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NUTRITION AND HEALTH INFO SHEET

Cholesterol

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SOME FACTS ABOUT CHOLESTEROL

More than 102 million Americans have high cholesterol, defined as above 200 mg/dl (milligrams per deciliter). A great portion of this group has cholesterol values that pose a high risk for developing atherosclerosis, which can lead to coronary heart disease.¹

What is cholesterol?

Cholesterol is a fatty substance (lipid) that has a waxy appearance and is found in the body cells of humans and animals, particularly the brain, kidneys, and liver. High amounts of cholesterol in our diets and blood can be viewed negatively because it is associated with coronary heart disease.¹ However, it is important to recognize that our bodies need cholesterol in many different ways.

How does the body use cholesterol?

The body uses cholesterol in the following ways:

- to form hormones such as estrogen and testosterone
- to keep the structure of cells in the body intact
- to make the active form of vitamin D
- to make bile acids which are compounds necessary for fat digestion²

What are the two sources of cholesterol?

Diet

Dietary cholesterol comes only from animal sources, such as dairy products, egg yolks, meats, poultry, and seafood. No vegetables, fruits, or grains contain cholesterol.¹ Baked products may contain some cholesterol if they contain egg yolks, cheese, milk, butter, or lard. In milk products the majority of the cholesterol is in the fat, so low-fat or skim milk contains less cholesterol than whole-milk products.²

Body

No dietary requirement exists for cholesterol because the body can make enough cholesterol to meet its needs.¹ The body can make cholesterol from compounds produced by the breakdown of protein, carbohydrates, or fats.³ The liver is the organ responsible for about 10 percent of cholesterol synthesis, and its function has a significant impact on blood cholesterol levels. However, some people lack the ability to control the amount of cholesterol they make and as a result they are prone to high levels of cholesterol in their blood stream.²

What are the different types of cholesterol found in the body?

Cholesterol, triglycerides (TG), and other fats travel through the bloodstream packaged with large molecules called lipoproteins. These packages differ from one another by the amounts of protein, fat, and related compounds they contain.⁴ Cholesterol is

carried in the blood by two different types of lipoproteins: high-density lipoprotein (HDL) and low-density lipoprotein (LDL).

Three main lipoproteins exist in our blood:

High-density lipoprotein

HDL is also known as the “good” cholesterol since it is believed to carry cholesterol out of the blood vessels to the liver, where it is removed from the body.

Low-density lipoprotein

This is the largest portion of blood cholesterol.⁴ Because this form of cholesterol may contribute to the formation of plaque in blood vessels, LDL is often referred to as the “bad” cholesterol.

Very low-density lipoprotein (VLDL)

VLDL is very high in triglycerides and does not carry cholesterol in the blood.

What are the guidelines for cholesterol levels?

For adults, total blood cholesterol below 200 mg/dl is desirable, because these levels are associated with a relatively low risk of coronary heart disease. Levels in the range of 200–239 mg/dl are considered “borderline,” and total cholesterol levels above 240 mg/dl are associated with high risk and the need for treatment. Coronary heart disease (CHD) risk is much greater at serum lipid levels above 200–239 mg/dl due to elevations in LDL-cholesterol. In several studies, high HDL values (above 60 mg/dl) actually seem to be protective and have been associated with a lower incidence of heart disease.⁴ (See the metric conversion table at the end of this publication.)

What are the current diagnostic values for serum lipids?¹

	Desirable (mg/dl)	Borderline (mg/dl)	High risk (mg/dl)
Total cholesterol	<200	200–239	>240
LDL-cholesterol	<130, but <100 optimal	130–159	>160
HDL-cholesterol	>60, but 40–59 normal range	<40 for men <50 for women	<35
TG	<150	150–199	>200

How can total cholesterol and LDL-cholesterol levels be reduced?

The American Heart Association recommends that dietary cholesterol be controlled by

- limiting total cholesterol to an average of 300 mg or less per day
- limiting total fat to no more than 30 percent and saturated fat to no more than 10 percent of total calorie intake
- eating 5 to 9 servings of vegetables, fruits, and grain products, which have been shown to lower serum cholesterol levels¹

A physician should be consulted in order to treat each individual in regard to cholesterol levels. It is recommended that blood cholesterol levels be tested every 5 years after the age of 20. If blood cholesterol is found to be high, dietary measures can be taken to try to reduce the levels. If after several months dietary modifications have minimal impact on the serum cholesterol levels, a physician may prescribe a cholesterol-lowering drug, particularly if there are other risk factors or symptoms of CHD.

How can HDL-cholesterol be increased?

Excess body weight and cigarette smoking are associated with low HDL-cholesterol levels. Exercise can help raise HDL-cholesterol. The exercise doesn't have to be strenuous; just walking a mile or two or even gardening several times a week can help.¹ Since the dietary intake of fat, saturated fat, and cholesterol can influence the risk of cardiovascular disease, the table below includes values for each of these categories.^{1,5}

How can cholesterol levels be reduced?

The following list offers dietary suggestions for reducing cholesterol:

- Eat 5 to 9 servings of vegetables and fruits, and 6 to 11 servings of grain products.¹
- Use lemon juice, salsa, or small amounts of salad dressing on salads.²
- Use moderate amounts of spreads such as butter, margarine, and mayonnaise or oils when cooking.²
- Regularly check labels on foods to see how much fat and saturated fat are being consumed.²
- Trim fat from meat; take skin off poultry.²
- Occasionally, eat cooked dry beans and peas or other vegetarian dishes instead of meat.²
- Limit the use of egg yolks and organ meats, since they are very high in cholesterol.²
- Choose skim or low-fat milk and fat-free or low-fat yogurt and cheese.²
- Steam, boil, or bake vegetables.²
- Vegetables can be seasoned with herbs and spices, which contain no calories, instead of using sauces, butter, or margarine.²
- Substitute plain low-fat yogurt for sour cream.²

What is the cholesterol, total fat, and saturated fat content of some common foods?

	Cholesterol (mg)	Total fat (g)	Saturated fat (g)
Dairy products			
milk, 1 cup			
3.25% fat	34.2	8.2	5.0
2% fat	19.5	4.7	2.9
1% fat	9.8	2.6	1.6
skim (nonfat)	4.9	0.4	0.3
yogurt, 1 cup			
nonfat plain	4.9	0.4	0.3
low-fat, plain	14.7	3.8	2.5
low-fat, fruit flavored	12.3	2.8	1.9
Fats, oils, sweets			
butter, 1 tbsp	31.1	11.5	7.2
cheesecake (9 in), no bake 1/12 (99g)	28.7	12.6	6.6
cream cheese, 1 tbsp	16.0	5.1	3.2
margarine, 1 tsp	0.0	3.8	0.7
mayonnaise (regular), 1 tbsp	8.1	11.0	1.6
sour cream, 1 tbsp	5.3	2.5	1.6
Meat, poultry, fish, and eggs			
beef liver, braised, 3 oz	330.7	4.2	1.6
chicken, light and dark meat, roasted			
with skin (178g)	156.6	24.2	6.7
without skin (146g)	129.9	10.8	3.0
lean only	58.7	4.2	1.5
eggs, large, cooked, 1			
yolk	212.0	5.3	1.6
white	0.0	0.0	0.0
ground beef, cooked, 3 oz patty			
regular (75% lean & 25% fat)	76.7	15.9	6.1
extra lean (95% lean & 5% fat)	64.6	5.6	2.4
prime rib, 3 oz	72.3	28.2	11.7
shrimp, steamed			
4 large	42.9	0.2	0.1
tuna, canned, 3 oz			
in oil	26.4	6.9	1.4
in water	35.7	2.5	0.7

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4. Mahan, L. K., and S. Escott-Stump. 2000. Krause's food, nutrition, and diet therapy. 10th ed. Philadelphia: W. B. Saunders.
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Metric Conversions

English	Conversion factor for English to Metric	Conversion factor for Metric to English	Metric
grain	64.80	0.015	milligram (mg)
fluid ounce (fl oz)	29.57	0.034	milliliter (ml)
fluid ounce (fl oz)	2.96	0.0034	deciliter (d)
ounce (oz)	28.35	0.035	gram (g)

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