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# Coronary Heart Disease and Women's Health

## What is Coronary Heart Disease?

Heart disease is caused by narrowing of the coronary arteries that feed the heart. Like any muscle, the heart needs a constant supply of oxygen and nutrients, which are carried to it by the blood in the coronary arteries. When the coronary arteries become narrowed or clogged by cholesterol and fat deposits—a process called atherosclerosis—and cannot supply enough blood to the heart, the result is coronary heart disease (CHD). If not enough oxygen-carrying blood reaches the heart, you may experience chest pain called angina. If the blood supply to a portion of the heart is completely cut off by total blockage of a coronary artery, the result is a heart attack. This is usually due to a sudden closure from a blood clot forming on top of a previous narrowing.

Cholesterol is a waxy, fat-like substance that occurs naturally in all parts of the body and that your body needs to function normally. It is present in cell walls or membranes everywhere in the body, including the brain, nerves, muscle, skin, liver, intestines, and heart. Your body uses cholesterol to produce many hormones, vitamin D, and the bile acids that help to digest fat. It takes only a small amount of cholesterol in the blood to meet these needs. If you have too much cholesterol in your bloodstream, the excess is deposited in arteries, including the coronary arteries, where it contributes to the narrowing and blockages that cause the signs and symptoms of heart disease.

## What does cholesterol have to do with heart disease?

The Framingham Heart Study established that high blood cholesterol is a risk factor for coronary heart disease (CHD). Results of the Framingham study showed that the higher the cholesterol level, the greater the CHD risk. On the other end of the spectrum, CHD is uncommon at total cholesterol levels below 150 milligrams per deciliter (mg/dl). A direct link between high blood cholesterol and CHD has been confirmed by the Lipid Research Clinics-Coronary Primary Prevention Trial (1984) which showed that lowering total and LDL ("bad") cholesterol levels significantly reduces CHD. A series of more recent trials of cholesterol lowering using statin drugs have demonstrated conclusively that lowering total cholesterol and LDL-cholesterol reduces the chance of having a heart attack, needing bypass surgery or angioplasty, and dying of CHD-related causes.

## What are the benefits of lowering the Cholesterol?

Recent studies have shown that cholesterol lowering in people without heart disease greatly reduces their risk for developing CHD, including heart attacks and CHD-related death. This is true for those with high cholesterol levels and for those with average cholesterol levels.

A 1995 study called the West of Scotland Coronary Prevention Study (WOSCOPS) found that cholesterol lowering reduced the number of heart attacks and deaths from cardiovascular causes in men with high blood cholesterol levels who had not had a heart attack.

In 1998, the results of the Air Force/Texas Coronary Atherosclerosis Prevention Study

(AFCAPS/TexCAPS) showed that cholesterol lowering in generally healthy people with average cholesterol levels reduced their risk for a first-time major coronary event by 37%.

### What Makes your Cholesterol High or Low?

Your blood cholesterol level is affected not only by what you eat but also by how quickly your body makes LDL (“bad”) cholesterol and disposes of it. In fact, your body makes all the cholesterol it needs, and it is not necessary to take in any additional cholesterol from the foods you eat.

Many factors help determine whether your LDL-cholesterol level is high or low. The following factors are the most important:

- Heredity**
- What you eat**
- Weight**
- Physical activity/exercise**
- Age and sex**
- Alcohol**
- Stress**

*Heredity:* Your genes influence how high your LDL (“bad”) cholesterol is by affecting how fast LDL is made and removed from the blood. One specific form of inherited high cholesterol that affects 1/500 people is familial hypercholesterolemia, which often leads to early heart disease. But even if you do not have a specific genetic form of high cholesterol, genes play a role in influencing your LDL-cholesterol level.

*What you eat:* Two main nutrients in the foods you eat make your LDL (“bad”) cholesterol level go up: saturated fat raises your LDL-cholesterol level more than anything else in the diet. Eating too much saturated fat and cholesterol is the main reason for high levels of cholesterol and a high rate of heart attacks in the United States. Reducing the amount of saturated fat and cholesterol you eat is a very important step in reducing your blood cholesterol levels.

*Weight:* Excess weight tends to increase your LDL (“bad”) cholesterol level. If you are overweight and have a high LDL-cholesterol level, losing weight may help you lower it. Weight loss also helps to lower triglycerides and raise HDL (“good”) cholesterol levels.

*Physical Activity/Exercise:* Regular physical activity may lower LDL (“bad”) cholesterol and raise HDL (“good”) cholesterol levels.

*Age and sex:* Before the age of menopause, women usually have total cholesterol levels that are lower than those of men the same age. As women and men get older, their blood cholesterol levels rise until about 60-65 years of age. After the age of about 50, women often have higher total cholesterol levels than men of the same age.

*Alcohol:* Alcohol intake increases HDL (“good”) cholesterol but does not lower LDL (“bad”) cholesterol. Doctors don’t know for certain whether alcohol can damage the liver and heart muscle, lead to high blood pressure, and raise triglycerides. Because of the risks, alcoholic beverages should not be used as a way to prevent heart disease.

*Stress:* Stress over the long term has been shown in several studies to raise blood cholesterol levels. One way that stress may do this is by affecting your habits. For example, when some people are under stress, they console themselves by eating fatty foods. The saturated fat and cholesterol in these foods contribute to higher levels of blood cholesterol.

## What are the Risk Factors for Coronary Heart Disease?

Risk factors are conditions that increase your risk for developing heart disease. Some risk factors can be changed and others cannot. In general, the more risk factors you have, the greater your chance of developing heart disease. Fortunately, there are things you can do to address most of the risk factors for heart disease.

The risk factors that you cannot control include:

- Age (45 years or older for men; 55 years or older for women)
- Family history of early heart disease (father or brother affected before age 55; mother or sister affected before age 65)

The known risk factors for heart disease that you can do something about include:

- High blood cholesterol (high total cholesterol and high LDL (“bad”) cholesterol)
- Low HDL (“good”) cholesterol
- Smoking
- High Blood Pressure
- Diabetes—if you have diabetes, your risk for developing heart disease is high, as high as a heart disease patient’s risk for having a heart attack. You will need to lower your cholesterol under medical supervision, in much the same way as a heart disease patient, in order to reduce your high risk of getting heart disease.
- Obesity/Overweight
- Physical Inactivity

When should I measure my blood cholesterol?

Everyone age 20 and older should have their blood cholesterol measured at least once every 5 years. It is best to have a blood test called a “lipoprotein profile” to find out your cholesterol numbers. This blood test is done after a 9-12 hour fast and gives information about your:

- Total cholesterol
- LDL (bad) cholesterol
- HDL (good) cholesterol
- Triglycerides

If it is not possible to have a lipoprotein profile done, knowing your total cholesterol and HDL cholesterol can give you a general idea about your cholesterol levels. If your total cholesterol is 200 mg/dl or more, or if your HDL is less than 40 mg/dl, you will need to have a fasting lipoprotein profile done.

If you do not know your LDL level, you should have it measured. If it does not need specific treatment, you can still take the following steps to keep your cholesterol low and reduce your risk for heart disease:

- Follow a diet lower in saturated fat and cholesterol (Heart Healthy Diet for Americans)
- Be physically active
- Maintain a healthy weight
- Not smoke

A heart healthy diet is an eating pattern the whole family can follow, including children from the age of about 2-4 onward.

*Note: Children younger than 2 years old need more fat in their diet to provide enough calories*

*and should not follow a low saturated fat, low cholesterol diet.*

What are the blood levels and what do they mean?

Total cholesterol is the sum of all the cholesterol in your blood. The higher your total cholesterol, the greater your risk for heart disease.

Cholesterol travels in the blood in packages called lipoproteins. Just like oil and water, cholesterol, which is fatty, and blood, which is watery, do not mix. In order to be able to travel in the bloodstream, the cholesterol made in the liver is combined with protein, making a lipoprotein. This lipoprotein then carries the cholesterol through the bloodstream.

LDL carry most of the cholesterol in the blood, and the cholesterol from LDL is the main source of damaging

<b>Total Cholesterol Levels</b>	
Less than 200 mg/dL	“Desirable” level that puts you at lower risk for heart disease. A cholesterol level of 200 mg/dL or greater increases your risk.
200-239 mg/dL	“Borderline-High”
240 mg/dL and above	“High” blood cholesterol. A person with this level has more than twice the risk of heart disease compared to someone whose cholesterol is below 200 mg/dL

buildup and blockage in the arteries. Thus, the more LDL-cholesterol you have in your blood, the greater your risk of heart disease. Reducing your LDL cholesterol is the main goal of cholesterol-lowering treatment. HDL carry cholesterol in the blood from other parts of the body back to the liver, which leads to its removal from the body.

<b>LDL-Cholesterol Levels (“bad” Cholesterol)</b>	
Less than 100 mg/dL	Optimal
100-129 mg/dL	Near optimal/Above optimal
130-159 mg/dL	Borderline High
160-189 mg/dL	High
190 mg/dL and above	Very High

HDL carry cholesterol in the blood from other parts of the body back to the liver, which leads to its removal from the body. So HDL help keep cholesterol from building up in the walls of the arteries.

<b>HDL-Cholesterol Levels (“good” cholesterol)</b>	
Less than 40 mg/dL	A major risk factor for heart disease
40-59 mg/dL	The higher your HDL, the better
60 mg/dL and above	An HDL of 60 mg/dL and above is considered protective against heart disease

Triglycerides are a form of fat carried through the bloodstream. Most of your body's fat is in the form of triglycerides stored in fat tissue. Only a small portion of your triglycerides is found in the bloodstream. High blood triglyceride levels alone do not necessarily cause atherosclerosis (the buildup of cholesterol and fat in the walls of arteries). But some lipoproteins that are rich in triglycerides also contain cholesterol, which causes atherosclerosis in some people with high triglycerides, and high triglycerides are often accompanied by other factors (such as low HDL or a tendency toward diabetes) that raise heart disease risk. So high triglycerides may be a sign of a lipoprotein problem that contributes to heart disease.

<b>Triglyceride Levels</b>	
<b>Normal</b>	Less than 150 mg/dL
<b>Borderline-High</b>	150-199 mg/dL
<b>High</b>	200-499 mg/dL
<b>Very High</b>	500 mg/dL or above

**How do I lower my cholesterol without taking medicine?**

**Cholesterol lowering foods:** Some foods can assist in the reduction of cholesterol and could be incorporated into your new diet plan.

#### *Cholesterol lowering Margarine*

Recently, cholesterol lowering margarines have been introduced to the market. Denecol is one of the products that has been confirmed to lower cholesterol on an average of 10% if used as recommended. In addition, this margarine does not affect your HDL, or "good" cholesterol. Other products include Take Control margarine and salad dressings that are made from plant sterols, which are extracted from soybeans. These sterols trick your intestine into thinking they are cholesterol and when it tries to absorb them, it is not able to, therefore blocking cholesterol.

#### **Soy Protein**

Cholesterol lowering quality of soy protein was evidenced when FDA approved the health claim for its effects on risk of heart disease. To achieve intended results, you have to consume at least four servings of 6.25 grams of soy protein totaling daily intake to 25 grams/day. Many food manufacturers have since introduced soy beverages and energy bars containing up to 10-20 grams of soy protein. People with high cholesterol-levels of 260-300 mg/dL, soy protein has shown to reduce cholesterol by 15-25%.

#### **Nuts**

Nuts, such as almonds and walnuts, that have high amounts of monounsaturated or polyunsaturated, also help lowering cholesterol. Researchers at the Loma Linda University School of Public Health found that a diet containing pecans not only lowered total and LDL cholesterol significantly but also helped to maintain desirable levels of HDL cholesterol. Another study by the same University found that Mediterranean style diet that included walnuts lowered cholesterol.

#### **Oats and Barley**

In lowering cholesterol, oats and barley have played a critical role. These foods have a soluble fiber known as Beta Glucan, which is the key, in how they lower the cholesterol. To gain the intended cholesterol lowering effect, you have to consume anywhere between two and four cups of dry oat or barley cereal each day.

## **Fruits and Vegetables**

Fruits and vegetables such as apples, citrus fruit, berries, carrots, apricots, cabbage, sweet potatoes are high in soluble fiber and pectin both shown to be helpful in lowering cholesterol. At least five servings a day is recommended to benefit the full effect.

## **Flaxseed**

Flaxseed provides alpha-linolenic acid, a poly-unsaturated fat which has been shown to lower cholesterol while providing needed soluble fiber.

## **Olive Oil**

Olive oil is one of the mono-saturated fats and studies have shown that it lowers blood cholesterol. Extra virgin olive oil is suggested to be better than other varieties.

## **Fish**

According to researchers, fish containing an omega-3 poly-unsaturated fatty acids make the blood more slippery and less likely to clot in addition to lowering blood cholesterol.

## **Cautions:**

Bake, roast, or grill food instead of frying. Cut back on egg yolks, and if you drink 2% milk, change to 1% and if possible, skim milk.

**The Therapeutic Lifestyle Diet (TLC):** Created by the National cholesterol Education Program (NCEP).

This diet helps the average American reduce their total cholesterol by 15%. Additional percentage points of cholesterol may be reduced while also raising “good” HDL by adding regular exercise.

The low cholesterol diet prescribed in the TLC program is a low saturated fat, low cholesterol diet that will help to reduce your blood cholesterol level to decrease your chance of developing heart disease, future heart attacks, and other heart disease complications.

The TLC diet is a low-saturated fat, low-cholesterol eating plan. The TLC diet is for anyone whose LDL is above his or her goal level.

You should eat according to the following TLC guidelines:

Less than 7% of the day’s total calories from saturated fat.

25-35% or less of the day’s total calories from fat.

Less than 200 milligrams of dietary cholesterol a day.

Limit sodium intake to 2400 milligrams a day.

Just enough calories to achieve or maintain a healthy weight and reduce blood cholesterol level (for women this is between 1200-1500 calories/day)

**Other Low Cholesterol or TLC diet factors:**

Soluble fiber may be increased in the diet if LDL is not lowered enough by reducing saturated fat and cholesterol.

Certain food products that contain plant stanols or plant sterols (e.g., cholesterol-lowering margarines and salad dressings) can also be added to the diet to boost its LDL-lowering power.

## What to Eat!

Eat foods low in saturated fat, such as:

- Fat free or 1% dairy products
- Lean meats
- Fish and shellfish
- Skinless poultry
- Whole grain foods
- Fruits
- Vegetables

### Note:

Look for soft margarines (liquid or tub varieties) that are low in saturated fat and contain little or no trans-fat (another type of dietary fat that can raise your cholesterol level). For more information on choosing fats and oils, see the National Heart, Lung, and Blood Institute Tipsheet Fats and Oils to Choose at:

<http://www.nhibisupport.com/chd1/tipsheets/tipsheet-satfat.htm>.

Eat foods high in soluble fiber, such as:

- Oats
- Certain fruits (d.g., oranges and pears)
- Certain vegetables (e.g., Burssels sprouts and carrots)
- Dried peas and beans

## What NOT to eat

Limit foods high in cholesterol, such as:

- Liver and other organ meats
- Egg yolks
- Full-fat dairy products (National Heart, Lung, and Blood Institute 2001a; National Heart, lung, and Blood Institute, 2002m)

For more details on making wise food choices for the TLC diet, see the National Heart, Lung, and Blood Institute Tipsheet TLC Diet Daily Food Guide Food Groups at:

<http://www.nhibisupport.com/chd1/tipsheets/foodgroup.htm>.

Limit foods high in saturated fat, such as:

- High fat processed meats (e.g., sausage, hot dogs, bologna, salami) and fatty, untrimmed red meats
- Fried foods (American heart Association, 2002c)

## How to prepare food?

When preparing foods, the following cooking methods tend to produce lower saturated fat lev-

els:

**Bake**

**Broil**

**Microwave**

**Poach**

**Grill**

**Roast (when roasting, place meats on a rack so fat can drip away)**

**Lightly stir-fry or sauté in cooking spray, small amounts of vegetable oil, or reduced sodium chicken broth (National Heart, Lung, and Blood Institute, 2002K)**

## **Meat, Poultry, Fish, Dry Beans, Eggs, and Nuts**

To keep your blood cholesterol level low, choose only the leanest meats, poultry, fish, and shellfish.

Choose chicken and turkey without skin or remove skin before eating.

Some fish, like cod, have less saturated fat than either chicken or meat.

Since even the leanest meat, chicken, fish, and shellfish have saturated fat and cholesterol, limit the total amount you eat to 6 ounces or less per day.

### **Poultry**

In general, chicken and turkey are low in saturated fat, especially when the skin is removed.

When shopping for poultry remember:

You can buy chicken and turkey pieces with the skin already removed. Or buy pieces with the skin on and remove it yourself before eating. It is easy to do. Remember, the white meat itself always contains less saturated fat than the dark meat.

Limit goose and duck. They are high in saturated fat, even with the skin removed.

Try fresh ground turkey or chicken that is made from white meat like the breast.

Remember that some chicken and turkey hot dogs are lower in saturated fat and total fat than pork and beef hot dogs. There are also “lean” beef hot dogs and vegetarian (made with tofu) franks that are low in fat and saturated fat.

### **Fish and Shellfish**

When shopping for fish and shellfish remember that:

Most fish is lower in saturated fat and cholesterol than meat or poultry.

Shellfish varies in cholesterol content. Shellfish have little saturated fat and total fat. Even shrimp can be enjoyed occasionally on a Heart Healthy Diet provided you eat less than 300 milligrams of cholesterol a day. For example, 3 ounces of steamed shrimp has 167 milligrams of cholesterol

### **Meat Substitute**

Egg yolks are high in dietary cholesterol—each contains about 213 milligrams. So, egg yolks are limited to no more than 4 yolks per week. This includes the egg yolks in baked goods and processed foods. Check the label to see how much cholesterol the food contains or ask the bakery if the recipe uses whole eggs. Limit these types of foods for occasional treats.

Egg whites have no cholesterol, and you can substitute them for whole eggs in recipes—two egg



whites are equal to one whole egg. You can also use cholesterol-free egg substitute in place of whole eggs. In many baked goods, you can't tell the difference.

### **Milk, Yogurt, and Cheese Group**

Like high fat meats, regular dairy foods that have fat—such as whole and 2% milk, cheese, and ice cream—are also high in saturated fat and cholesterol. However, dairy products are an important source of nutrients. You should eat 2-3 servings per day of lowfat or nonfat dairy products. Here is a guide to buying low fat and nonfat dairy foods:

#### **Milk:**

Buy fat free and 1% milk rather than whole or 2% milk. Fat free and 1% milk have just as much or more calcium and other nutrients as whole milk—with much less saturated fat and cholesterol.

#### **Cheese**

When looking for hard cheeses, go for the versions that are “fat free,” “reduced fat,” “low fat,” or “part skim”. Choose varieties that have 3 grams of fat or less per ounce.

When looking for soft cheeses, choose low fat (1%) or nonfat cottage cheese, farmer cheese, or part-skim or light ricotta. Some of these cheeses have 3 grams of fat or less per ounce.

If you are watching your sodium intake, choose lower sodium cheeses. Read the label to compare the sodium content.

#### **Frozen Dairy Desserts**

Buy frozen desserts that are lower in saturated fat, like ice milk, low fat frozen yogurt, low fat frozen dairy desserts, fruit ices, sorbets, and popsicles.

#### **Other Dairy Foods**

Buy low or nonfat yogurt; like many other dairy foods, it is an excellent source of protein and calcium. Eat lowfat or nonfat yogurt alone or as a topping or in recipes. Try topping with fruit.

Try lowfat or nonfat sour cream or cream cheese blends. Many taste as rich as the real thing, but have less fat and calories.

#### **Fats and Oils**

You can help keep your blood cholesterol low when you replace saturated fats with unsaturated fat. Just be sure to limit the total amount of fats or oils to keep calories in check.

When buying fats and oils, remember to:

Choose liquid vegetable oils that are high in unsaturated fats—like canola, corn, olive, peanut, safflower, sesame, soybean, and sunflower oils.

Buy margarine made with unsaturated liquid vegetable oils as the first ingredient. Choose soft tub or liquid margarine or vegetable oil spreads.

Buy light or nonfat mayonnaise and salad dressing instead of the regular kind that are high

in fat. For example, two tablespoons of regular Italian dressing can add as many as 14 grams of fat.

### **Fruits and Vegetables**

You should be eating at least 3-5 servings of fruits and vegetables each day. Fruits and vegetables are very low in saturated fat and total fat, and have no cholesterol. A diet high in fruit and vegetables may also help keep cholesterol levels low. So, fruits and vegetables are great substitutes for foods high in saturated fat and cholesterol.

When shopping, remember to:

**Buy fruits and vegetables to eat as snacks, desserts, salads, side dishes, and main dishes**

**Add a variety of vegetables to meat stews or casseroles or make a vegetarian (meatless) main dish.**

**Wash and cut up raw vegetables (carrot, broccoli, cauliflower, lettuce, etc.) and store in the refrigerator for quick and easy use in cooking or snacking.**

**Serve fresh fruit for dessert or freeze (banana, berries, melon, grapes) for a delicious frozen treat.**

**Display fresh fruit in a bowl in the kitchen to make fruit easier to grab as a snack**

To keep naturally lowfat vegetables low in fat and saturated fat, season with herbs, spices, lemon juice, vinegar, fat free or lowfat mayonnaise or salad dressing.

### **Breads, Cereals, Rice, Pasta, and Other Grains**

Breads, cereals, rice, pasta, and other grains, and dry beans and peas are generally high in starch and fiber and low in saturated fat and calories. They also have no dietary cholesterol, except for some bakery breads and sweet bread products made with high fat, high cholesterol milk, butter and eggs.

Like fruits and vegetables, naturally low fat, low cholesterol breads and other foods in this group are also good choices. You should be eating 6-11 servings of foods from this group each day. If you have high triglycerides and /or low HDL, you should keep your carbohydrate intake below the maximum of 60% of total calories. You can choose a diet up to 35% fat, substituting unsaturated fat for saturated fat.

When buying foods from this group, remember to:

**Choose whole grain breads and rolls often. They have more fiber than white breads.**

**Buy dry cereals, most are low in fat. Limit the high fat granola, muesli, and oat bran types that are made with coconut or coconut oil and nuts, which increases the saturated fat content. Add fat free milk or 1% milk instead of whole or low fat (2% milk) to save saturated fat and cholesterol.**

**Buy pasta and rice to use as entrees. Hold the high fat sauces (butter, cheese, cream, white).**

**Limit sweet baked goods that are made with lots of saturated fat, mostly from butter, eggs, and whole milk such as croissants, pastries, muffins, biscuits, butter rolls, and doughnuts. These are also high in cholesterol.**

### **Sweets and Snacks**

Some sweets and snacks—like baked goods (cakes and cookies) cheese crackers, and some chips—often are high in saturated fat and cholesterol.

Here are some low fat sweets and snacks to buy and use only now-and-then:

- Angel food cake topped with fruit puree or fresh fruit slices
- Fat free or low fat brownies, cakes, cheesecake, cupcakes, and pastries
- Fat free or lowfat cookies like animal crackers, devil's food cookies, fig and other fruit bars, ginger snaps, and vanilla or lemon wafers.
- Frozen lowfat or nonfat yogurt, fruit ices, ice milk, sherbet, and sorbet.
- Gelatin desserts-watch the whipped cream.
- Graham crackers
- Puddings made with 1% or fat free milk.

Just remember that, while these treats may be low in fat, most are not low in calories. So choose them only every now-and-then, especially if you are trying to control your weight to improve your blood cholesterol levels.

Not all snack foods are high in saturated fat and cholesterol. Buy some of these low fat ones and keep them on hand for snack attacks:

- Bagels
- Bread sticks\*
- Ready-to-eat cereals without added sugar\*
- Frozen grapes or banana slices; or other fresh fruit
- Fruit leather or other dried fruit
- Low fat or fat free crackers\* like melba toast, rice cakes, rye crisp, and soda crackers
- No-oil baked tortilla chips\*
- Popcorn (air popped or "light")\*
- Pretzels\*
- Raw vegetables with nonfat or lowfat dip

\*If you are watching your sodium intake, be sure to look for low sodium or unsalted varieties.

## Exercise

It is generally recommended that you exercise 30 minutes aerobically daily (at least 5 days per week). The chart below is an example of calories used by a 150 pound person for 20 minutes of physical activity of different intensities.

Activity	Intensity	Calories Used
Non-competitive Volleyball	Moderate	70
Walking (3mph, 20 min. mile)	Moderate	81
Walking (4mph, 15 min. mile)	Moderate	94
Ping Pong	Moderate	94
Raking Leaves	Moderate	94
Social Dancing	Moderate	103
Lawn Mowing (push mower)	Moderate	103
Jogging (5mph, 12 min. miles)	Hard	167
Running (6mph, 10 min. mile)	Very Hard	231

## Non-Pharmaceutical (Natural and Alternative Supplements) that affect Cholesterols

Having several methods available to impact cholesterol metabolism is important. Research continues investigating the effectiveness and safety of herbal products in this setting.

### Policosanol:

It is derived from sugar cane wax and has been researched in depth over the last 10 years. These published studies have validated the safety and effectiveness of policosanol in lowering the LDL cholesterol and the prevention of oxidation of LDL cholesterol and, as a result, a reduction in the formation of atherosclerotic plaques. Policosanol also inhibits the formation of clots. The recommended dose is 10 mg nightly with food and may be increased to 20 mg nightly.

### References

- Stusser R, Batista J, Padron R, Sosa F, Perezto O. "Long-term therapy with policosanol improves treadmill exercise-ECG testing performance of coronary heart disease patients." *International Journal of Clinical Pharmacological Therapy* 1998 Sep;36(9):469-73
- "Sugar Cane Extracts Can Lower LDL Cholesterol, Report Cuban Researchers in Journal of Medicinal Food." *Business Wire* July 20, 2001
- Pons P, Rodriguez M, Robaina C, Illnait J, Mas R, Fernandez L, et al. Effects of successive dose increases of policosanol on the lipid profile of patients with type II hypercholesterolaemia and tolerability to treatment. *Int J Clin Pharmacol Res* 1994;14(1):27-33.
- Canetti M, Moreira M, Mas R, Illnait J, Fernandez L, Fernandez J, et al. A two-year study on the efficacy and tolerability of policosanol in patients with type II hyperlipoproteinaemia. *Int J Clin Pharmacol Res* 1995;15(4):159-65.
- Mas R, et al. 1999. Effects of policosanol in patients with type II hypercholesterolemia and additional coronary risk factors. *Clin Pharmacol Ther* 65:439-47.
- Castano G, Mas R, Fernandez JC, Illnait J, Fernandez L, Alvarez E. Effects of policosanol in older patients with type II hypercholesterolemia and high coronary risk. *J Gerontol A Biol Sci Med Sci* 2001;56(3):M186-92.
- Noa M, et al. 1998. Effect of olicosanol on damaged arterial wall induced by forceps in rabbits. *J Electron Microsc* 4:629-30.
- Negre-Aminou P, et al. 1996. Antiproliferative potencies of 6 vastatins in cultured human cells: involvement of the ras-mediated signaling pathway. *66th Cong Eur Atheroscler Soc* (July 13-17, Florence): 120.
- Castano G, Mas R, Fernandez L, Fernandez JC, Illnait J, Lopez LE, et al. Effects of policosanol on postmenopausal women with type II hypercholesterolemia. *Gynecol Endocrinol* 2000;14(3):187-95.
- Torres O, Agramonte AJ, Illnait J, Mas Ferreiro R, Fernandez L, Fernandez JC. Treatment of hypercholesterolemia in NIDDM with policosanol. *Diabetes Care* 1995;18(3):393-7.
- Crespo N, Illnait J, Mas R, Fernandez L, Fernandez J, Castano G. Comparative study of the efficacy and tolerability of policosanol and lovastatin in patients with hypercholesterolemia and noninsulin dependent diabetes mellitus. *Int J Clin Pharmacol Res* 1999;19(4):117-27.
- Castano G, Mas R, Fernandez L, Illnait J, Gamez R, Alvarez E. Effects of policosanol 20 versus 40 mg/day in the treatment of patients with type II hypercholesterolemia: a 6-month double-blind study. *Int J Clin Pharmacol Res* 2001;21(1):43-57.
- Noa M, et al. 1995. Effect of policosanol on lipofundin-induced atherosclerotic lesions in rats. *J Pharm Pharmacol* 47:289-91.
- Arruzazabala ML, et al. 2000. Protective effect of policosanol on atherosclerotic lesions in rabbits with exogenous hypercholesterolemia. *Braz J Med Biol Res* 33:835-40.
- Menendez R, et al. 1999. Oral administration of policosanol inhibits in vitro copper ion-induced rat lipoprotein peroxidation. *Physiol Behav* 67:1-7.
- Xu XP, et al. 1999. Oxidized low-density lipoprotein regulates matrix metalloproteinase-9 and its tissue inhibitor in human monocyte-derived macrophages. *Circulation* 99:993-8.
- Noa M, et al. 1996. Effect of policosanol on foam-cell formation in carrageenan-induced granulomas in rats. *J Pharm Pharmacol* 48:282-5.
- Lindstedt L, et al. 1999. matrix metalloproteinases-3, -7, and -12, but not -9, reduce high density lipoprotein-induced cholesterol efflux from human macrophage foam cells by truncation of carboxyl terminus of apolipoprotein A-I. Parallel losses of pre-beta particles and the high affinity component of efflux. *J Biol Chem* 274:22627-34.
- Aleman CL, et al. 1994. A 12-month study of policosanol oral toxicity in Sprague Dawley rats. *Toxicol Lett* 70:77-87.
- Rodriguez-echenique C, et al. 1994. Effects of policosanol chronically administered in male monkeys (*Macaca arctoides*). *Food Chem Toxicol* 32:565-75.
- Mas R, Rivas P, Izquierdo JE, et al. Pharmacoepidemiologic study of policosanol. *Curr Ther Res* 1999;60:458-67.
- Carbajal D. 1998. Interaction policosanol-warfarin on bleeding time and thrombosis in rats. *Pharmacol Res* 38:89-91.
- Molina V, et al. 1998. Effect of policosanol on arterial blood pressure in rats. Study of the pharmacological interaction with nifedipine and propranolol. *Arch Med Res* 29:21-4.
- Rodriguez MD, Garcia H. Teratogenic and reproductive studies of policosanol in the rat and rabbit. *Teratog Carcinog Mutagen* 1994;14:107-13.
- Rodriguez MD, Sanchez M, Garcia H. M Itigenerational reproduction study of policosanol in rats. *Toxicol Lett* 1997;90:97-106.
- Rodriguez MD, Garcia H. Eval ation of peri- and post-natal toxicity of policosanol in rats. *Teratog Carcinog Mutagen* 1998;18:1-7.

## Guggul:

It is a gum resin from the mukul myrrh tree. It helps lower cholesterol and blood pressure (originally used to treat obesity)

Although earlier studies conducted in India have not been able to find the exact action of guggul, studies conducted in the U.S (University of Texas and Baylor College) established that Guggul extract, blocks the activity of a receptor in the liver's cells called Farnesoid X Receptor (FXR). Analysis of guggul gum shows the active ingredients are plant sterones or "guggulsterones". In addition, the data supports the idea that the two compounds, Z- and E-guggulsterones, work with the body to significantly lower serum triglycerides and cholesterol as well as LDL and VLDL cholesterol (the "bad" cholesterol) as it raises levels of HDL cholesterol (the "good" cholesterol). Since guggul is also an antioxidant, guggulsterones also keep LDL cholesterol from oxidizing, which protects against atherosclerosis. Guggul has also been shown to reduce the stickiness of platelets--another effect that lowers the risk of coronary artery disease.

## References

- Satyavati, G.V., "Gum guggul (Commiphora mukul - The success story of an ancient insight leading to a modern discovery", *Indian J. Med. Res.*, April, 1988, 327-335.
- Satyavati, G.V., Effect of an indigenous drug on disorders of lipid metabolism with special reference to atherosclerosis and obesity (Medoroga), MD thesis (Doctor of Ayurvedic Medicine), Banaras Hindu University, Varanasi, India, 1966.
- Verma, S.K. and Bordia, A., "Effect of Commiphora mukul (gum guggulu) in patients of hyperlipidemia with special reference to HDL-cholesterol.", *Indian J. Med. Res.*, April, 1988, 356-360.
- Sidhu, L.S., Keertisharma, Puri, A.S. and Prakash, S., "Effect of gum guggul on body weight and subcutaneous tissue folds", *J. Res. Indian Med. Yoga Homoeo. II* (1976)16.
- Sastry, V.V.S., Experimental and clinical studies on the effect of oleogum resin of Commiphora mukul Engl. on thrombotic phenomena associated with hyperlipaemia (Snehavyapat), M.D. thesis (Doctor of Ayurvedic Medicine), Banaras Hindu University, Varanasi, 1967.
- Werbach, M.R. and Murray, M.T., *Concise Materia Medica, Gugulipid (commiphora mukul)*, Botanical Influences on Illness, Third Line Press, Tarzana, CA, 1994:24.
- Nityanand, S. et al., "Clinical trials with Gugulipid: A new hypolipidemic agent", *J Assoc. Phys. India*, 37(5):323-328, 1989.
- Tripathi, Y.B., et al, "Thyroid Stimulatory Action of (Z)-Guggulsterone: Mechanism of Action", *Planta Medica*, 1988;4:271-277.
- Rombi, Max, *Phytotherapy, a Practical Handbook of Herbal Medicine*, Herbal Health Publishers Limited, Surrey, UK, 1988:60.
- Andrew Chevallier, *The Encyclopedia of Medical Plants*, DK Publishing, 1996; p. 84
- Nancy Ross Flanigan, *A Healthy Me*, Blue Cross Blue Shield of Massachusetts, 2001
- Robert J. Huskey, *Sex and Cholesterol*, Human Biology Web Site, July 11, 1997
- Singh BB, Mishra L, Aquilina N, Kohlbeck F., *Usefulness of Guggul on Osteoarthritis of the Knee*, PubMed National Library of Medicine
- Thappa DM, Dogra J., *Nodulocystic acne: oral gugulipid versus tetracycline*. PubMed National Library of Medicine, Oct. 1994
- Edwin S. Geffner, *Compendium of Drug Therapy*, Biomedical Information Corporation

## Pantethine:

Pantethine is the active form of pantothenic acid. It has been shown to significantly reduce serum triglycerides, total cholesterol, and LDL-cholesterol (the so-called "bad cholesterol") levels while increasing HDL ("good cholesterol") levels in several clinical trials. Pantethine has the advantage of being an effective treatment for high cholesterol while avoiding the undesirable side effects of synthetic lipid-lowering drugs. In fact, there appear to be no toxicity or side effects from pantethine, making an attractive and natural treatment alternative. Pantethine has been used for the past 30 years in Japan, where it is approved as a pharmaceutical agent for the purpose of increasing HDL-C, the "good cholesterol" needed by the body to maintain a healthy heart.

## References

- Binaghi P, Cellina G, Lo Cicero G, et al. "Evaluation of the cholesterol-lowering effectiveness of pantethine in women in perimenopausal age." *Minerva Med* 1990;81:475-479.
- Schwabedal PE, Pietrzik K, Wittkowski W. "Pantothenic acid deficiency as a factor contributing to the development of hypertension." *Cardiology* 1985;72 Suppl 1:187-9
- Bertolini S, Donati C, Elicio N, Daga A, Cuzzolaro S, Marcenaro A, Saturnino M, Balestreri R, "Lipoprotein changes induced by pantethine in hyperlipoproteinemic patients: adults and children." *Int J Clin Pharmacol Ther Toxicol* 1986 Nov;24(11):630-7
- Wells, Ken. "Cholesterol" *Gale Encyclopedia of Alternative Medicine*. Gale Group, 2001.
- Binaghi P, Cellina G, Lo Cicero G, Bruschi F, Porcaro E, Penotti M. "Evaluation of the cholesterol-lowering effectiveness of pantethine in women in perimenopausal age." *Minerva Med* 1990 Jun;81(6):475-9
- Nagieli-Ostaszewski I, Lau-Cam CA. "Protection by pantethine, pantothenic acid and cystamine against carbon tetrachloride-induced hepatotoxicity in the rat." *Res Commun Chem Pathol Pharmacol* 1990 Feb;67(2):289-92

- Osono Y, Hirose N, Nakajima K, Hata Y. "The effects of pantethine on fatty liver and fat distribution." *J Atheroscler Thromb* 2000;7(1):55-8
- Vecsei L, Widerlov E, Ekman R, Alling C. "Cysteamine and pantethine effects on passive avoidance behavior, shuttle box learning, open-field activity, striatal catecholamines and somatostatin." *Arch Int Pharmacodyn Ther* 1989 May-Jun;299:14-27
- Morisaki N, Matsuoka N, Shirai K, Sasaki N, Saito Y, Kumagai A. "Effect of pantethine on fatty acid oxidation in microvessels of rat brain." *Tohoku J Exp Med* 1983 Sep;141(1):41-5
- Haslock DI, Wright V, "Pantothenic acid in the treatment of osteoarthritis." *Rheumatol Phys Med* 1971 Feb;11(1):10-3
- Mann, Denise. "Yes, you can prevent heartburn." *Better Nutrition* Feb, 1999
- Watanabe A Hobara N Kobayashi M Nakatsukasa H Nagashima H "Lowering of blood acetaldehyde but not ethanol concentrations by pantethine following alcohol ingestion: different effects in flushing and nonflushing subjects." In: *Alcohol Clin Exp Res* (1985 May-Jun) 9(3):272-6
- Butler JD Zatz M Pantethine and cystamine deplete cystine from cystinotic fibroblasts via efflux of cysteamine-cysteine mixed disulfide. In: *J Clin Invest* (1984 Aug) 74(2):411-6
- Wittwer CT Gahl WA Butler JD Zatz M Thoene JG Metabolism of pantethine in cystinosis. In: *J Clin Invest* (1985 Oct) 76(4):1665-72
- Vecsei L Widerlov E Preclinical and clinical studies with cysteamine and pantethine related to the central nervous system. In: *Prog Neuropsychopharmacol Biol Psychiatry* (1990) 14(6):835-62
- Watanabe A Hobara N Kobayashi M Nakatsukasa H Nagashima H Lowering of blood acetaldehyde but not ethanol concentrations by pantethine following alcohol ingestion: different effects in flushing and nonflushing subjects. In: *Alcohol Clin Exp Res* (1985 May-Jun) 9(3):272-6
- Arsenio L, Bodria P, Magnati G, Strata A, Trovato R. "Effectiveness of long-term treatment with pantethine in patients with dyslipidemia." *Clin Ther* 1986;8(5):537-45
- Avogaro P, Bon GB, Fusello M. "Effect of pantethine on lipids, lipoproteins and apolipoproteins in man." *Curr Ther Res* 1983;33:488-93.
- Maggi GC, Donati C, Criscuoli G. "Pantethine: a physiological lipomodulating agent, in the treatment of hyperlipidemias." *Curr Ther Res* 1982;32:380-6.

## Garlic

In a double-blind placebo-controlled study that followed 152 individuals for 4 years, standardized garlic powder at a dosage of 900 mg daily significantly slowed the development of atherosclerosis. (Koscielny J, Klussendorf D, Latza R, et al. The antiatherosclerotic effect of *Allium sativum*. *Atherosclerosis*. 1999;144:237–249.) In another study, 432 individuals who had suffered a heart attack were given either garlic extract or no treatment over a period of 3 years. The results showed a significant reduction of second heart attacks and about a 50% reduction in death rate among those taking garlic. (Bordia A. Garlic and coronary heart disease. The effects of garlic extract therapy over three years on the reinfarction and mortality rate [translated from German]. *Dtsch Apoth Ztg*. 1989;129 (suppl 15):16–17.)

## Omega-3 fatty acids

Dr. Fran Hu of the Harvard School of Public Health reviewed data on 84,688 female nurses, ages 34 to 59, who were part of the Nurses' Health Study over 16 years. They found that high consumption of fish (4-5 times a week) cut the risk of dying from heart disease by 45 percent compared to women who rarely ate fish. Another study published in *The New England Journal of Medicine* compared 94 men who died suddenly to 181 other men. Men with the highest levels of omega-3 fatty acids had an 81 percent lower risk of dying suddenly than men with the lowest levels. According to Dr. JoAnn Manson of Boston's Brigham and Women's Hospital, "the fat in fish actually lowers cholesterol, helps prevent blood clots that form in heart attacks and lessens the chances for the irregular heart beats that cause about 250,000 sudden deaths a year." If you don't like fish or have allergies to certain kinds of fish, supplements are very effective as shown by the study published in the American Heart Association's journal *Circulation*. Participants who took one gram daily of an omega-3 fatty acid supplement reduced their risk of sudden cardiac death by 42 percent.

## **Psyllium**

Psyllium is native to Iran and India. The seeds are primarily used in traditional herbal medicine, which is a common ingredient in bulk laxative products. Studies have shown that psyllium found in supplements can lower LDL cholesterol. This study showed improvement in both children and adults. This benefit is believed to come from the soluble fiber component of psyllium.

Other forms of natural herbs and supplements believed to help reduce LDL cholesterol include:

- Vitamin E and C
- Green Tea
- Licorice Extract
- Aspirin (80 mg a couple of times per week)

Extra Virgin Oil (1 tablespoon daily)