

Chief Editor: Dr. Sreenivasarao Vepachedu<sup>(1)</sup>

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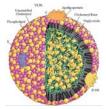
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## CHOLESTEROL AND LIPID FACTS

Cholesterol which is essential for all animal life is produced by each cell through a complex process. Cholesterol enables animal cells to protect membrane integrity and cell viability. Cholesterol also serves as a precursor for the biosynthesis of steroid hormones, bile acids, and vitamin D. An adult on a low-cholesterol diet typically synthesizes<sup>(2)</sup> about 800 mg of cholesterol per day. The liver is the major site of cholesterol synthesis in mammals, although the intestine

also forms significant amounts. The rate of cholesterol formation by these organs is highly responsive to the cellular level of cholesterol. Therefore, there is no need for humans to ingest cholesterol from animal products.

Cholesterol and triacylglycerols are transported in body fluids in the form of lipoprotein particles. Each



particle consists of a core of hydrophobic lipids surrounded by a shell of more polar lipids and apoproteins. The protein components of these macromolecular aggregates have two roles: they solubilize hydrophobic lipids and contain cell-targeting signals. Lipoprotein particles are classified according to increasing density.

Low density lipoproteins (LDL)<sup>3</sup> transports cholesterol from the liver to the tissues of

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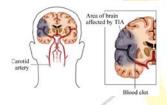
the body. High levels of LDL in the blood result in collection of plaque on the walls of arteries. This buildup narrows and stiffens the arteries resulting risk for a heart attack or stroke. LDL of 190 or above in the blood is considered a serious risk factor for heart disease. Lowering LDL is just one part of an overall strategy for reducing your total risk for heart disease.



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High Density Lipoproteins (HDL) carry excess cholesterol and LDL to the liver to be removed so it won't clog your arteries. HDL should be 60 mg/dL or higher, which will protect against heart disease. Triglycerides are the most common form of fat in food and in the body. Extra calories ingested are stored as triglycerides in fat cells. The amount of triglycerides in the body should be below 150 mg/dL.

Cholesterol narrows blood vessels everywhere from the heart to the pelvis. In men, erection problems can



even be an early warning sign of heart disease. Fatty skin growths, called xanthomas<sup>(4)</sup>, are rare outward sign of high cholesterol, leading to a heart attack or stroke. A healthy cholesterol level is good for brain as well as heart. High cholesterol can lead to strokes, as well as mini-strokes also known as transient ischemic attack (TIA)<sup>(5)</sup>. Over time these TIAs can cause memory and thinking problems that affect daily life.

Estrogen causes "age gap"<sup>(6)</sup> in heart disease and stroke between men and women by lowering LDL and raising HDL. However, after menopause women lose their advantage. Between ages 15 and 24 years, men are four to five times more likely to die than women due to "testosterone storm," causing reckless and violent behavior in males. Most deaths in this male group come from motor vehicle accidents, followed by homicide, suicide, cancer, and drowning. In the 55- to 64-year-old range, more men than women die, due mainly to heart disease, suicide, car accidents, and illnesses related to smoking and alcohol use. A longer life doesn't necessarily mean a healthier life. While men succumb to fatal illnesses like heart disease, stroke, and cancer, women live on with non-fatal conditions such as arthritis, osteoporosis, and diabetes.

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## Health and Nutrition

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A scoop of ice cream<sup>(7)</sup> has 11 grams of saturated fat, far more than in an egg, which contains about 1.6 g. The saturated fat results in the rise of low density lipoproteins (LDL). An English muffin contains 7 g of protein, and no cholesterol, while an egg contains about 200 mg of cholesterol, about 130 mg of choline and about 6 g of protein. Dietary cholesterol leads to marked hyperlipemia (high LDL) and hypercholesterolemia (high cholesterol) in the presence of dietary choline<sup>(8)</sup>. Therefore, it is better to consume vegetables for choline and avoid animal products to avoid cholesterol from the diet.

Research has shown that choline is important for the synthesis of phospholipids in cell membranes,



methyl metabolism, acetylcholine synthesis, and cholinergic neurotransmission in humans<sup>(9)</sup>. Cruciferous veggies, including cauliflower, cabbage, bok choy and broccoli, contain around 65 mg of choline per cup cooked. Legumes such as garbanzo beans, lima

choline beans and lentils have about 70 mgs of choline per cup, while sunflower seeds, pumpkin seeds and almonds have around 60 mgs of choline per cup.

Healthy habits such as exercising, eating right, and maintaining a healthy weight, not only improve health with proper cholesterol levels, but also improves libido. Lifestyle changes can lower cholesterol, LDL and HDL levels. Eat less saturated fat, avoid trans fat, and get to a healthy weight. Quitting smoking can bump up HDL and helps heart in many other ways. Drinking alcohol results in high blood pressure, liver damage and can harm health in many other ways.

Trans fat<sup>(10)</sup> increases LDL levels. There are two broad types of trans fats found in foods: naturallyoccurring and artificial trans fats. Naturally-occurring trans fats are produced in the gut of some animals and foods made from these animals (e.g., milk and meat products) may contain small quantities of these fats. Artificial trans fats (or trans fatty acids) are created in an industrial process that adds hydrogen to liquid vegetable oils to make them more solid. It's used in baked goods, snack foods, shortening, margarine, and fried foods. The primary dietary source for trans fats in processed food is "partially hydrogenated oils." In November 2013, the U.S. Food and Drug Administration (FDA) made a preliminary determination that partially hydrogenated oils are no longer Generally Recognized as Safe (GRAS) in human food.

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Exercise must be at least moderately intense to reduce cholesterol and LDL, and to increase HDL, such as a brisk walk or slow jog, resulting in breaking a sweat and raise your heart rate. Traditional resistance training programs do not burn many calories and cardiovascular exercise on the other hand does little to stimulate muscle growth. Circuit training is a high volume (repetitions), low resistance (weight) workout with short rest intervals and is geared primarily at improving muscle tone and definition, while improving cardiovascular fitness. This workout involves exercising all major muscle groups (stations) in one continuous cycle, alternating between the different areas to allow for muscle recovery and to force your heart to work harder in pumping blood (and oxygen) to these constantly changing areas. Given the nature of your short rest periods, it is strongly recommended you use machines are in close proximity to each other.

### CONDOMS<sup>(11)</sup>

Long ago, it is said, ancient Egyptians wore condoms in different colors. Another story says a Dr. Condom supplied sheaths to King Charles II to prevent unwanted pregnancies. In 1564, an Italian anatomist claimed that he invented a linen sheath, had 1,100 men try it to guard against syphilis, and none of them got the disease.

There three main kinds of condoms, latex, polyurethane, and animal skin (lambskin). All these help prevent pregnancy. Animal skin condoms are often made from the intestinal lining of sheep, which cannot prevent sexually transmitted infections, as viruses can get through lambskin, even though sperm can't.

Latex condoms are the most popular and usually the most inexpensive. Polyurethane condoms are good for people with latex allergies. When using a latex condom, oil-based lubricants like petroleum jelly and baby oil damage latex. Water-based or silicone-based lubricants like K-Y jelly, Astroglide, water, saliva etc. should be used with latex.

Typical American woman uses condoms when she first starts having sex. Then she switches to the pill until she wants her first child. Later on, she has her tubes tied (with a surgery called tubal ligation) when ready to stop having kids. About 34% of women before 1985 and 72% in 2008 had pre-marital sex used a

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male condom on their partner when they first did it. Factoring in human error, condoms are typically about 85% effective. Condoms are more likely to break down when they've been exposed to air, heat, and light for a long time. Wallet or glove compartment is not the best place to keep condoms. A cool, dry storage place where they won't get folded is ideal.

# GLUTEN MYTHS<sup>(12)</sup>

Amazingly, many Americans believe nowadays that eating gluten is unhealthy and wheat is not fit for human consumption. Unfortunately, about 1 in 4 Americans (i.e., about 80 million Americans) believe that is it is beneficial to avoid wheat, according to NDP Group.

Gluten is a protein that is naturally hydrolyzed in the gut. About 1% of the total human population may suffer from an autoimmune disease called celiac disease which results in sensitivity to gluten. Wheat allergy sufferers are about 0.03% of the American population. Only 400,000 Americans who are diagnosed with celiac disease should avoid gluten, the remaining 99% of the human population is fine to eat wheat.

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## DIDGERIDOO FOR SLEEP APNEA<sup>(13)</sup>

A study found that practicing the Australian wind instrument called the didgeridoo for about 25 minutes a day six days a week improved sleep apnea symptoms like daytime sleepiness. Researchers speculated that playing the instrument strengthened the muscles around the airways, preventing them from collapsing during sleep.

Sleep apnea can cause loud snoring, but snoring doesn't mean sleep apnea. About 45% of men and 30% of women snore regularly. The only definitive test for sleep apnea is an overnight sleep study. It can be done at a sleep clinic or sometimes at home using portable equipment.

Obesity is clearly linked with the risk of obstructive sleep apnea. As fat builds up in the throat, it narrows the airways, making airway obstruction more likely. As one gets older, the brain has a harder time

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keeping the muscles in the airways tight during sleep. During the night, they're more likely to sag, closing off the airways and momentarily cutting off the oxygen supply.

Treating OSA is important because it's linked with other medical problems like high blood pressure, heart disease, heart failure, and atrial fibrillation. According to experts, at least one in 10 people over age 65 have sleep apnea. Alcohol, sedatives, and sleeping medications all relax the muscles in the airways, making them prone to collapse and block the airway during sleep. Smokers are more than twice as likely to have sleep apnea as nonsmokers and former smokers. Smoking can irritate the airways and cause inflammation and fluid retention in the airways, making reduced airflow more likely.

Some 45% of men and 30% of women snore regularly. Most cases are harmless. But anyone who snores nightly and has other symptoms, like pauses in breathing at night or daytime sleepiness, should talk to a doctor to rule out sleep apnea.

Continuous Positive Airway Pressure (CPAP)<sup>(14)</sup> uses a constant gentle stream of air through the nose to stop the airways from collapsing while you breathe. A small device with a fan pushes the air through a tube and facemask. It can also help reduce the risk of heart disease, stroke, and diabetes, health problems that are associated with sleep apnea. For the majority of people with sleep apnea, CPAP improves their symptoms and their sleep. But it only helps as long as it is used, symptoms will come back when stopped.

Sleeping on your side may help, since airway collapse and obstruction tend to be worst when sleeping on your back. Losing weight if you are overweight often helps too. Putting blocks under the head of the bed to raise it 2 to 4 inches may help reduce symptoms for some people.

#### **REFERENCES AND NOTES**

(1) Dr. Rao Vepachedu is the Managing Director at Cardinal Risk Management and registered patent attorney with extensive experience in the management of intellectual property and extensive experience in research and teaching. He currently works for Cardinal Intellectual Property (CIP), Cardinal Risk Management (CRM), and Cardinal Law Group (CLG). In addition, he is the president of Vepachedu Educational Foundation Inc. (www.vepachedu.org), a 501(c) (3) educational foundation. For more information visit: <a href="http://www.inkedin.com/in/vepachedu">www.inkedin.com/in/vepachedu</a>. Http://www.avvo.com/attorneys/60201-il-sreenivasarao-vepachedu-764535.html, and <a href="http://www.crm-ip.com/vepachedu.html">http://www.crm-ip.com/vepachedu.html</a>. Contact: <a href="http://www.avvo.com/attorneys/60201-il-sreenivasarao-vepachedu-764535.html">www.linkedin.com/in/vepachedu</a> and <a href="http://www.crm-ip.com/vepachedu.html">http://www.crm-ip.com/vepachedu.html</a>. Contact: <a href="http://www.svo.com/attorneys/60201-il-sreenivasarao-vepachedu-764535.html">www.linkedin.com/in/vepachedu</a>. Attorneys/60201-il-sreenivasarao-vepachedu-764535.html</a>, and <a href="http://www.crm-ip.com/vepachedu.html">http://www.crm-ip.com/vepachedu.html</a>. Contact: <a href="http://www.svo.com/attorneys/60201-il-sreenivasarao-vepachedu-764535.html">http://www.svo.com/attorneys/60201-il-sreenivasarao-vepachedu-764535.html</a>, and <a href="http://www.srm-ip.com/vepachedu.html">http://www.srm-ip.com/vepachedu.html</a>. Contact: <a href="http://www.svo.com/attorneys/60201-il-sreenivasarao-vepachedu@cardinal-ip.com">http://www.svo.com/attorneys/60201-il-sreenivasarao-vepachedu@cardinal-ip.com</a>: <a href="http://www.svo.com/attorneys/60201-il-sreenivasarao-vepachedu@cardinal-ip.com">http://www.svo.com/attorneys/60201-il-sreenivasarao-vepachedu@cardinal-ip.com</a>: <a href="http://www.svo.com/attorneys/60201-il-sreenivasarao-vepachedu@cardinal-ip.com">http://www.svo.com/attorneys/60201-il-sreenivasarao-vepachedu@cardinal-ip.com</a>:

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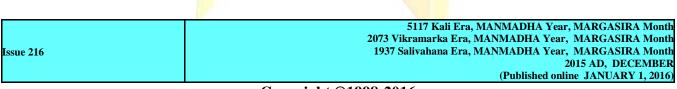
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