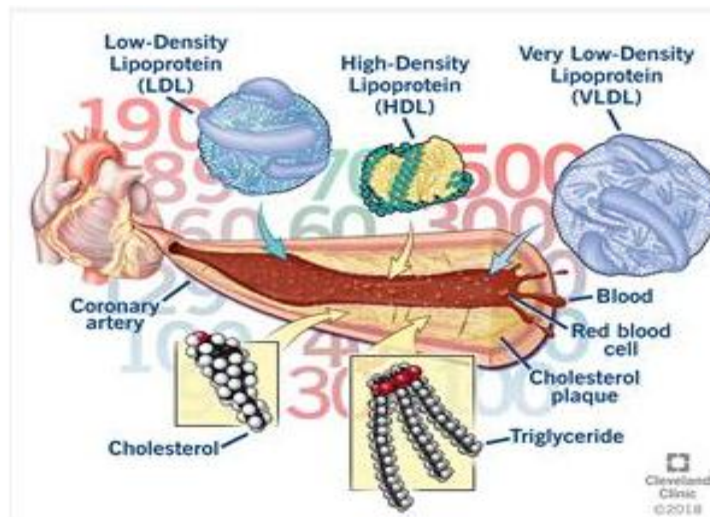




Estimation of total cholesterol

Total cholesterol is the total amount of cholesterol in your blood. Your total cholesterol includes low-density lipoprotein (LDL, or “bad”) cholesterol and high-density lipoprotein (HDL, or “good”) cholesterol. Cholesterol is a waxy, fat-like substance found in every cell in your body.



Your body needs some cholesterol to make hormones, vitamin D, and substances that help you digest foods. Your body makes all the cholesterol it needs. Cholesterol is also found in foods from animal sources, such as egg yolks, meat, and cheese.

Cholesterol is different from most tests in that it is not used to diagnose or monitor a disease but is used to estimate risk of developing a disease — specifically heart disease.

Types of Cholesterol

There are three type of cholesterol (HDL, LDL, and VLDL) are lipoproteins. They are a combination of fat (lipid) and protein. The lipids need to be attached to the



proteins so they can move through the blood. Different types of lipoproteins have different purposes:

- **HDL stands for high-density lipoprotein.** It is sometimes called "good" cholesterol because it carries cholesterol from other parts of your body back to your liver. Your liver then removes the cholesterol from your body.
- **LDL stands for low-density lipoprotein.** It is sometimes called "bad" cholesterol because a high LDL level leads to the buildup of plaque in your arteries.
- **VLDL stands for very low-density lipoprotein.** Some people also call VLDL a "bad" cholesterol because it too contributes to the buildup of plaque in your arteries. But VLDL and LDL are different; VLDL mainly carries triglycerides and LDL mainly carries cholesterol.

Functions of Cholesterol

In plasma membrane

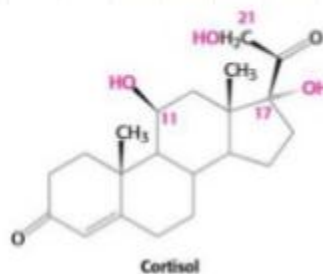
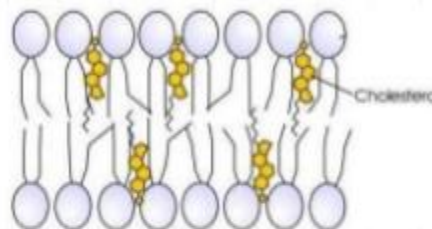
- Membrane fluidity
- Lipid rafts

Precursor molecule of:

- Steroid hormones
- Vitamin D
- Bile Acids

Nerve conduction

Signal transduction

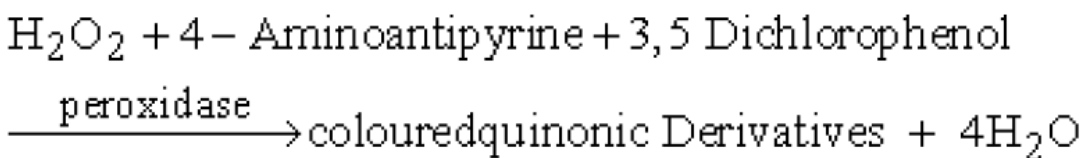
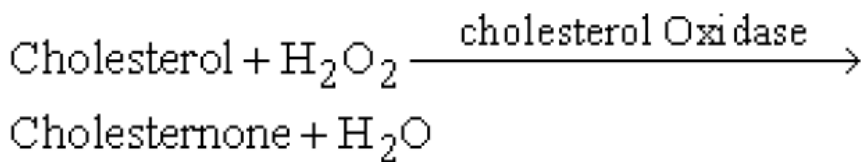
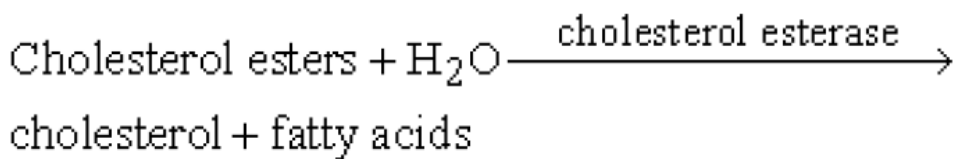




Important note:

1. It is not necessary to fast when you have a cholesterol test.
2. Cholesterol is high during pregnancy. Women should wait at least six weeks after the baby is born to have cholesterol measured.
3. Some drugs that are known to increase cholesterol levels include anabolic steroids, beta blockers, epinephrine, oral contraceptives and vitamin D.

Principle:



The intensity of the color formed is proportional to the cholesterol concentration in the sample.

Cholesterol levels:

- ❖ Desirable: Cholesterol below 200 mg/dL is considered desirable and reflects a low risk of heart disease.



- ❖ Borderline: 200-239 mg/dl
- ❖ High Risk: Cholesterol above 240 mg/dL is considered high risk.

Causes of high cholesterol level (Hypercholesterolemia)

Many factors can increase your chances of having heart problems or a stroke if you have high cholesterol.

These include:

- ✚ An unhealthy diet – in particular, eating high levels of saturated fat
- ✚ Smoking – a chemical called acrolin, found in cigarettes, stops HDL transporting cholesterol from fatty deposits to the liver, leading to narrowing of the arteries (atherosclerosis)
- ✚ A number of other conditions can also increase cholesterol levels including diabetes, high blood pressure (hypertension), obesity, alcohol use, monoclonal gammopathy, dialysis therapy, nephrotic syndrome, hypothyroidism, Cushing's syndrome and anorexia nervosa
- ✚ Having a family history of stroke or heart disease

Causes of low cholesterol (Hypocholesterolemia)

- ✚ Statins
- ✚ Hyperthyroidism, or an overactive thyroid gland
- ✚ Adrenal insufficiency
- ✚ Liver disease
- ✚ Malabsorption (inadequate absorption of nutrients from the intestines), such as in celiac disease
- ✚ Malnutrition



Dentistry Department

Title of the lecture: Estimation of total cholesterol

Dr.Nada Hasan

NadaHasan@mustaqbal-college.edu.iq

- + Abetalipoproteinemia - a rare genetic disease that causes cholesterol readings below 50 mg/dl. It is found mostly in Jewish populations

- + Hypobetalipoproteinemia - a genetic disease that causes cholesterol readings below 50 mg/dl[11]
- + Manganese deficiency
- + Smith–Lemli–Opitz syndrome
- + Marfan syndrome
- + leukemias and other hematological diseases