

The Role of Cholesterol in the Body

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When it comes to managing optimal health and [fitness](#), one of the most misunderstood concepts is the role of cholesterol in the body. Hyped by the media as a major risk factor for heart disease, cholesterol actually has a number of important roles in the body - without which, we couldn't survive.

While it is true that high levels of cholesterol consumed in the diet is one the top risk factors for heart disease (the others being high blood pressure, cigarette smoking, and diabetes), cholesterol is important for digestion, making hormones, synthesizing vitamin D, maintaining cell membranes, learning, memory and sleep.

How Cholesterol Affects Digestion

Almost everything we eat eventually gets broken down by the digestive tract and circulates in the blood stream. Blood, being "water soluble," fails to mix with substances that are fat-based, like cholesterol. Cholesterol principally comes from two sources: it is manufactured by the liver and consumed in the food we eat.

Regardless the source of cholesterol, the body treats both types of cholesterol the same. Being a "fat-based" substance, the body packages cholesterol in water soluble "packets" called "lipoproteins." There are numerous types of lipoproteins in the body but there are two that get the most press: "low density lipoproteins" and "high density lipoproteins."

Low density lipoproteins (LDL) are often called the "bad" type of cholesterol because they are responsible for the accumulation of "plaque" along the inside of the arterial walls, causing "atherosclerosis." High density lipoproteins (HDL) are called the "good" type of cholesterol because it scavenges LDL from the inside of the arterial walls and excretes it from the body.

Cholesterol and Hormone Production

Cholesterol is an important part of creating "hormones" in the body. The most well known hormones include "mineralcorticoids," "glucocorticoids" and "sex hormones."

Mineralcorticoids are instrumental in managing how our bodies regulate minerals, including "calcium" in the bones. It also helps to regulate blood pressure.

Glucocorticoids help to regulate "blood sugar" - an important fuel source for the body during energy production.

Cholesterol also plays a key role in manufacturing and regulating sex hormones. One of the most important is "pregnenolone." Pregnenolone is converted into "progesterone," and is also converted into "cortisol." Cortisol helps to manage inflammation in the body and plays a role in regulating "aldosterone," which regulates "testosterone" and "estradiol," also known as "estrogen."

Synthesizing Vitamin D

While most people know that dairy products and sunshine are important sources of vitamin D, they are often surprised to learn that not only does cholesterol play a critical role in supplying your body with vitamin D, all three are equally important.

Vitamin D plays a major role in building and maintaining healthy bones and teeth. As little as 15 minutes of exposure to sunlight, three times a week, is enough to help convert cholesterol to vitamin D. It has also been shown to help with regulating blood glucose levels, enhancing the body's immune system and preventing cancer.

Maintaining Cell Membranes

One of the most important roles that cholesterol performs is building and maintaining the integrity of the cell walls. The cell walls, or "membranes," regulate what is allowed in and out of the cells, help to maintain their unique shape and allow different types of cells to communicate with each other. Many cells are composed of two distinct types of layers - "hydrophilic," or "water attracting" and "hydrophobic," or "water repelling." Cholesterol lies between the two layers and acts as a "phospholipid" to allow fluids in or out of the cells.

Learning, Memory and Sleep

Studies have shown that cholesterol can help the body's nervous system learn new activities by creating nerve junctions called "synapses" while we sleep. Bonding synapses together is what allows one to "learn" new activities and convert temporary behaviors into permanent ones. Cholesterol also plays a critical role in building the "myelin sheaths," or the coating of the nerves that help with nerve transmission.