is also essential to good health and can help to reduce stress which is a factor in both high cholesterol and the risk of heart disease. The message is to take good care of you!

Final Thoughts

When looking at your diet you may want to consider reducing your intake of meat and replacing it with fish, beans and whole grains. You may want to eat lots of fresh fruits and vegetables and consider eating more seeds and nuts that are high in Vitamin E, essential fats and minerals. Minimizing the use

of salt and drinking lots of clean water can help flush toxins out of the body. Lastly, make sure to have regular annual exams with your physician to check your blood pressure, cholesterol levels, homosysteine levels, and general health. If you smoke, it is always a good idea to consider quitting and to try to avoid prolonged periods of stress. These changes can often lead to a healthier and happier life – and a healthier and happier you!

References

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Before you go to the office, and after you have had a cholesterol test, it helps to have a list of questions prepared about your test results and any proposed treatment. A note from Cleveland Clinic. When considering cholesterol numbers, it's important to remember that you really have the ability to make those numbers go in your favor. With high cholesterol, you can develop fatty deposits in your blood vessels. Eventually, these deposits grow, making it difficult for enough blood to flow through your arteries. Ask your doctor if you should have a cholesterol test. Children and young adults with no risk factors for heart disease are usually tested once between the ages of 9 and 11 and again between the ages of 17 and 19. Retesting for adults with no risk factors for heart disease is usually done every five years. If you have high cholesterol, you're also at higher risk for heart disease. But the good news is, it's a risk you can control. You can lower your "bad" LDL cholesterol and raise your "good" HDL cholesterol. As you adopt lifestyle changes, everything starts shifting, and the improvements you see at 6 weeks often increase by 3 months. You still may need to take medicine to get your cholesterol back on track. But if you make just a few, small changes, you might be able to lower your dose and chance of side effects. Taking blood and measuring cholesterol levels is a skilled job, and your results will be affected by the way you do the test. Going to a health professional means you will get an accurate reading. You can read more about testing at home here. When should I have a cholesterol check? We believe all adults should know their cholesterol numbers, no matter what their age. Even if you haven't been invited for a cholesterol check it's a good idea to get one anyway, as it's the only way to know your cholesterol numbers. Cholesterol is made in your liver and has many important functions. For example, it helps keep the walls of your cells flexible and is needed to make several hormones. However, like anything in the body, too much cholesterol or cholesterol in the wrong places creates problems. If you're concerned about your cholesterol levels, have them checked by your doctor. A simple blood draw, taken after an overnight fast, is all that's required. Written by Matthew Thorpe, MD, PhD on December 11, 2017.