

AN AYURVEDIC APPROACH TO HYPERCHOLESTEROLEMIA

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ABSTRACT

Cholesterol is an important building block in the formation and repair of cell walls, function of nerve tissue, and the production of hormones such as testosterone, estrogen, and the stress hormone, cortisol. It is important to understand that fat tissue (cholesterol) in itself is not bad, and is actually essential for the body to function properly. The mixing of *ama* with fat tissue is the main cause of imbalanced cholesterol as per ayurveda. When *meda dhatu* mixes with *ama*, it changes the quality of fat tissue and the quality of cholesterol, making it unhealthy rather than healthy. High cholesterol raises our risk for heart disease, heart attack. In *Ayurvedic* perspective, the production of cholesterol does not necessarily need to be lessened, but it needs to be balanced. When the digestion is balanced and healthy, then the body produces the right amount of cholesterol, in the right proportion to nourish the body. Balanced diet, proper lifestyles, exercise, *yoga*, balanced *Agni* (digestion & metabolism) play important role in prevention of hypercholesterolemia.

Keywords: Cholesterol, Diet, *Ama*, *Medha dhatu*, *Agni*

INTRODUCTION

Cholesterol is one of many lipids found throughout the body. Cholesterol is an important building block in the formation and repair of cell walls, function of nerve tissue, and the production of hormones such as testosterone, estrogen, and the stress hormone, cortisol. Cholesterol is a waxy steroid metabolite found in the cell membranes and transported in the blood plasma of all animals. The majority of cholesterol identified in our bloodstream is not from our diet, but instead produced in our own liver.¹ The liver produces approximately 3000 mg of cholesterol in a 24 hour period which is more than enough for the average person. What we consume is simply “extra.” Once produced within the liver, cholesterol circu-

lates within the blood stream and combines with proteins to form lipoproteins. Hypercholesterolemia, or high cholesterol, occurs when there is too much cholesterol in the body. High cholesterol raises our risk for heart disease, heart attack, and stroke. When there is too much cholesterol circulating in the blood, it can create sticky deposits (called plaque) along the artery walls. Plaque can eventually narrow or block the flow of blood to the brain, heart, and other organs. Blood cells that get caught on the plaque form clots, which can break, loose and completely block blood flow through an artery, causing heart attack.² It is important to understand that cholesterol is not mentioned in the *Ayurvedic* tradition. Rather, the *Ayurvedic* texts discuss *Meda Dhatu* (lipid tissue)

and explain how to maintain healthy quantity and quality of fat tissue in the body. When *Meda Dhatu* is balanced and healthy, that subsequently helps to maintain balanced cholesterol. The mixing of *Ama* with fat tissue is the main cause of imbalanced cholesterol as per Ayurveda. When *Meda Dhatu* mixes with *Ama*³ it changes the quality of fat tissue and the quality of cholesterol, making it unhealthy rather than healthy. It is important to understand that fat tissue (cholesterol) in itself is not bad, and is actually essential for the body to function properly.

MATERIAL & METHODS

Cholesterol is required to build and maintain membranes. About 20–25% of total daily cholesterol production occurs in the liver. Other sites of high synthesis rates include the intestines, adrenal glands, and reproductive organs. It regulates membrane fluidity over the range of physiological temperatures. Cholesterol reduces the permeability of the plasma membrane to protons (positive hydrogen ions) and sodium ions. Within the cell membrane, cholesterol also functions in intracellular transport, cell signaling and nerve conduction. Within cells, cholesterol is the precursor molecule in several biochemical pathways. In the liver, cholesterol is converted to bile, which is then stored in the gallbladder. Bile contains bile salts, which solubilize fats in the digestive tract and aid in the intestinal absorption of fat molecules as well as the fat-soluble vitamins, Vitamin A, Vitamin D, Vitamin E, and Vitamin K. Cholesterol is an important precursor molecule for the synthesis of Vitamin D and the steroid hormones, including the adrenal gland hormones cortisol and aldosterone as well as the sex hormones progesterone,

estrogens, and testosterone, and their derivatives. Some research indicates that cholesterol may act as an antioxidant

According to the lipid hypothesis, abnormally high cholesterol levels (hypercholesterolemia); that is, higher concentrations of LDL and lower concentrations of functional HDL are strongly associated with cardiovascular disease because these promote atheroma development in arteries (atherosclerosis). This disease process leads to myocardial infarction (heart attack), stroke, and peripheral vascular disease. LDL particles are often termed "bad cholesterol" because they have been linked to atheroma formation. On the other hand, high concentrations of functional HDL, which can remove cholesterol from cells and atheroma offer protection and are sometimes referred to as "good cholesterol". These balances are mostly genetically determined but can be changed by body build, medications, food choices, and other factors. The report of National Cholesterol Education Program, Adult Treatment Panel suggests that the total blood cholesterol level should be: < 200 mg/dL normal blood cholesterol, 200–239 mg/dL borderline-high, > 240 mg/dl high cholesterol.

DISCUSSION

High cholesterol rarely causes symptoms. It is usually detected during a routine blood test that measures cholesterol levels. It may first be discovered when diagnosed with a condition that is caused in part by high cholesterol, such as coronary artery disease, stroke, or peripheral vascular disease. Some people with lipid disorders, such as familial hypercholesterolemia, may have other distinct symptoms such as deposits of excess cholesterol that collect in the skin or eye tissue. These cholesterol deposits can also

cause nodules in tendons in the hands or feet or, rarely, yellow streaks in the hands. Causes of high cholesterol vary depends on the lifestyle, gender or the heritage of the individual. *Ayurvedic* texts discuss *Meda Dhatu* (lipid tissue) and explain how to maintain healthy quantity and quality of fat tissue in the body. When *Meda Dhatu* is balanced and healthy, that subsequently helps to maintain balanced cholesterol. People with high cholesterol are commonly advised to reduce their consumption of dietary cholesterol and saturated fats. In addition, cholesterol-lowering medications, such as bile acid sequestrants (e.g., cholestyramine [Questran] and colestipol [Colestid]) and HMG-CoA Reductase Inhibitors (e.g., atorvastatin [Lipitor], cerivastatin [Baycol], fluvastatin [Lescol], lovastatin [Mevacor], pravastatin [Pravachol], and simvastatin [Zocor]) are often prescribed. .

Ayurvedic texts discuss *Meda Dhatu* (lipid tissue) and explain how to maintain healthy quantity and quality of fat tissue in the body. When *Meda Dhatu* is balanced and healthy, that subsequently helps to maintain balanced cholesterol. A moderate lifestyle, diet and daily routine uphold balanced functioning of every aspect of life i.e. body, mind and senses. The principle factor behind balance in the body is balanced *Agni* (digestive fire). Digestion is quite literally the basis for good health in every part of the body. A strong *Agni* is equally important in maintaining balance in the *Doshas* and *Malas*. Therefore, when digestion, assimilation and elimination are balanced, fat tissue and cholesterol will also be balanced. It is important to understand that fat tissue (cholesterol) in itself is not bad, and is actually essential for the body to function properly. Digestion depends on the strength of the di-

gestive fire (*Agni*). First the food is metabolized by the main digestive fire (*Jathara-Agni*), located in the stomach and duodenum. Next it is metabolized by the five elemental fires located in liver (*Bhuta-Agnis*), and finally by seven *Dhatu-Agnis*, located in the seven tissues.⁴ When *Meda Dhatu* mixes with *Ama*, it changes the quality of fat tissue and the quality of cholesterol, making it unhealthy rather than healthy. This mixing of *Ama* with fat tissue is the main cause of imbalanced cholesterol. And it is the liver (*yakrit*) that is responsible for qualitative digestion, i.e., the quality, or purity, of the fat tissue and hence the quality of the cholesterol that is being produced. The cause of imbalanced digestion is categorizing in three categories: mental, physical and environmental. Mental causes include too much mental activity or pressures at work as well as emotional factors such as anger, worries, sorrow, and greed. Physical causes include eating too much (above digestive capacity), eating too little (below the digestive capacity), and eating faulty food (against the digestive capacity). Other physical causes include eating before the previous meal is digested, eating irregular amounts at irregular times of day, eating while suffering from indigestion, suppressing natural urges, constipation, and emaciation. Environmental causes include eating the wrong foods for the climate or season as well as eating foods polluted with toxins.^{5, 6} There are two *subdoshas* of *Pitta*, *Pachaka Pitta* and *Ranjaka Pitta* that govern the digestion. *Pachaka Pitta* governs the breakdown of the food in the stomach and small intestine. *Ranjaka Pitta* governs the five *Bhuta-Agnis*, and bile production, which is important in the digestion of fat. *Ranjaka Pitta* supports the five *Bhuta-Agnis* that re-

side in the liver to effectively process fat and prevent imbalanced qualities in the body's lipids (*Meda Dhatu*). The *Bhuta-Agnis* also scan and identify toxins. Fat is processed by all the five *Bhuta-agnis*, because even though it is primarily composed of the earth element, it contains a small amount of all five elements. If the fat is unhealthy, then each of these *Bhuta-Agnis* must scan for toxins and take care of the toxins. There are three types of toxins. One, called *Ama* in *Ayurveda*, is the sticky, foul-smelling waste product of improper digestion. *Ama* settles first in the digestive tract and if it continues to accumulate, mixes with the *rasa* (nutritive fluid) and travels throughout the body⁷, settling in weak areas. *Ama* is caused by a dull, slow digestion or by eating foods that are too heavy and difficult to digest, such as packaged, frozen, canned, and fried.

The second type of toxin is called *Amavisha*, and it is a more reactive, dangerous type of *Ama*. *Amavisha* is created when *Ama* is present for a very long time and is not flushed from the system.⁸ When *Amavisha* starts to spread throughout the body, it can mix with the *Dhatus* (body tissues) and the *Malas* (waste products). If *Amavisha* mixes with the fat tissue, and at the same time one continues to engage in an unhealthy lifestyle or diet, it can cause imbalance and disease in the lipid tissues. These lifestyle errors include lack of exercise, sleeping during the day, eating excessive amounts of fatty foods, indulging in alcoholic drinks.

Toxins also enter the body from the environment, with exposure to lead, heavy metals, or water or air pollution. These environmental toxins are called *Garvisha* in *Ayurveda*, and they are the third type of toxin. Eating food that is grown using chemical fertilizers and pesticides, and food that is

prepared with chemicals additives, and preservatives can also add to the toxic overload of the liver and result in disturbance of lipid metabolism.

If it is simple *Ama*, the *Bhuta-Agnis* burn it, because heat purifies *Ama*. If it is *Amavisha*, the *Bhuta-Agni* first must neutralize it, and then eliminate it from the *Rasa* (nutritive fluid) so it doesn't get passed on to the body tissues. For the third type of toxin, *Garvisha*, which includes toxins from chemicals, pesticides, or some other environmental causes, the *Bhuta-Agnis* scan and identify *Garvisha*, and if they find it they store it elsewhere in the liver.

There are some important drugs included in Cholesterol Protection to produce healthier fat tissue and balance cholesterol production: *Nirgundi* (*Phyllanthus Niruri*), *Guduchi* (Indian *Tinospora*), Indian *Sarsaparilla*, *Parijat* (Night Jasmine), and *Manjistha*. Each of these helps with bile secretion and also purifies blood and muscle tissue, thus purifying the building blocks for healthy fat tissue. In addition, *Guduchi* strengthens all of the *Dhatu Agnis*, including *Meda Dhatu Agni*, which is responsible for fat metabolism. *Guduchi* supports intellectual stamina to enhance the quality of fat for the entire body. Another way to say this is that, it supports the production of *Ojas*, which is the master coordinator between consciousness, the *Doshas*, tissues and metabolism for the whole body including fat tissue and fat metabolism. It does this by enhancing the intelligence of the liver. *Guggul* increases fat metabolism, *Shilajit* enhances metabolism and prevents nutrients from being lost in the metabolic process. *Manjistha* and Indian *Sarsaparilla* help bring balance to the interaction between the liver (governed by *Ranjaka Pitta*) and blood

plasma, thus creating purer blood by screening out toxins. *Parijat* helps cool the body and eliminate excess heat, thus preventing the formation of *Amavisha*. Other drugs also have a profound effect in supporting healthy cholesterol levels. Turmeric supports the liver, purifies the blood, increases bile and enhances the interaction of plasma and blood. *Trikatu*, which is a combination of powdered Ginger, Long Pepper and Black Pepper, enhances absorption and thus makes the other herbs in the formula easier to assimilate. Licorice balances all three *Doshas* and especially helps cool *Pitta Dosha*, decreasing the reactivity of *Amavisha*. *Triphala*, which includes *Haritaki*, *Amalaki*, and *Bibhitaki*, helps scrub the colon and remove cholesterol from the body through the bowel. Finally, zinc (*Yasad Bhasma*) increases fat metabolism.

The general guideline is to follow a light *Kapha*-pacifying diet, because those foods will help increase fat metabolism without creating much dryness and brittleness in the body. A *Kapha*-pacifying diet favors bitter, astringent and pungent foods. Astringent foods include most pulses or dried beans, such as lentils, split mung dal, and garbanzo beans. Stay away from the larger beans, but favor the smaller, split kind. Astringent foods also include many vegetables, such as the cruciferous family (broccoli, cabbage, and cauliflower) and fruits such as apples and pears. The ideal breakfast is a cooked apple with cooked prunes and figs. This will help cleanse the bowel and lower cholesterol levels. Bitter foods include greens such as spinach and mustard greens. These greens, when cooked and seasoned with spices, help cleanse the bowel and thus prevent the bad type of cholesterol from accumulating. Avoid sweet,

sour and salty foods. Sweet foods include not only sugar but also rice, wheat, pasta, breads, and sweet milk products. Sour foods include not only lemons and other sour fruits, but yogurt, cheese, tomatoes and vinegar, which are found in salad dressings, ketchup, mustard and pickles. Always cook food and eat it warm, because this helps counteract the cool, earthy *Kapha Dosha*. Avoid bad fats, and cook with small amounts of ghee or olive oil

Yoga asanas and *surya namaskara* (sun salutations) are part of the *Ayurvedic* routine and can be performed twice daily for ten minutes each. *Pranayama*, or yogic breathing exercises, are also recommended, as proper breathing helps digestion and helps clean the *srotas*, or channels. The *Kapha* pacifying routine also discourages sleeping during the day, as this causes the metabolism to slow and the *srotas* or channels to fill with *Ama*. Wake up before six o'clock, and avoid daytime naps. Eat our meals at the same time every day, and plan to eat our largest meal at lunchtime, when our digestion is strong. To avoid indigestion at night, eat lightly. Finally, one of the most effective ways to lower cholesterol is to practice the Transcendental Meditation technique. It reduces stress and improves mental clarity, making it easier to follow a healthy diet and make healthy lifestyle.

CONCLUSION

In *Ayurvedic* perspective, the production of cholesterol does not necessarily need to be lessened, but it needs to be balanced. When the digestion is balanced and healthy, then the body produces the right amount of cholesterol, in the right proportion to nourish the body. The mixing of *Ama* with fat tissue is the main cause of imbalanced cholesterol as per *ayurveda*. So *Ama*

can cause all of the problems that are associated with impure lipid tissue which are associated with high cholesterol, even though it's not the cholesterol itself that causes these problems. It is ideal to follow a *Kapha*-pacifying diet & lifestyles. In addition Exercise & *yoga* balances all the *Agnis*, including the five *Bhuta-Agnis* and *Meda Agni*, all of which are important for metabolizing fat and creating healthy cholesterol. Exercise also improves circulation, which helps the *Dhatu Agnis* such as *Meda Agni*.

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