

**МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ  
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ  
КАФЕДРА ІНОЗЕМНИХ МОВ  
ЛІНГВІСТИЧНИЙ НАВЧАЛЬНО-МЕТОДИЧНИЙ  
ЦЕНТР**

**МАТЕРІАЛИ  
X ВСЕУКРАЇНСЬКОЇ НАУКОВО-ПРАКТИЧНОЇ  
КОНФЕРЕНЦІЇ СТУДЕНТІВ, АСПІРАНТІВ ТА  
ВИКЛАДАЧІВ  
ЛІНГВІСТИЧНОГО НАВЧАЛЬНО-МЕТОДИЧНОГО  
ЦЕНТРУ КАФЕДРИ ІНОЗЕМНИХ МОВ**

**“WITH FOREIGN LANGUAGES TO MUTUAL  
UNDERSTANDING, BETTER TECHNOLOGIES AND  
ECOLOGICALLY SAFER ENVIRONMENT”**

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## INHIBITORS FOR CHOLESTEROL REDUCTION

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Cardiovascular diseases (CVDs) are a group of disorders of the heart and blood vessels. Many of them involve atherosclerosis, which causes most heart attacks and strokes. Cardiovascular diseases are the leading cause of death globally. Nearly 2,200 Americans die of cardiovascular disease daily, with an average of one death occurring every 40 seconds. However, elevated levels of certain forms of cholesterol are some of the primary drivers in the development of some CVDs.

Cholesterol is an organic lipid molecule present in cells throughout the body, serves many important functions. It is an essential structural component of all animal cell membranes. Within cells, cholesterol is the precursor molecule in several biochemical pathways. Normally, the liver makes all the cholesterol the body needs. Eating habits and other lifestyle factors play a large role in determining the risk of heart disease and may prevent or even reverse this condition.

The bloodstream carries cholesterol throughout the body via special carriers called lipoproteins. The two major lipoproteins are low-density lipoprotein cholesterol—LDL-C—and high-density lipoprotein cholesterol—HDL-C. LDL tends to collect in the arteries, promoting atherosclerosis. Atherosclerosis starts when the endothelium becomes damaged, allowing LDL cholesterol to accumulate in the artery wall. The body sends macrophage white blood cells to clean up the cholesterol, but sometimes the cells get stuck there at the affected site. Over time this results in plaque being built up. This constricted circulation leads to less oxygen for the heart muscle, resulting in chest pain (angina), usually following exercise or excitement. It also stresses the heart muscle to the point of failure, which is what happens during a heart attack.

There are effective statin medications that can change blood cholesterol levels. Statins, first introduced in 1987, work directly to

block HMG Co-A reductase, a key enzyme the liver needs to manufacture cholesterol. Blockage of this enzyme results in depletion of cholesterol in the liver and an increase in the hepatic ability to remove cholesterol from the circulating blood. As a result, cholesterol levels drop and the lipid profile improves.

But there are some people who still don't get enough reduction in their LDL levels continue having cardiovascular events, even though taking full doses of the statins.

A rare genetic mutation called autosomal dominant hypercholesterolemia, which causes high LDL cholesterol levels, eventually led to a search for a new target for cholesterol lowering. Some people with an underactive copy of the PCSK9 gene, which regulates the body's LDL receptors, were found to have LDL levels of 15, instead of well over 100. They also had low levels of cardiovascular disease. And this led to the hunt for a drug that could mimic the effects of this.

There are now the PCSK9 inhibitors, a new class of cholesterol-lowering drugs that are self-injected once or twice a month. The medications work on the cholesterol receptor in the liver by a mechanism that is similar to statins, yet completely unique. The drugs not only reduce LDL cholesterol levels dramatically, but also take them to super low levels never seen before. There are now several PCSK9 drugs currently in various stages of development.

In sum, we would like to say that maintenance of cholesterol level is a main part of the homeostasis. A normal level of cholesterol in our organism is 5.0 mmol/l. An increased level of cholesterol can lead to the development of atherosclerosis. This disease is very common among adult people. The inculcation of new method among wide range of people with predisposition to atherosclerosis can help to prevent the development of this disease.