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CHOLESTEROL

What is cholesterol?

Cholesterol is a lipid that, in reasonable amounts, is essential for good health. It is a basic building material of cell membranes, it is found in all tissues of the body, it is a component of bile, it is necessary in the synthesis of sex hormones, and in the formation of vitamin D in the skin. Triglycerides serve as fuel but also as energy storage in fat tissue.

When can it be dangerous?

Cholesterol starts to become dangerous when it circulates in our blood in a much larger amount than we need**.** Excess amount of cholesterol can be deposited in various parts of the artery wall causing progressive narrowing of the lumen, specifically arteriosclerosis and its effects: heart attack, stroke, abdominal aortic aneurysm, carotid arteries, narrowing of the arteries, obstruction of the arteries etc.

The deepest cause of most heart diseases and strokes is atherosclerosis, a narrow of the arteries caused by the deposition of a yellow, fatty substance in the inner wall of the arteries. Atherosclerosis consists mainly of cholesterol.

Which is the HDL and LDL?

Cholesterol does not circulate freely in the blood but is bound and transported by special proteins called lipoproteins. The main lipoproteins are:

1. High-density lipoprotein (HDL), or "good" cholesterol, removes cholesterol from the walls of arteries and returns it to the liver, where it is excreted, reducing the risk of coronary heart disease or heart attack.
2. Low density lipoprotein (LDL) or "bad" cholesterol, which is also the main carrier of cholesterol in the blood: LDL carries cholesterol from the liver to peripheral tissues and "sticks" it to the walls of arteries. The severity of atherosclerosis and the risk of developing coronary heart disease increases with the increase of total and LDL cholesterol in the blood.

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TRIGLYCERIDES

Triglycerides are the most common form of body fat. They usually come from food or are synthesized in our own body. The calories that we get from a meal and are not immediately used by the tissues for energy production, they are converted to triglycerides and transported to fat cells, where they are stored. Hypertriglyceridemia (the sudden increase in the value of triglycerides in the blood above normal level) in combination with high LDL (bad cholesterol) or low HDL (good cholesterol) is associated with lipid deposition in the artery walls.

There is evidence-based data to prove that high plasma HDL cholesterol levels are associated with a reduced incidence of atherosclerosis. Specifically, HDL value> 60 mg / dl tends to reduce the risk of a high LDL value. In contrast, low HDL levels are a strong, independent risk factor for developing cardiovascular problems. In general, the lower the HDL concentration, the greater the risk of atherosclerosis.

NUTRITIONAL RECOMMENDATIONS FOR THE TREATMENT OF HYPERLIPIDEMES

Maintaining a healthy weight [BMI 20-25kg / m^2, waist circumference <94 cm (men) and <80 cm (women)] and adopting a healthy diet with emphasis on high intake of whole grains products, fruits, vegetables , legumes and fish are important in treating dyslipidemias.

Reducing the intake of trans fatty acids and saturated fatty acids are the main interventions for the intake of cardiovascular disease.

INCREASE THE DIETARY CONSUMPTION IN:	
Monounsaturated fatty acids **Up to 20% calories**	Olive oil, rapeseed oil (canola oil), peanut oil, avocado, nuts
Polyunsaturated fatty acids **And especially omega-3 fatty acids**	Linseed oil and flaxseed, soybean oil, walnuts and coconut oil, egg yolk, cod liver oil, linseed oil, avocado, oilseeds (for example sunflower seed) Fish (especially those that includes lots of fats such as sardines, cod, salmon, anchovies, etc.) are valuable sources of omega-3 fatty acids. Other sources of omega-3 fatty acids are linseed oil (a source of α-linolenic acid), nuts, eggs fortified with omega-3 fatty acids, etc.

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Note:

Most nuts are a rich source of monounsaturated fatty acids.

- Walnuts have a higher proportion of polyunsaturated fatty acids than saturated and monounsaturated fats and contain α-linolenic acid which helps control cholesterol.
- They have a high content of beneficial nutrients to reduce the risk of coronary heart disease such as: fiber, vitamin E, folic acid, potassium, phytochemicals
- They reduce by 30-50% the risk for cardiovascular diseases
- We must not forget! It is good to eat a handful (30g) of nuts

REDUCE THE DIETARY CONSUMPTION IN:	
Saturated fatty acids <10% of total energy intake	They are usually contained in all foods that contain fat. They are found in high proportion compared to monounsaturated and polyunsaturated foods like: coconut oil (saturated fat content is over 80%), palm oil, whole milk, lean meats, butter, creams (eg sour cream), pastries and baked products (commercial or homemade) such as cakes, biscuits, croissants etc.
Trans fatty acids **Avoidance is recommended**	There are trans fatty acids that are found "naturally" in some foods but also those that are "industrially produced". Industrially produced trans fats are formed during the partial hydrogenation of vegetable oils and constitute about 80% of dietary fat intake. It is recommended to read the list of ingredients on food labels. Foods that usually contain trans fats are commercial fried foods, popcorn for microwave, frozen commercial products made with hydrogenated fatty acids, frozen fish sticks, etc.
Dietary cholesterol*** **(dietary intake must not exceed >200 mg)**	Dairies, meat (especially liver), egg yolk, poultry

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******CONTENT OF CHOLESTEROL IN VARIOUS FOODS***

FOODS	CHOLESTEROL (mg)
Whole raw egg	225 mg
Boiled shrimps (125 gr)	250 mg
Offal (Avoidance is recommended)	>400 mg
Boiled or Cooked Chicken (125 gr)	100 mg
Beef fillet (125 gr)	125 mg
Pork meat (125 gr)	137 mg
Shellfish (mussels etc.) (125 gr)	125 mg
Shellfish (raw oysters etc.) (125 gr)	62,50 mg
Roast duck (125 gr)	200 mg

It is also recommended to increase the intake of edible fiber (especially soluble) due to their hypocholesterolemic action: Rich sources are whole grains products (especially oats and barley which are a source of soluble fiber), legumes, fruits and vegetables.

In case of alcohol consumption, as long as the triglyceride values are not increased, limited consumption is allowed. The consumption of wine is highly recommended due to its content of polyphenols which are antioxidant compounds that act as a shield in our body.

It is also recommended to avoid exposure to smoke of any kind. Smoking is the most potent risk factor for developing atherosclerosis of all known risk factors. Clinically, smoking lowers HDL cholesterol while increasing LDL cholesterol levels, blood glucose levels and blood pressure. In addition, smoking acts synergistically with other risk factors, significantly increasing the overall risk of developing atherosclerosis.

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