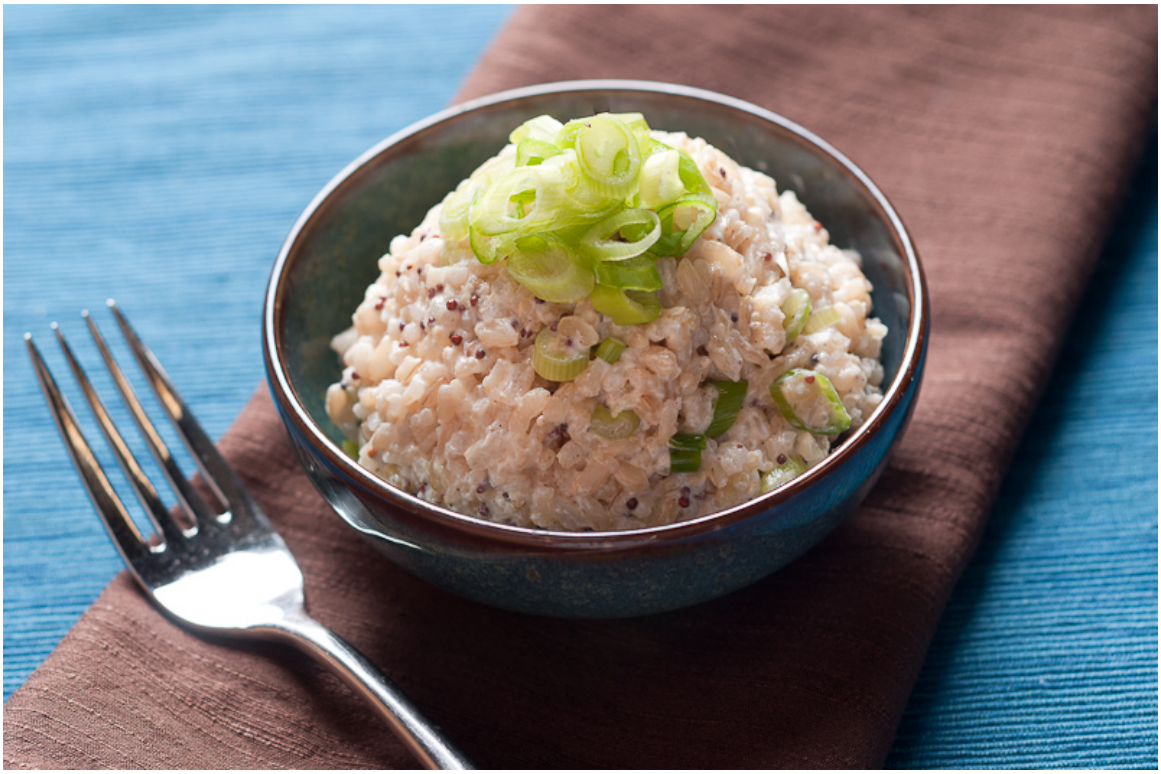
Hypertension and High Cholesterol in Traditional Chinese Medicine

How to treat using Medicated Diet

Written by: Jessica Rea
709 Research Report • Toronto School of Traditional Chinese Medicine • August 2011



This report outlines the basic information of hypertension and high cholesterol including diagnosis, Western treatments, risk factors and side effects of common Western treatments. It then goes through the understanding of these two diseases in Traditional Chinese Medicine and gives diet recommendations to follow such as foods to eat and foods to avoid.

Diet for Hypertension and High Cholesterol

Seeking out food and making sure that we had enough to last through tough times is what humans are programmed to do. With the fairly recent advancements of technology and the industrial revolution, having enough food is no longer a stress for many people in the west. Our bodies are still programmed to take in as much nutrient rich foods as possible when it is available to us. Today in the West, the majority of the people can eat whatever they want as often as they want. This has lead to a rise in diseases of excess such as hypertension, high cholesterol, heart disease, type 2 diabetes etc. Many of these illnesses are strongly diet related, studies show that overconsumption of animal products leads to heart disease and certain forms of cancer, obesity, diabetes, hypertension, gout and kidney stones[1]. Here we will examine two major illnesses included under the umbrella of heart disease, hypertension and high cholesterol. It will be examined how changing your diet can save your life. Findings published in some of the major scientific journals show that heart disease, including hypertension and high cholesterol can be reversed with diet alone.

Hypertension and high cholesterol in the blood is a strong indication that there is risk of serious disease. The writers of "The China Study" say that one thing they had learned from working with three prominent cardiologists was that they had never seen a heart disease death in a patient with a blood cholesterol level lower than 150 mg/dL, which is well below the acceptable level in North America, but not low considering there are cultures with levels from 70-90 mg/dL. Over 100 million Americans have high cholesterol and the problem is developing earlier and earlier. For the first time in history, America's children have a lower life expectancy than their parents.

How Diet contributes to Disease

Hypertension and high cholesterol are both diseases under the umbrella of heart disease. As of 2007, heart disease was the leading cause of death in Western countries such as U.S., England, Canada and Wales. The relationship between food and heart health is unmistakable. Things in the diet that contribute

---

[1] Mark, R and Bo, R (2007) *Vegan Fusion*. Hawaii: Beaufort Books pp. 8.

to high cholesterol, high blood pressure and increase the risk of many serious illnesses are animal fats (saturated fat) and animal proteins. On a medical expedition to the Philippines for child malnutrition, a health researcher was trying to increase the amount of animal protein that children received there. What he discovered was in conflict with the goal of the mission. The children who were already eating high protein diets were the ones who were likely to get liver cancer. This is the same amount of animal protein that people in the West consume. Casein, which makes up 87% of protein in cow's milk was the protein more related to cancers. There is also a strong link between high blood cholesterol and cancer.[2] It has been shown that once cholesterol levels in the blood decreased from 170 mg/dL to 90 mg/dL in a population, the levels of cancer of the liver, rectum, colon, lung, breast, childhood leukemia, adult leukemia, childhood brain, adult brain, stomach, esophagus and throat also decreased. A vegetarian diet with no animal protein, including milk products and eggs is the best diet for your heart. Increasing insoluble fibre in your diet has been shown to reduce LDL (bad) cholesterol by 18% and significantly lower blood pressure readings. Plant sources of insoluble fibre include legumes such as peas, soybeans and other types of beans, vegetables such as potatoes, sweet potatoes, onions and other such type of root vegetables. Fruits and vegetables with soluble fibre include apples, pears, plums, berries, bananas, etc. and fruit juices such as prune juice, Jerusalem artichokes, broccoli, and carrots. Grains with soluble fibre include barley, rye, chia and oats. Psyillium husks are also very high in soluble fibre. Plant based materials are the only source of dietary fibre.

Hypertension

Hypertension, also named high blood pressure is known as the silent killer because there is often no discomfort felt until the pressure within the vessels reaches a dangerous levels and the risk of stroke is imminent. It is a condition where the pressure within the arteries is higher than normal. The pressure of the blood against the artery walls is measured with a tool called a sphygmomanometer, the first number found is the systolic pressure and the second number is the diastolic pressure, it is measured in millimeters mercury (mmHg). Systolic pressure is the amount of pressure when the left ventricle of the

---

[2] T. Colin Campbell, T. Campbell II. (2006) The China Study. USA. BenBella Books Inc. pp. 79

heart is contracted, diastolic pressure is the pressure on the artery walls when the blood is flowing through the artery.

When there is no known cause for the high blood pressure it is called primary or essential hypertension, when there is an existing condition where high blood pressure is one symptom it is called secondary hypertension. Illnesses which also cause hypertension include kidney problems, adrenal gland tumors, congenital problems with blood vessels. Medications which can cause high blood pressure include birth control pills, cold remedies, decongestants, pain relievers, illegal drugs such as cocaine and amphetamines.

- Normal blood pressure: 120/80 mmHg
- Pre hypertension: 120/80 to 139/89 mmHg
- Stage 1 hypertension: 140/90 to 159/99 mmHg
- Stage 2 hypertension: 160/100 to 179/109 mmHg
- Stage 3 or resistant hypertension: 180/110 and above

Hypertension is diagnosed when readings are higher than normal on 2 or 3 separate occasions to allow for the fact that the pressure normally varies through the day and is commonly high when at the doctor's office. In elderly people, elevated systolic pressure with normal diastolic readings are the most common. It is understood that the older you are, the normal levels of blood pressure are slightly higher.

Western Information

Hypertension is a disease of the blood, vessels and the heart. The main function of the blood is to carry oxygen to the entire body from the lungs with red blood cells. The red blood cell is shaped like a round donut with thin centre, it has to be very flexible to fit through very small arterioles which are so small that a red blood cell must bend in half to fit through. That is quite amazing considering 5 million red blood cells can fit on the head of a pin.

One cause of hypertension is thick and sticky blood or red blood cells. If your blood cells are sticky or other elements in the blood are thick, the blood cells start to stick together. This prevents the red blood cells from being able to access and flow through the small arterioles in the body. As a result, there are

tissues in the body that are not getting enough oxygen. This starts a reaction within the body which tells the heart to pump harder to try to get blood to the tissues as well as sends signals to produce more red blood cells which will only add to the problem of sticky thick red blood cells. This may not have an immediate negative impact, but over time the heart muscle gets overworked leading to an enlarged heart, permanent damage is done and it becomes less effective. Due to the high pressure with in the vessels, they also become damaged which can lead to rupture of the vessels in the brain causing stroke. Things that can cause excessive amounts of red blood cells include smoking, sleep apnea, dehydration and a diet high in fat and cholesterol. Studies show that the flow of blood is considerably slowed by a diet high in fat, it is simple to understand that fat clogs the system.

Another cause of hypertension is vessel related. The blood vessels are strong and they are also slightly elastic to accommodate for when the blood is pumped into the artery from the heart. It expands when the blood is pumped in from the heart and returns to its normal size which increases the pressure which moves the blood along. With poor lifestyle habits that are common in the west the vessels develop a thick build up of fat and cholesterol on them making the vessels inflexible. This makes the heart have to push harder leading to same problems such as an inefficient enlarged heart with permanent damage. The hardened fat and cholesterol built up on the artery walls are called plaque and they can also break off in small pieces causing heart attack or stroke.

Certain risk factors have been identified which contribute to high blood pressure.

Age: As you age, your risk of high blood pressure naturally increases, and the acceptable range for blood pressure also rises. Men are more likely to suffer from high blood pressure, but women are more likely to develop high blood pressure after menopause.

Race: Hypertension affects black people more, and at a younger age than white people. Black people are also more likely to suffer the serious complications associated with hypertension.

Family connection: Hypertension also tends to run in families.

Overweight: The more overweight an individual is, the more their risk of elevated blood pressure because the amount of blood in the body is increased and puts more pressure on the vessels. Many

people that are overweight may also have high cholesterol. Cholesterol causes increased blood pressure by causing plaques to be laid down which causes vascular resistance. The avoidance of this substance is one of the keys to the success of many lifestyle treatments advocated by Dr. Castelli MD, Dr. Esselstyn, Dr. McDougal MD, Dr. Campbell PhD, Dr. Pritikin MD, Dr. Diehl PhD and a whole host of other educators with effective programs that effectively help people to reduce their high blood pressure problems.

Smoking: Smoking or chewing tobacco rises the blood pressure temporarily but the chemicals in the products damages the artery walls causing them to narrow and increases the pressure. This is also true for second hand smoke.

Salt: Eating a diet high in sodium increases the amount of fluid in the body and increases the blood pressure.

Insufficient potassium: Potassium is used in the body to regulate the amount of sodium in the body, if you don't eat enough potassium there can be too much sodium in the blood.

Alcohol: Heavy drinking can damage the heart leading to high blood pressure. A landmark study published in 1977 showed that alcohol consumption correlated strongly with high blood pressure. (Klatsky AL, FreidmanGD, Siegelaub, AB. Alcohol consumption and blood pressure. N. England J. Med 296 (21) 1194). Three drinks per day strongly correlated with high blood pressure. It is estimated that as high as 10% of hypertension cases can be related to alcohol consumption.

Stress: High stress levels can have a dramatic effect on blood pressure levels.

Western Treatment

Western medicine recommends first making dietary and lifestyle changes such as;

- **Eating healthy foods:** Emphasizing fruits, vegetables, whole grains and low-fat dairy foods, foods rich in potassium and eating less saturated fat and total fat.
- **Decrease salt:** 1.500 mg per day are recommended for people 51 years of age or older or any age if you are of Black heritage, currently have hypertension, diabetes or chronic kidney disease. Healthy people can consume 2,300 mg or less per day. It is important to count the sodium content included in prepared foods and not just the salt added from the shaker.

- **Keep a healthy weight:** Being overweight contributes to high blood pressure and losing even a few pounds can lower the blood pressure.
- **Increase physical activity:** 30 minutes of exercise per day is recommended.
- **Limit alcohol use:** Healthy amounts are one drink per day for women and people over 65 and two drinks per day for men.
- **Don't smoke:** Tobacco damages the blood vessels and accelerates the hardening of the arteries, there is no safe amount of smoking.
- **Stress:** Stress reduction such as muscle relaxation and deep breathing are recommended.

When lifestyle changes have not controlled the blood pressure, medications will be prescribed.

- **Thiazide diuretics:** Often called water pills, they stimulate the kidneys to excrete more water and sodium and reduce the blood volume. These are often the first line of treatment.
- **Beta blockers:** They stimulate the blood vessels to dilate and make the heart beat slower and with less force, they are often used with thiazide diuretics for elderly and black people. Examples of Beta blockers include Acebutolol (Sectral), atenolol (Tenormin), metoprolol (Lopressor, Mepressor, Merol), nadolol (Corgard), pindolol (Visken), propranolol (Inderal) or timolol (Blocadren).
- **Angiotensin-converting enzyme (ACE) inhibitors:** These block the formation of a chemical in the body that constricts the blood vessels. Examples of ACE inhibitors include captopril (Capoten), enalapril (Vasotec), lisinopril (Zestril or Prinivil)
- **Angiotensin II receptor blockers:** These block the action (not the formation) of a natural chemical that constricts the blood vessels.
- **Calcium channel blockers:** These relax the muscles in the blood vessels and some slow the heart rate. Calcium channel blockers work better for black people and the elderly. Side effects can occur when the patient eats grapefruit or drinks grapefruit juice. Examples of calcium channel blockers include Diltiazem (Cardizem), nicardipine (Cardene), Nifedipine (Procardia) and verapamil (Calan or Isoptin).

- **Renin inhibitors:** These slow the production of renin, an enzyme produced by the kidneys which starts the chemical steps to increase the blood pressure.

For people who are having trouble reaching blood pressure goals with the above medications, there are stronger medications that are used;

- **Alpha blockers:** These reduce the nerve impulses to the blood vessels which reduce effects of the chemicals that narrow the blood vessels.
- **Alpha-beta blockers:** These reduce the nerve impulses to the blood vessels and also reduce the heartbeat.
- **Central-acting agents:** These prevent your brain from signaling your nervous system to increase your heart rate and narrow your blood vessels.
- **Vasodilators:** These directly dilate the muscles in the walls of the arteries.

Note: It is important not to stop taking blood pressure medications suddenly, it can cause dangerous spikes in blood pressure.

Side effects of Western Treatment

Aside from the fact that the western treatment plan for high blood pressure means taking medications for the rest of a person's life which is already a negative factor, the medications themselves can have undesired side effects. It is true that the side effects outweigh the dangers in the short term, but the goal should not to remain on the medications for the duration of life. They have no curative effects, they only mask and control the problem.

- **Diuretics:** Some diuretics decrease potassium in the body which can lead to leg cramps, weakness, constipation or tiredness. Potassium is a major component in the body and the blood, such as fluid balance, protein synthesis, nerve conduction, energy production, muscle contraction, synthesis of nucleic acids and control of heartbeat. There are potassium-sparing diuretics such as amiloride (Midamar), spironolactone (Aldactone) or triamterene (Dyrenium) which do not decrease the potassium and have have the opposite problem of too much potassium which will cause mild paralysis, weakness

in the limbs or an irregular heart beat. Some people suffer from attacks of gout when on diuretics for a prolonged period of time.

- **Beta blockers:** Side effects of beta blockers include insomnia, cold hands and feet, tiredness or depression, a slow heartbeat or asthma like symptoms. Impotence in men may also occur.
- **ACE inhibitors:** These can cause skin rash, loss of taste and a chronic dry hacking cough. In rare cases it can cause kidney damage.
- **Angiotensin II receptor blockers:** These can cause dizziness.
- **Calcium channel blockers:** These may cause heart palpitations, swollen ankles and edema, constipation, headache or dizziness.
- **Alpha blockers:** These carry the possible side effects of a fast heart rate, dizziness or a drop in blood pressure when you stand up.
- **Central-acting agents:** These can have the possible side effects of constipation, depression, dizziness, dry mouth, drowsiness, fatigue, headache, impotence, impaired thinking and weight gain.
- **Vasodilators:** These may cause headaches, swelling around the eyes, heart palpitations or aches and pains in the joints.

Complications of Hypertension

The most common complications of hypertension are heart attack or stroke and heart failure. Over time, increased pressure in the vessels leads to hardening and thickening of the arteries (atherosclerosis), which leads to heart attack, stroke etc. Increased pressure on the artery walls can cause an area to weaken and bulge, and an aneurysm develops. If it ruptures it is fatal. The heart muscles must thicken to compensate for the higher pressure in the arteries, heart failure results when the thickened muscles can no longer pump enough blood to meet the needs of the body. When the arteries in the kidneys are weakened and narrowed the kidney can no longer function properly leading to kidney problems and kidney failure. Vision loss occurs when the vessels in the eyes become thickened, narrowed and torn. Metabolic syndrome is a group of conditions that are all related to metabolism, they include increased waist circumference, high triglicerides, low HDL (good cholesterol), high blood pressure and high insulin.

If you have high blood pressure, you are more likely to suffer from the other diseases in the metabolic group and the more difficult it becomes to control. It is more common for people who have high blood pressure to have troubles with memory and understanding than people with normal levels of blood pressure.

Chinese Medicine View of Hypertension

Traditionally, high blood pressure is not a TCM disease, it was categorized under the common symptoms that usually occur in patients with high blood pressure such as headache, head distention, dizziness, heart palpitations, insomnia, tinnitus and numbness and tingling. As mentioned previously, hypertension is referred to as the “silent killer” meaning it often has no signs or symptoms and therefore doesn’t fit with any TCM pattern relating to high blood pressure. In these cases the best way is to go with whichever TCM pattern that a person presents with.

Symptoms that occur include dizziness, facial flushing, headaches, fatigue, epistaxis, nervousness and anxiety palpitations, profuse perspiration, hearing and vision disturbances, confusion and nausea and vomiting.

In Chinese medicine hypertension is closely related to the following factors;

- **Emotional stresses:** Excessive anger and frustration which stagnate the liver qi and cause liver yang rising and wind. Stagnant liver qi may turn into fire and exhaust the liver yin. When insufficient yin fails to restrain the yang, hyperactive liver yang occurs.
- **Improper diet:** Overindulgence in rich, greasy and overly sweet foods injure the spleen and stomach leading to generation of damp-turbid. Accumulated damp-turbid can further stagnate and transform into heat, rising to disturb the clear orifices. The mechanism of ascending clear yang and descending the turbid is disturbed.
- **Kidney essence deficiency:** Deficiency fails to generate the marrow leading to emptiness of the sea of marrow.

Caused by the above factors, the end result of imbalance of yin and yang results. High blood pressure is usually a pattern of deficiency below and excess above such as liver and kidney deficiency below and

hyperactive liver yang rising above. Hyperactive yang may transform into wind and generate fire. When wind and fire mutually disturb each other, the blood follows the rebellious qi upwards to disturb the mind and cover the orifices. The end result is wind-stroke or syncope.

The basic TCM patterns of high blood pressure include;

- **Liver fire excess:** Manifests with distending headache, dizziness, flushed face, eye congestion, irritablity and prone to outbursts of anger, bitter taste, dry throat. May be accompanied by tinnitus, deafness, insomnia which are all aggravated by emotional outbursts of anger. This pattern often has a red tongue with a yellow tongue coating.
- **Liver and kidney yin deficiency:** Manifests with dizziness, headache, poor eyesight, tinnitus, dry mouth, dry eyes, insomnia, vivid dreams, feverish sensation in the palms and soles, weakness in the low back and knees, mental tiredness, forgetfulness. This pattern often has a red tongue with a small amount of tongue coating.
- **Yin deficiency with hyperactive yang:** Manifests with a more serious distending headache, with an occasionally flushed face, prone to outbursts of anger. Often has a red tongue with a thin yellow coating. It is also combined with the symptoms of liver and kidney Yin deficiency.

Diet therapy for Hypertension

Chinese medicated diet for hypertension focuses on adding the foods that will nourish the yin, clear heat and lower yang as well as avoiding foods that are pungent, rising, and warm. It is also important to eliminate or drastically reduce meat intake. As mentioned previously, a diet of mainly plant based foods leads to better heart health and can bring blood pressure to safe and health levels.

Foods to Avoid for Hypertension

Lamb: It has a very hot property, it puts a lot of heat into the body.

Chicken: It is too warm and is contraindicated to heat syndromes.

Duck Egg: It has a high fat content.

Pepper, black pepper: It is too warm and stimulating with a rising nature.

Alcoholic drinks: Alcoholic drinks are very hot with the exception of beer and have a rising action which is contraindicated for hypertension.

Ginseng: Is very warm and has a rising action and is contraindicated for hypertension. American ginseng has a more cool nature and be beneficial for hypertension.

Foods to Eat for Hypertension

- Apple: Sweet, sour, goes to the stomach, spleen and lungs and is lowering. It clears heat, relieves agitation, alleviates summer heat, creates body fluids, moistens the lungs, relieves diarrhea, stimulates the appetite. Use raw, cooked, as a juice, decocted, in a syrup, dried or powdered.
- Hawthorn fruit (Shan Zha): Acrid, sweet, slightly warm, goes to the spleen, stomach and liver. It promotes digestion, transforms food retention, invigorates the blood and eliminates accumulations. It is know to clear out fat and cholesterol from the blood and aid in weight loss.
- Pear: Cool, sweet, goes to the lung and stomach, and is lowering. It clears heat, moistens dryness, creates body fluids and transforms phlegm.
- Banana: Cold, sweet, goes to the stomach, large intestine and is lowering. It clears heat, nourishes the yin, moistens and detoxifies the intestines, creates body fluids, moistens the stomach. Can be eaten raw or steamed.
- Grape: Neutral, sweet and sour, goes to the spleen, lung and kidneys and is lowering and rising. It supplements the kidneys and liver, nourishes qi, promotes blood formation, creates body fluids, strengthens muscles, sinews and bones and is a diuretic. Can be eaten raw, as juice, in decoction, or preserved in alcohol. Note: Raisins have a higher carbohydrate content and are higher in iron and calcium than fresh grapes.
- Watermelon: Cold, sweet, goes to the stomach, heart and bladder and is lowering. It clears heat, relieves summer heat, quenches the thirst, relieves agitation, and is a diuretic. Can be eaten raw, in juice, in decoction, or in syrup. It is made up of 95% water.
- Peanut (not roasted): Cool, sweet, goes to the spleen and lungs and has a rising function. It supplements the spleen and stomach, harmonizes the stomach, moistens the lungs, relieves cough, promotes milk production and moistens the large intestines. Can be eaten raw, boiled or ground.

- Garlic raw: Hot, acrid, goes to the lung, stomach and spleen and is rising in nature. It warms the spleen and stomach, moves the Qi, disperses blood stasis and Qi stagnation in the abdomen, dispels cold, detoxifies, is anti parasitic and relieves cough. Can be eaten raw, gently braised (low heat), as a juice or in decoction.
- Garlic cooked: Warm, sweet-acrid.
- Tomato: Cold, sweet and sour, goes to the stomach and liver and is lowering. It clears heat, nourishes yin, produces fluids and relieves dryness, cools and cleans the blood, strengthens the stomach and promotes the liver network activity. Can be eaten raw, in juice, boiled, sauteed or in decoction.
- Celery: Cool, slightly salty and bitter, goes to the stomach and liver. It cools the stomach and liver heat and loosens Qi stagnation.
- Radish: Cool, acrid, goes to the lungs and stomach. It loosens blood stagnation and clears blood heat.
- Onion: Warm, acrid and sweet, goes to the lung, stomach and large intestine and is rising in nature. It supplements the stomach, regulates Qi, disperses blood stasis, drives out cold, produces perspiration and promotes appetite. It can be eaten as juice, fried or dried. They loose their effect when they are cooked too long.
- Spinach: Cool, sweet, goes to the stomach, liver, large intestine and small intestine. It clears heat, moistens dryness, promotes the formation of body fluids, nourishes the blood, nourishes the liver, supports the Yin and lowers Qi, especially of the liver and stomach which tend to rise pathogenically. Can be eaten blanched, raw or boiled.
- Cucumber: Cool, sweet, goes to the spleen, stomach and large intestine and is lowering in nature. It clears heat, drains Yang, reduces swelling, detoxifies and clears the skin. Can be eaten raw, boiled, fried, or in decoction.
- Carrot: Warm, sweet, goes to the spleen, stomach and lungs. It warms and strengthens the spleen and stomach and relieves food stagnation.
- Kelp: Cold, salty, goes to the liver, stomach and kidneys. It eliminates phlegm, softens hardness and is a diuretic.

- Seaweed: Cold, salty, bitter, goes to the liver, stomach and kidneys. It clears heat, eliminates phlegm, softens hardness, disperses nodules and is a diuretic.
- Mushroom: Cool to cold, sweet, goes to the stomach, spleen and lungs and is lowering in nature. It supports the spleen and stomach, balances Qi, moistens dryness and transforms phlegm. Can be eaten boiled, steamed or powdered.
- Rice vinegar: Warm, sour and bitter, goes to the lungs and liver and is rising in nature. It stops bleeding, disperses blood and qi stagnation, detoxifies and promotes digestion. Can be used as a seasoning, diluted with water or in decoction.
- Honey: Neutral, sweet, goes to the spleen, lungs and large intestine and is rising in nature. It supplements the spleen and stomach, moistens dryness, moistens the lungs, relieves cough, relieves pain, moistens the large intestines and detoxifies. Can be eaten raw, as seasoning, used in cooking or dissolved in warm water.
- Soy milk: Cool, sweet, goes to the stomach, spleen and large intestine. It supplements the Qi and blood, moistens dryness and detoxifies.
- Corn silk: Neutral, sweet, goes to the bladder, liver and gall bladder and is lowering in nature. It is a diuretic, relieves edema, clears heat, soothes the liver, it is hypotensive and reduces glycemia. It is most commonly boiled in decoction.
- Mung bean (Lu Dou): Cool, sweet, goes to the heart and stomach. It clears heat, expels toxins and disperses summer heat.
- Sea cucumber: Warm, salty, goes to the heart and kidneys. It tonifies the kidneys, benefits the essence, strengthens the Yang and stops bleeding.
- Chrysanthemum flower: Cool, pungent, sweet, bitter, goes to the liver and lungs. It expels wind, clears heat, expels toxins and improves vision.
- Lycium fruit: Neutral, sweet, goes to the liver, kidneys and lungs. It nourishes the liver and kidneys, improves vision and moistens the lungs.

- Black fungus: Sweet, mild, it goes to the liver, stomach, lung and large intestine. It cools the blood, stops bleeding, benefits the flow of Qi, nourishes the spleen and stomach, produces body fluids to nourish the stomach and lubricates the lungs.
- White fungus: Neutral, sweet and bland, goes to the lung and stomach. It nourishes the lung and stomach yin, generates fluids and moistens the lungs.
- Cassia seed (Jue Ming Zi): Sightly cold, sweet, bitter, goes to the liver and large intestine. It clears liver heat, improves the vision, moistens the intestines and promotes bowel movements.
- Sesame (black): Neutral to cool (roasted is warmer), sweet, goes to the liver and kidney and is lowering in nature. It nourishes the liver and kidney and moistens dryness. It is eaten raw, roasted, ground, cooked with liquid as porridge, used as a seasoning or made into butter.
- Rabbit meat: Cool, neutral, sweet, goes to the liver, large intestine, stomach and spleen and is floating in nature. It nourishes the spleen and stomach, supplements the Qi and cools the blood. It can be boiled, fried/roasted or steamed. It is known to have little fat.
- Turtle (Jia Yu): Neutral to cool, sweet, goes to the liver and kidney. It nourishes the yin and cools the blood, restores the vital energy. It is eaten in soup or steamed.
- Green tea: Cool to cold, bitter and sweet, goes to the stomach, lung, heart and kidneys. It clears heat, especially in head regions; quenches the thirst, acts as a diuretic, lowers Qi, disperses digestive obstruction, refreshes the mind, transforms phlegm and dampness, detoxifies and harmonizes the stomach. Can be brewed, powdered or in decoction.

High Cholesterol

It is a fact that elevated levels of blood cholesterol are associated with not only eating saturated fats and foods with cholesterol in them, but also by eating any animal protein. High cholesterol is a major risk factor in heart disease.

Western Information

Cholesterol is a natural and necessary component in our bodies, it is made in the liver and the intestines. It is used to produce hormones and cell membranes and is transported in the blood plasma of all mammals. It is an essential component of cell membranes in all mammals. It is needed to establish proper membrane permeability and fluidity. Cholesterol is an important factor for the manufacture of bile acids, steroid hormones and vitamin D. Cholesterol is manufactured in the body and dietary sources of cholesterol are not necessary for this process. Cholesterol is transported within the body inside lipoproteins, the more cholesterol and less protein a lipoprotein has, the less dense it is. For this reason, lipoproteins are classified as being VLDL (very low density lipoprotein), LDL (low density lipoprotein) and HDL (high density lipoprotein). LDL has the highest percentage of cholesterol in them and are the major carriers of cholesterol in the blood stream and is known as the 'bad cholesterol'. HDL particles transport cholesterol back to the liver for excretion or to other tissues that will use it to manufacture hormones. Having higher levels of HDL is associated with better health and having low levels of HDL is associated with unhealthy changes in vessels.

When determining the cholesterol values, the total cholesterol level is measured along with LDL levels. They estimate the value to VLDL and minus HDL from the total cholesterol to find the estimated value of the LDL levels.

Cholesterol levels;

Ideal cholesterol levels: 5.2 mmol/L (below 200 mg/dL-U.S.)

Borderline high: 5.2-6.2 mmol/L (200-239 mg/dL-U.S.)

High: 6.2 mmol/L (240 and up-U.S.)

There is strong evidence that even these guidlines that were provided by the Mayo Clinic are too high, even lower values anywhere from 3.85-4.95mmol/L (70-90 mmol/L-U.S.) are ideal and have a very significantly lower rate of disease.

LDL Cholesterol levels;

For people with high risk of heart disease: Below 1.8 mmol/L (70mg/dL-U.S.)

For people at risk for heart disease: Below 2.6 mmol/L (100 mg/dL)

Ideal: 2.6-3.3 mmol/L (100-129 mg/dL-U.S.)

Borderline high: 3.4-4.1 mmol/L (130-159 mg/dL-U.S.)

High: 4.1-4.9 mmol/L (160-189 mg/dL-U.S.)

Very high: Above 4.9 mmol/L (190 mg/dL-U.S.)

HDL cholesterol levels;

Poor: Below 1 mmol/L for men (Below 40 mg/dL-U.S.)

Poor: Below 1.3 mmol/L for women (Below 50 mg/dL)

Good: 1.3-1.5 mmol/L (50-59 mg/dL-U.S.)

Best: Above 1.5 mmol/L (60 mg/dL-U.S.)

There are risk factors that are associated with high cholesterol such as obesity, nephritic syndromes, or genetic disorders and excessive consumption of alcohol.

Western Treatment

Western treatment includes making lifestyle changes such as eating foods low in cholesterol, losing weight and exercising. When these methods fail, as they most often do, medications will be prescribed.

Common medications for high cholesterol;

Statins: These are the most commonly prescribed to lower cholesterol. They block a substance that is needed by the liver to make cholesterol and may also help your body re-absorb cholesterol from built up deposits on artery walls. Examples include atorvastatin (Lipitor), fluvastatin (Lescol), lovastatin (Altoprev, Mevacor), pravastatin (Pravachol), rosuvastatin (Crestor) and simvastatin (Zocor).

Bile-acid-binding resins: These indirectly lower cholesterol by binding to bile acids which signals the liver to use excess cholesterol to make more bile acids, reducing the level of cholesterol in the blood. Examples include cholestyramine (Prevalite, Questran), colesevelam (Welchol) and colestipol (Colestid).

Cholesterol absorption inhibitors: These help reduce blood cholesterol by limiting the absorption of dietary cholesterol in the small intestine. The drug is called ezetimibe (Zetia).

Combination cholesterol absorption inhibitor and statin: This drug decreases both abosorption of dietary cholesterol in the small intestine and the production of cholesterol in the liver. This drug is a combination of ezetimibe-simvastatin (Vytorin).

Side effects of Western Treatment

Common side effects from high cholesterol medications include muscle pains, stomach pains, constipation, decreased sexual desire, nausea and diarrhea. The medications may also have a negative effect on the liver. Statins in particular have a specific risk of Rhabdomyolysis, where both muscle and protein and myoglobin are released into the blood stream. The break down of proteins and other materials at the cellular level creates toxins that enter the kidneys and can completely shut down the organ in its most extreme cases. Not all patients diagnosed with rhabdomyolysis have muscle pain and weakness, but that is one of the most common symptoms. Other symptoms include nausea and vomiting, dark urine, fever, and overall fatigue.

Statin drugs have also shown to deplete the body of the essential nutrient CoQ10. CoQ10 is an antioxidant that nourishes the cells in the body, specifically providing energy to the heart.

The combination medication Vytorin has shown in studies to cause headaches, muscle soreness, and allergic reactions, such as shortness of breath. Some allergic reactions required immediate medical intervention.

Warnings are given to those prescribed bile-acid-binding resins to talk to their doctor about any stomach or bowel disorders they may have. Warnings also encompass avoiding acid-binding-binding resins if you have difficulty swallowing or have had major surgery on the stomach or bowel. A very low fat diet, in addition to a low cholesterol diet is required. Taken over a long period of time can cause serious vitamin deficiencies in fat soluble vitamins such as vitamins A, E, and K, so anyone prone to deficiencies in these vitamins should not take bile-acid-binding resins.

Complications of High Cholesterol

High cholesterol can cause atherosclerosis, a dangerous accumulation of cholesterol and other deposits on the walls of your arteries. These deposits are called plaques and can reduce blood flow through your arteries, which can cause complications, such as;

- Chest pain: If the arteries that supply your heart with blood (coronary arteries) are affected, you may have chest pain (angina) and other symptoms of coronary artery disease.
- Heart attack: If plaques tear or rupture, a blood clot may form at the plaque-rupture site, blocking the flow of blood or breaking free and plugging an artery downstream. If blood flow to part of your heart stops, you'll have a heart attack.
- Stroke: It is similar to a heart attack, if blood flow to part of your brain is blocked by a blood clot, a stroke occurs.

Chinese Medicine View of High Cholesterol

The clinical manifestations of high cholesterol are typical of phlegm-damp accumulation in Chinese medicine. Although phlegm and dampness in the body are the main problem, the root of the problem is spleen Qi deficiency. Phlegm is an excessive turbid and viscous metabolic byproduct that can be deposited in any area of the body, including the blood. This perception of high cholesterol is quite similar to the view of modern medicine.

In Chinese medicine, the following factors contribute to high cholesterol;

Improper diet: Poor diet, high in animal proteins and fats, heavy and greasy foods injure the spleen and stomach, leading to phlegm-damp accumulation. The digestive function is deficient and cannot extract the essential substances from the food, causing the spleen to fail in its transforming and transporting functions. This causes an excess of lipids and fats in the blood stream. This is the most common pattern seen, another indication that it can be controlled with food.

Emotional stress: Overthinking and obsessing over things injures the heart and the spleen, while over indulging in anger injures the liver which then attacks the spleen. The same problem occurs, the spleen fails to transform and transport materials leading to phlegm and damp accumulation.

Constitution: Constitutional obesity is related to phlegm accumulation in the body. Constitutional liver and kidney yin deficiency with empty heat will consume the fluids and generate phlegm.

The basic TCM patterns of high cholesterol include;

- **Stagnation of phlegm:** Tiredness and heavy feeling in the head, stuffy sensation in the chest and abdomen, nausea, shortness of breath, heavy sensation in the body, numbness and heaviness of the limbs. The tongue can be moist and greasy.
- **Blood stasis:** Same as the above pattern with sharp or stabbing pains, a dark complexion and a purple tongue or a tongue with purple spots on it. This can be compared to hardening of the arteries themselves. Angina is commonly due to blood stasis in Chinese medicine.

Diet therapy for High Cholesterol

Diet therapy for high cholesterol focuses on eliminating foods that form phlegm and dampness in the body. These often correlate to foods high in fat, but not always, for example, bananas are said to be a food which can cause phlegm accumulation in the body.

Foods to Avoid for High Cholesterol

The following foods are prohibited for people with high cholesterol according to Chinese medicated diet. Egg, any pork products, chicken liver, shrimp, crab

Foods to Eat for High Cholesterol

- Hawthorn fruit (Shan Zha): Acrid, sweet, slightly warm, goes to the spleen, stomach and liver. It promotes digestion, transforms food retention, invigorates the blood and eliminates accumulations. It is know to clear out fat and cholesterol from the blood and aid in weight loss.
- Onion: Warm, acrid and sweet, goes to the lung, stomach and large intestine and is rising in nature. It supplements the stomach, regulates Qi, disperses blood stasis, drives out cold, produces perspiration

and promotes appetite. It can be eaten as juice, fried or dried. They loose their effect when they are cooked too long.

- Mushroom: Cool to cold, sweet, goes to the stomach, spleen and lungs and is lowering in nature. It supports the spleen and stomach, balances Qi, moistens dryness and transforms phlegm. Can be eaten boiled, steamed or powdered.
- Corn: Neutral, sweet, goes to the large intestine and stomach. It Supplements the spleen and stomach, kidneys, Qi and blood, balances the body fluids, harmonizes the stomach, strengthens diuresis. Can be eaten as a porridge, boiled or in decoction.
- Sunflower seeds: Neutral, sweet, goes to the lung and large intestine and has a rising function. It supplements the spleen, nourishes yin and moistens the large intestine. It can be eaten raw, roasted, or as an oil.
- Carrot: Warm, sweet, goes to the spleen, stomach and lungs. It warms and strengthens the spleen and stomach and relieves food stagnation.
- Radish: Cool, acrid, goes to the lungs and stomach. It loosens blood stagnation and clears blood heat.
- Tofu: Neutral to cool and sweet. It mainly clears heat.
- Cucumber: Cool, sweet, goes to the spleen, stomach and large intestine and is lowering in nature. It clears heat, drains Yang, reduces swelling, detoxifies and clears the skin. Can be eaten raw, boiled, fried, or in decoction.
- Kelp: Cold, salty, goes to the liver, stomach and kidneys. It eliminates phlegm, softens hardness and is a diuretic.
- Sea cucumber: Warm, salty, goes to the heart and kidneys. It tonifies the kidneys, benefits the essence, strengthens the Yang and stops bleeding.
- Seaweed: Cold, salty, bitter, goes to the liver, stomach and kidneys. It clears heat, eliminates phlegm, softens hardness, disperses nodules and is a diuretic.
- Garlic raw: Hot, acrid, goes to the lung, stomach and spleen and is rising in nature. It warms the spleen and stomach, moves the Qi, disperses blood stasis and Qi stagnation in the abdomen, dispels cold,

detoxifies, is anti parasitic and relieves cough. Can be eaten raw, gently braised (low heat), as a juice or in decoction.

- Garlic cooked: Warm, sweet-acrid.
- Honeysuckle flower (Jin Yin Hua): Cold, sweet, goes to the lungs, stomach and large intestine. It clears heat and expels toxins.
- Pumpkin: Warm, sweet, goes to the spleen and stomach. It invigorates the spleen and stomach, tonifies Qi, relieves inflammation and pain, detoxifies and is anti-parasitic.
- Oats: Neutral to warm, sweet, goes to the spleen, stomach and kidney and has a rising function. It supplements the Qi and blood, moves the Qi, strengthens the nerves, muscles, and sinews and dispels dampness.
- Black sesame: Neutral to cool (roasted is warmer), sweet, goes to the liver and kidney and is lowering in nature. It nourishes the liver and kidney and moistens dryness. It is eaten raw, roasted, ground, cooked with liquid as porridge, used as a seasoning or made into butter.
- Yellow soybean: Neutral, sweet and goes to the spleen and large intestine channels. It strengthens the spleen, relieves epigastric distention, moistens dryness and is a diuretic. It is also used to treat infantile malnutrition, diarrhea, dysentery, abdominal distention, toxemia of pregnancy, skin disorders such as carbuncles and abscesses.
- Rabbit meat: Cool, neutral, sweet, goes to the liver, large intestine, stomach and spleen and is floating in nature. It nourishes the spleen and stomach, supplements the Qi and cools the blood. It can be boiled, fried/roasted or steamed. It is known to have little fat.
- Apple: Sweet, sour, goes to the stomach, spleen and lungs and is lowering. It clears heat, relieves agitation, alleviates summer heat, creates body fluids, moistens the lungs, relieves diarrhea, stimulates the appetite. Use raw, cooked, as a juice, decocted, in a syrup, dried or powdered.
- Chinese date (Da Zao): Warm, sweet, goes to the spleen and stomach. It tonifies the spleen and stomach, strengthens the Qi, nourishes the blood, calms the mind and regulates the natures of other foods.

- Peanut (not roasted): Cool, sweet, goes to the spleen and lungs and has a rising function. It supplements the spleen and stomach, harmonizes the stomach, moistens the lungs, relieves cough, promotes milk production and moistens the large intestines. Can be eaten raw, boiled or ground.
- Celery: Cool, slightly salty and bitter, goes to the stomach and liver. It cools the stomach and liver heat and loosens Qi stagnation.
- Eggplant: Cool, sweet, goes to the stomach, spleen and large intestine and has a lowering nature. It clears heat, moves and cools the blood, disperses blood stasis, reduces swelling and eases pain; harmonizes the liver and uterus, especially with suppressed emotions.
- Tea leaf (green preferred): Green and white teas are cool to cold and black tea is cool to slightly warming, bitter and sweet, goes to the stomach, lung, heart and kidneys. It clears heat, especially in head regions; quenches the thirst, acts as a diuretic, lowers Qi, disperses digestive obstruction, refreshes the mind, transforms phlegm and dampness, detoxifies and harmonizes the stomach. Can be brewed, powdered or in decoction.
- Japanese pagoda flower (Huai Hua): Slightly cold, bitter, goes to the liver and large intestine. It cools the blood and stops bleeding.
- Fleece flower root (He Shou Wu): Slightly warm, goes to the liver and kidneys. It tonifies the blood, essence, stops malaria, expels toxins, moistens the intestines and promotes bowel movements.
- Reishi mushroom: Neutral, slightly warm, sweet and slightly bitter, goes to the kidneys and spleen. It tonifies the Qi, nourishes yin and blood, strengthens the spleen, tonifies the Qi and body fluids, calms the mind and strengthens the stomach.
- Lotus leaf (He Ye): Neutral, bitter, astringent, goes to the heart, spleen and stomach. It disperses and eliminates summer heat, disperses dampness, raises yang and stops bleeding.
- Cassia seed (Jue Ming Zi): Sightly cold, sweet, bitter, goes to the liver and large intestine. It clears liver heat, improves the vision, moistens the intestines and promotes bowel movements.
- Fish (Fresh water): Neutral, sweet, goes to the spleen and kidney. It has a diuretic effect to reduce edema, lowers rebellious Qi and promotes lactation.

- Bamboo shoots: Cold, sweet, goes to the large intestine, lung and stomach. It clears heat, acts as an expectorate, regulates the function of the spleen and stomach, moisturizes the intestines and is used to treat excessive accumulation of phlegm and heat in the lungs, food retention and promotes the eruption of measles.
- Black fungus: Sweet, mild, it goes to the liver, stomach, lung and large intestine. It cools the blood, stops bleeding, benefits the flow of Qi, nourishes the spleen and stomach, produces body fluids to nourish the stomach and lubricates the lungs.

Appendix I

Coconut oil for heart health

Scientists discovered coconut oil is the chief source of energy for many inhabitants of the Pukapuka and Tokelau Islands. Historically, these tropical islanders ate diets that were high in saturated fats, but low in cholesterol and sugar. When researchers analyzed fat biopsies from these islanders, they found high levels of Lauric Acid (the building block for a potent anti-microbial called Monolaurin). There were low rates of heart disease and the islanders felt no harmful effects from eating a diet high in saturated fats. Surprisingly, when some of these islanders migrated to New Zealand and stopped eating coconut oil, their total cholesterol and LDL cholesterol increased and their HDL cholesterol decreased. Researchers believed these islanders' diet of coconut oil may have played a role in their low rates of heart disease. Another study from India showed that virgin coconut oil reduced total cholesterol, triglycerides, phospholipids, and LDL cholesterol. Coconut oil has increased healthy HDL cholesterol in serum and tissues. Researchers believe this positive effect is due to the biologically active polyphenols found in virgin coconut oil. Polyphenols act as antioxidants. They protect your cells and body chemicals against damage caused by free radicals.

A study from Germany showed that when they gave virgin coconut oil to people with already high cholesterol levels, it showed that there was either no change or a decrease of 26% in cholesterol levels. When researchers mixed virgin coconut oil with 5% olive oil and 5% sunflower oil, they saw further decreases in cholesterol levels.

How to Use Coconut Oil in Your Diet

There are several ways you can add coconut oil to your everyday life, and it really is easy! Coconut oil is stable even during long periods of storage, and needs no refrigeration. Because its melting point is 76° F, it can be used in both liquid or solid forms. It has a neutral flavor that makes it ideal for use in frying, cooking and baking.

Here are just a few suggestions:

Use it in any recipe that calls for vegetable oil, shortening or butter as a healthy butter replacement on bread or vegetables coconut oil is the best oil for making popcorn as a luscious oil for skin care, hair care and massage. You can even try coconut oil right out of the jar for a quick burst of energy, without creating a spike in your blood sugar levels.

References

Linda, T. (2010) Chinese Medicated Diet. Chinese medicated diet for common cardiovascular disorders
Toronto School of Traditional Chinese Medicine, 8 October 2010 [Lecture notes taken by J. Rea]

Linda, T. (2010) Chinese Medicated Diet. Chinese medicated diet and home remedies for metabolic and endocrine disorders
Toronto School of Traditional Chinese Medicine, 11 November 2010 [Lecture notes taken by J. Rea]

1998-2011 Mayo Foundation for Medical Education and Research (MFMER). High blood pressure risk factors
http://www.mayoclinic.com/health/high-blood-pressure/DS00100/DSECTION=risk-factors

1998-2011 Mayo Foundation for Medical Education and Research (MFMER). High blood pressure complications
http://www.mayoclinic.com/health/high-blood-pressure/DS00100/DSECTION=complications

http://en.wikipedia.org/wiki/Cholesterol

1998-2011 Mayo Foundation for Medical Education and Research (MFMER). High Cholesterol tests and diagnosis
http://www.mayoclinic.com/health/high-blood-cholesterol/DS00178/DSECTION=tests-and-diagnosis

http://www.60daystolowercholesterol.com/statin-drugs/rhabdomyolysis.html

Brown L, Rosner B, Willett WW, et al. Cholesterol-lowering effects of dietary fiber: a meta-analysis. Am J Clin Nutr 1999; 69:30-42.

T. Colin Campbell, T. Campbell II. (2006) The China Study. USA. BenBella Books Inc.

2006-2011 Healthy Oil Planet. Health benefits of coconut oil.
http://www.healthy-oil-planet.com/health-benefits-of-coconut-oil.html

2011 Wikipedia. Heart Disease.
http://en.wikipedia.org/wiki/Heart_disease