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Inspired Functional Ingredients to Innovate and Differentiate Your Brand

Products by Ecovatec Solutions Inc.



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High Density Lipopeptides (HDL^p)



EcovaPure™ HDL^p



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High Density Lipopeptides (HDL^p)

- High density lipoproteins (HDL- the “good” cholesterol) remove low-density lipoproteins (LDL- the “bad cholesterol”) and macrophages from blood and artery walls.
- Recent advances in both animal studies and clinical trials indicate that increasing HDL levels results in additional benefits to those achieved by reducing LDL levels using statins
- HDL has also demonstrated anti-adhesive properties, preventing the colonization of pathogens like E. coli and Salmonella typhimurium.
- These HDL’s naturally occur in egg yolk and have been demonstrated to increase HDL in humans.
- Ecovatec’s proprietary processes effectively isolate the HDL and remove most of the LDL and cholesterol.



EcovaPure™ HDL^p



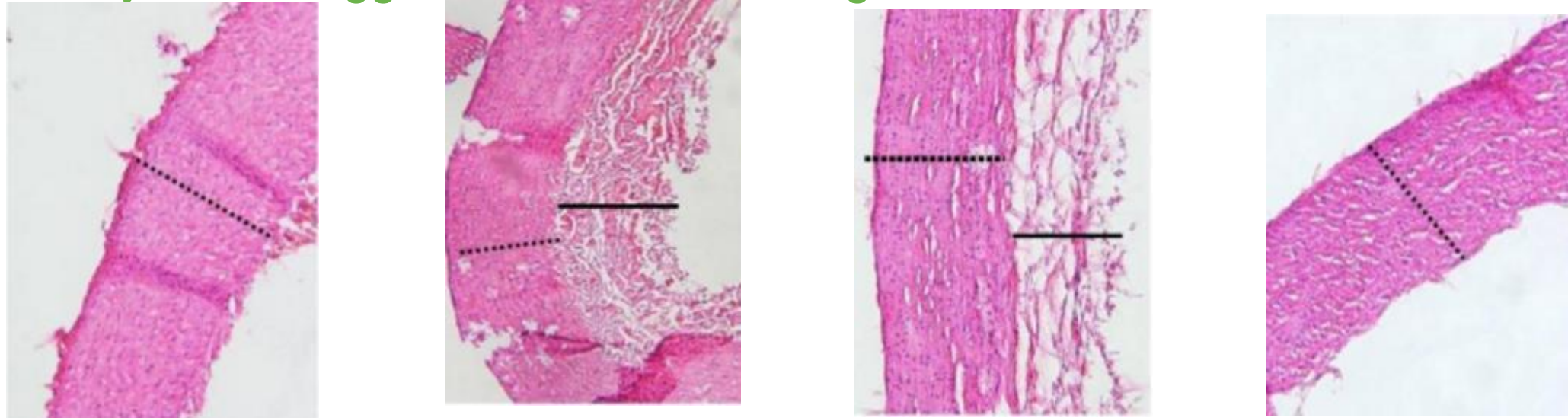
Background

- Low HDL levels (in ratio with high LDL levels) is associated with coronary heart disease and cardiovascular disease.
- Accounts for 16.7 million deaths worldwide per year.
- Caused by a build up of plaque in the artery (atherosclerosis).
- Cholesterol builds up into plaque due to high LDLs and triglycerides (TGs) and low HDLs.
- HDL transports LDL and TG from the blood and carry them to the liver which then converts them into bile salt.
- HDL also reduces inflammation in the artery, increasing blood flow.

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Study shows Egg Yolk HDL effective against Cardiovascular Disease



NORMAL ARTERIAL
NO TREATMENT

ARTERIAL WITH PLAQUE

ARTERIAL WITH PLAQUE
TREATED WITH HDL

NORMAL ARTERIAL
TREATED WITH HDL

These findings indicate that treatment with egg yolk HDL increased serum HDLC and decreased atherosclerotic plaque size in rabbits. Thus, egg yolk HDL can be considered as an antiatherosclerosis agent in treatment of patients with cardiovascular diseases.

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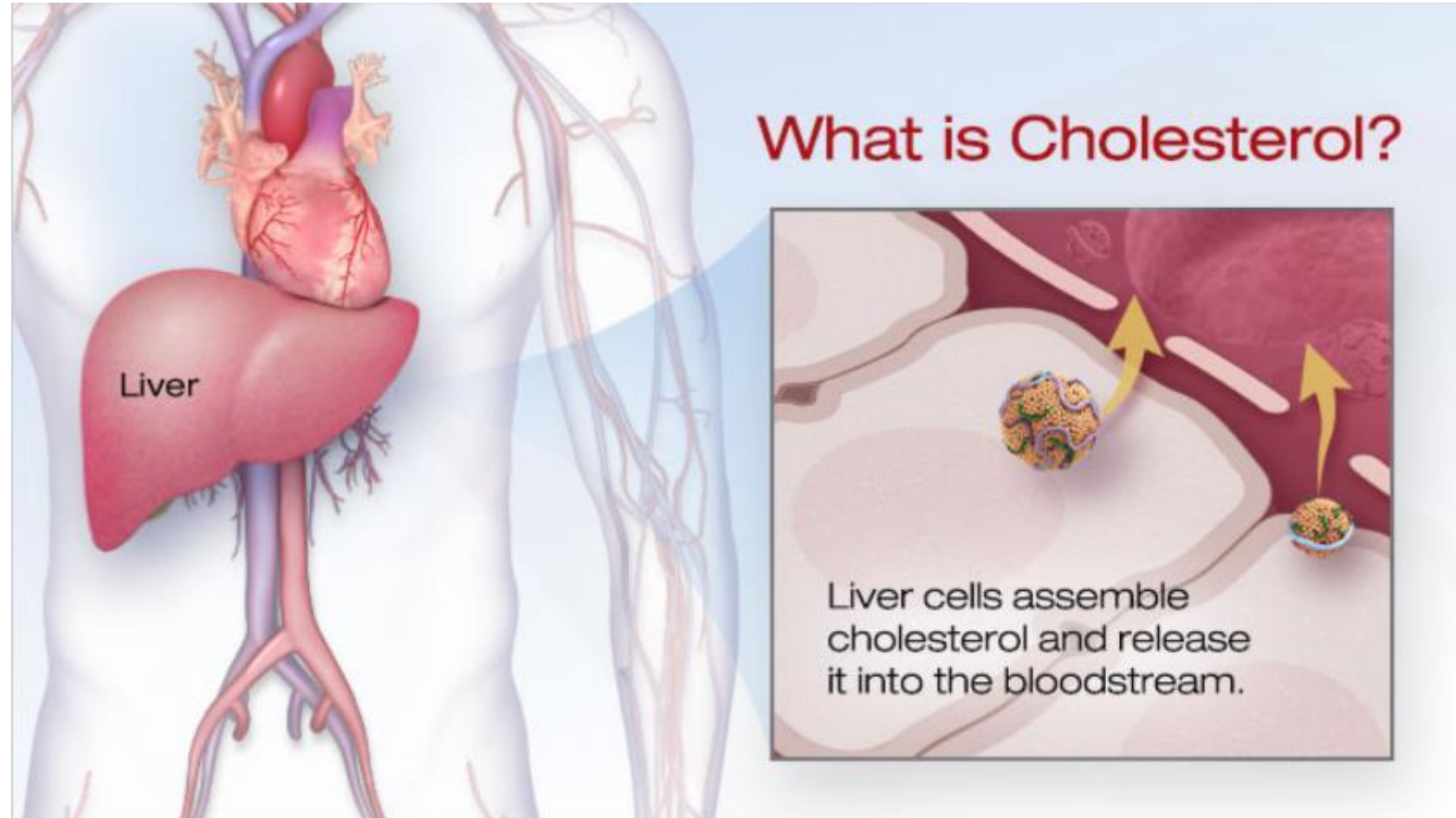
Science:

- In addition to the rabbit study shown where artery plaque decreased with increased dietary HDL...
- Researchers have found that when human study participants eat egg yolk (vs egg substitute) HDL levels in the blood increase.
 - Also found reductions in total LDL levels, plasma insulin, and insulin resistance.
 - This shows dietary HDL may help patients with type 2 diabetes.
- Also shown that when eating egg yolk (vs egg substitute) the capacity of HDL particles to accept and carry more cholesterol increases.
- So by consuming HDL, the blood HDL not only **increase** but their **effectiveness** increases as well.

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Cholesterol

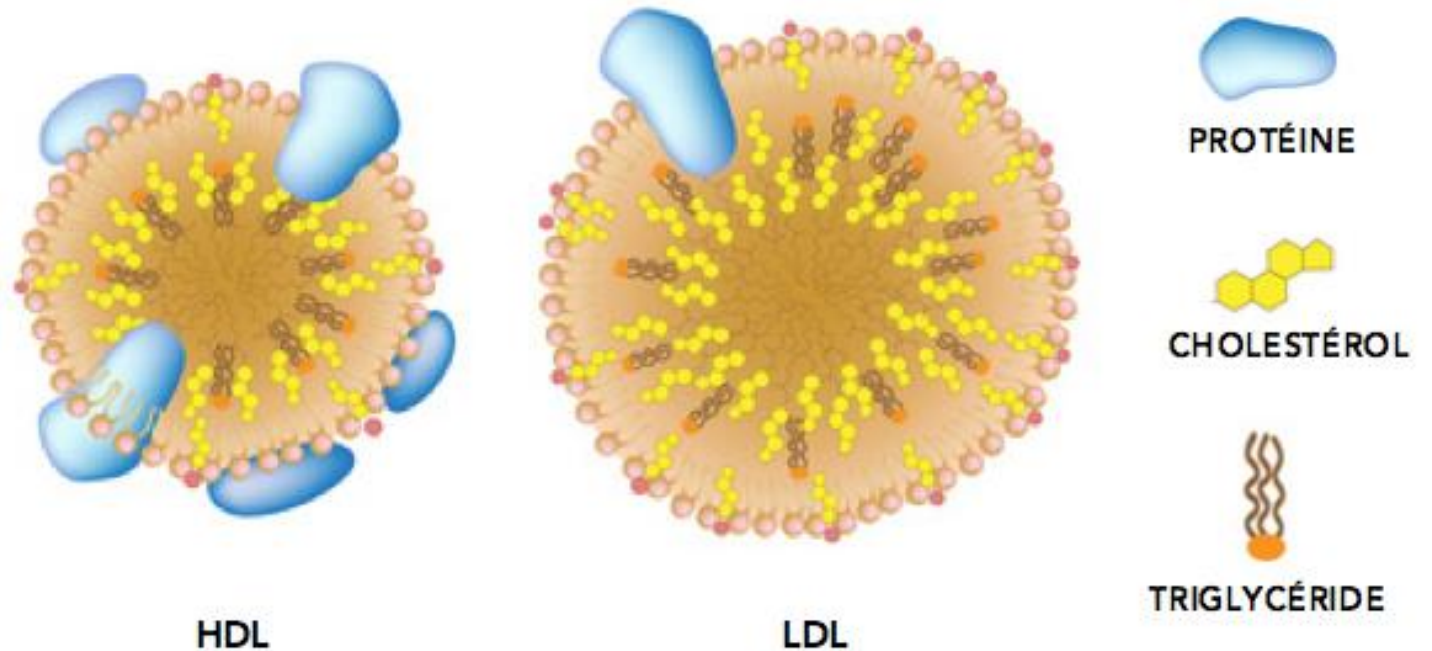


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Types of Cholesterol:

- Cholesterol is carried through bloodstream
- Carried on lipoproteins
- One is high density (smaller, more protein)
- One is low density (bigger, less protein)
- Amount of each type in your blood can be measured by a blood test.



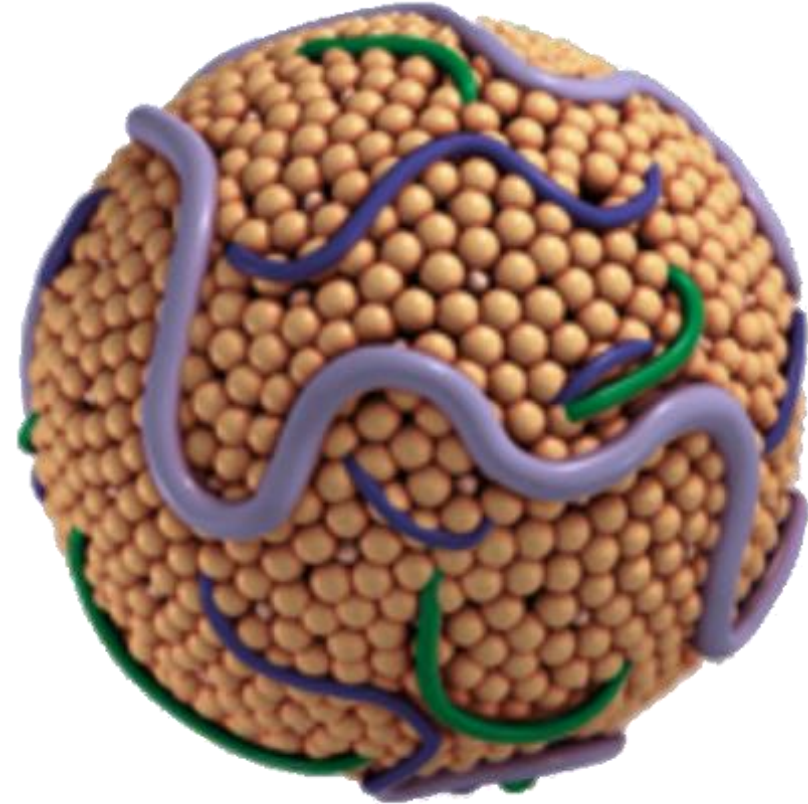
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Low Density Lipoprotein:

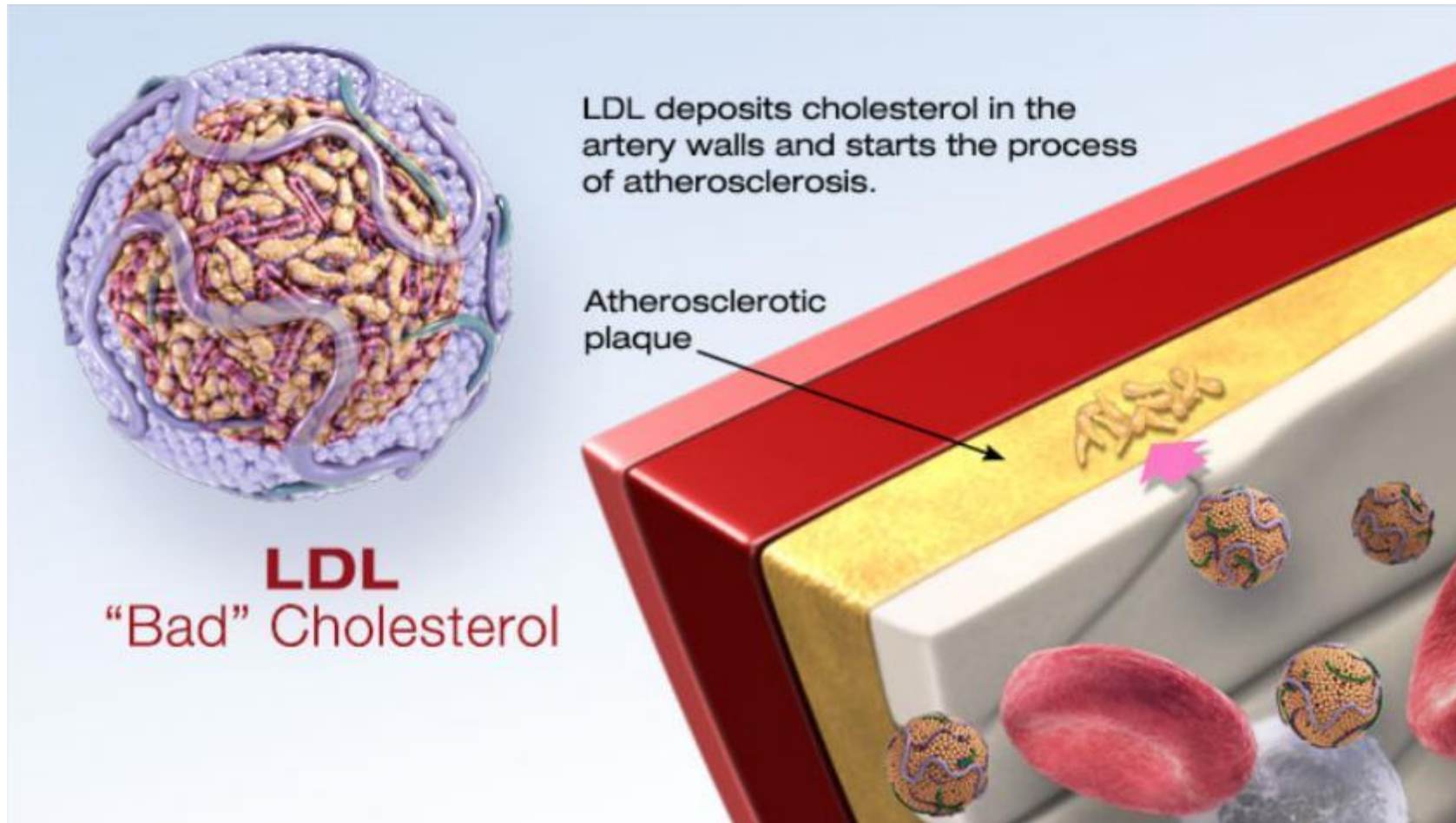
- “Bad”
- Contributes to fatty buildups (plaque) in artery
- Causes “atherosclerosis”
- Plaque buildup makes arteries more narrow, makes it hard for blood to flow
- Blood restriction can lead to heart attack, stroke, and peripheral artery disease.



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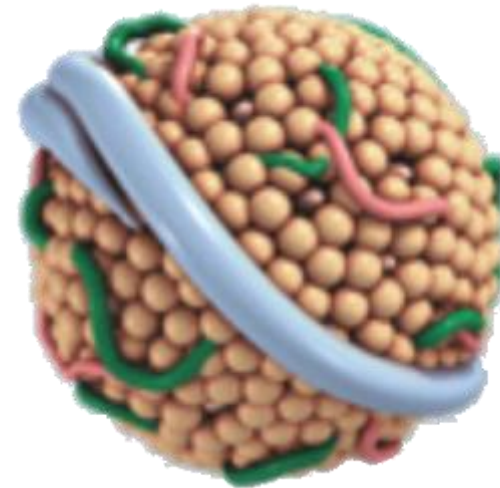


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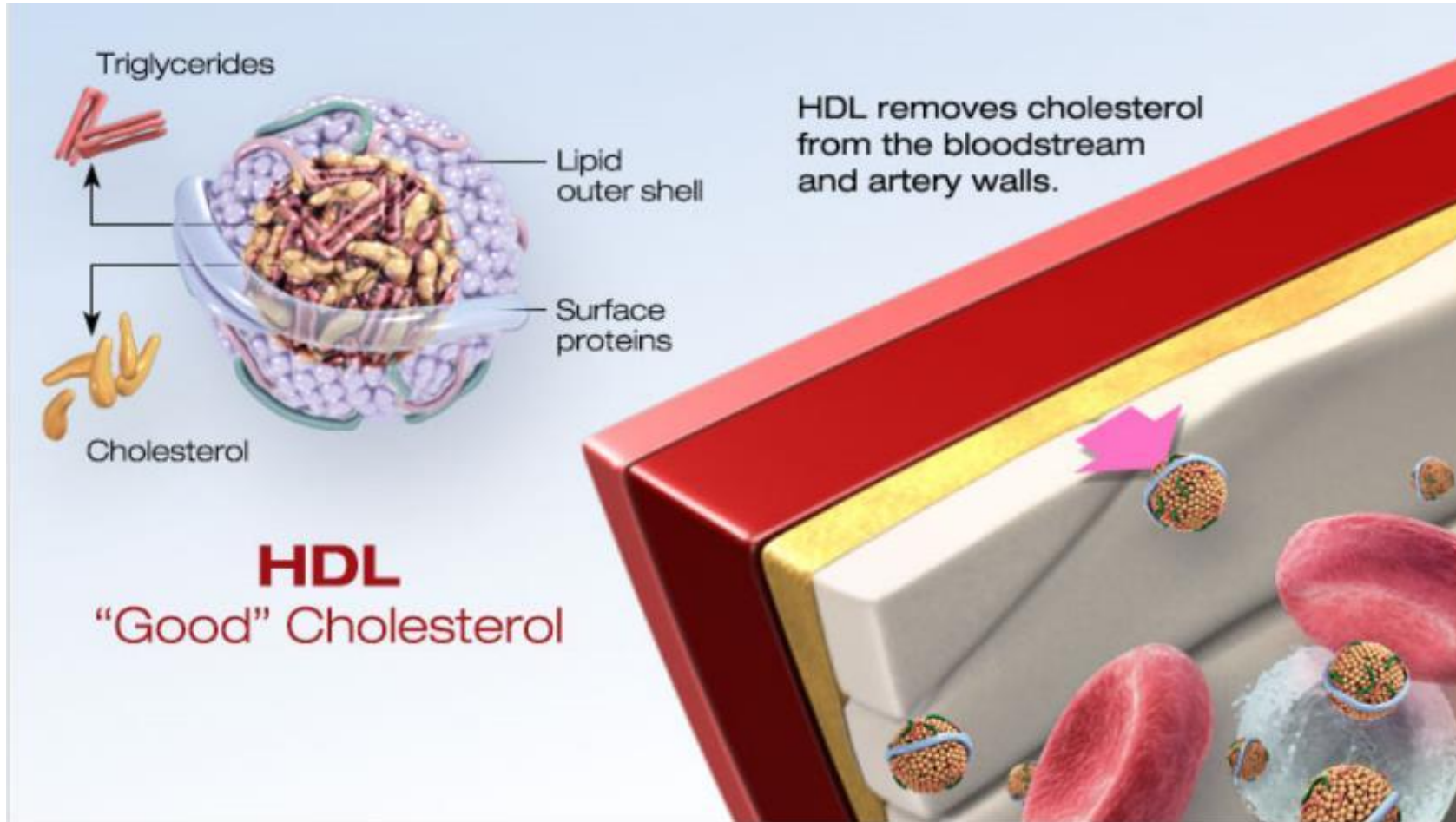


High Density Lipoprotein:

- “Good”
- Reduces fatty buildups (plaque) in artery
- Carries cholesterol to liver – broken down and eliminated from body
- Makes arteries less narrow, easier for blood to flow
- Protects against heart attack, stroke, and peripheral artery disease.



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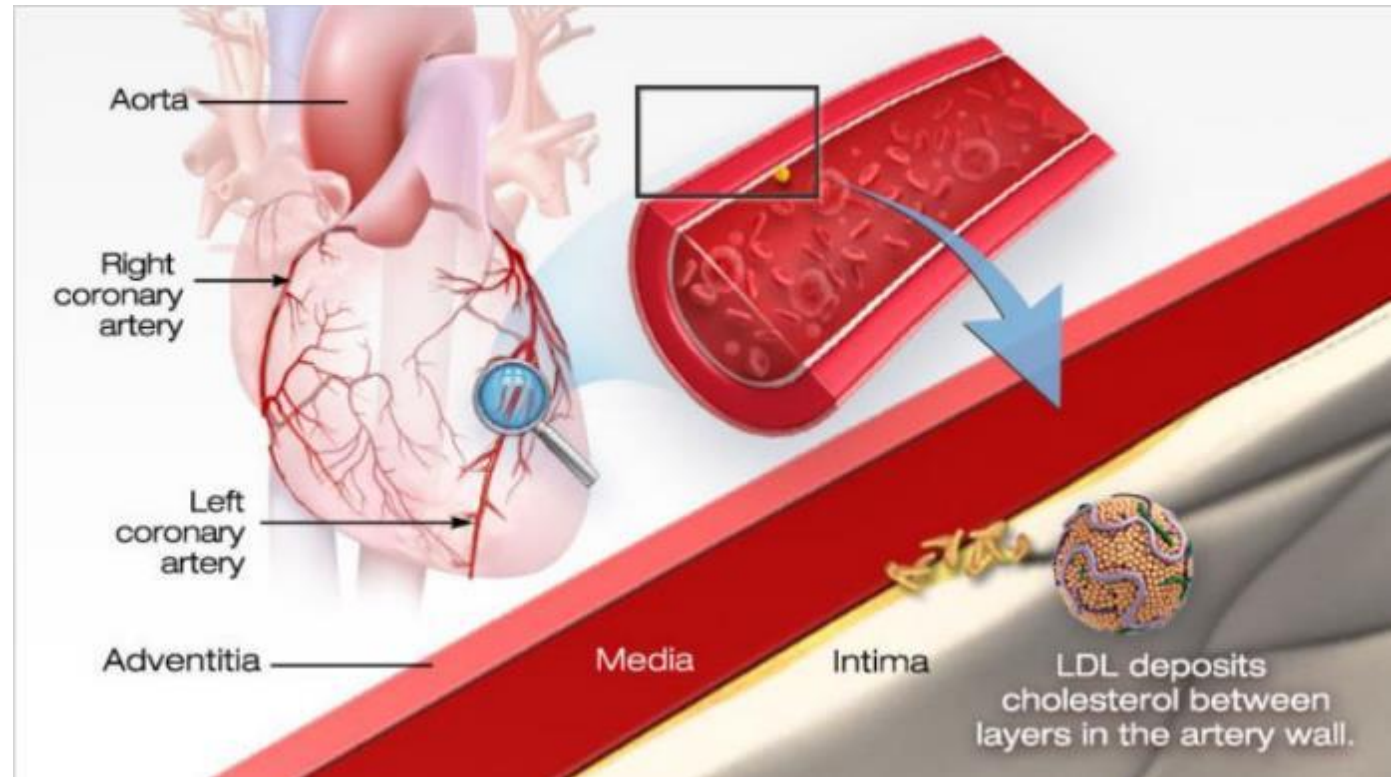


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Coronary Artery Disease:

- Inside of coronary artery narrows due to plaque, limiting oxygen flow to heart muscle.
- Atherosclerosis is the process that causes the artery to narrow and get thick and stiff.
- Complete blockage of the artery leads to heart attack.

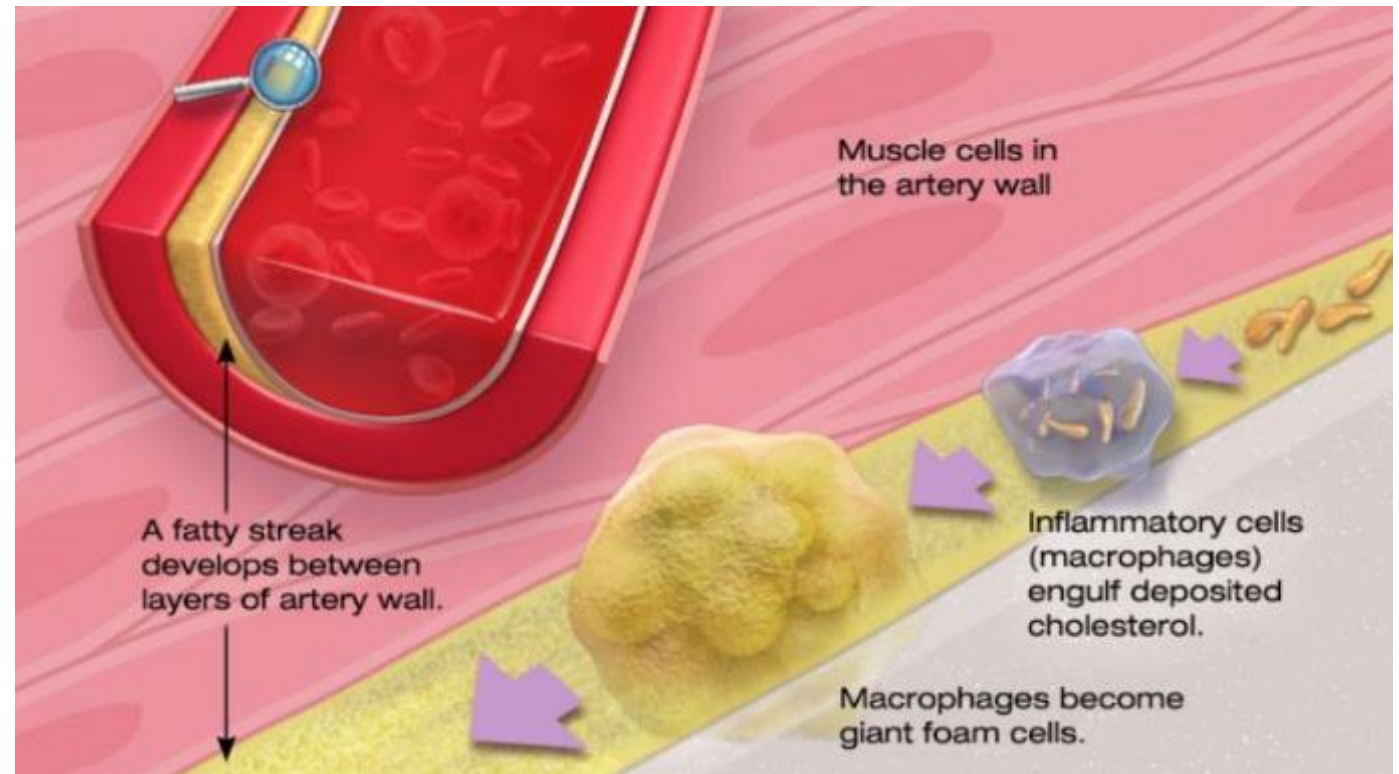


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Coronary Artery Disease:

- LDL deposits cholesterol in artery wall
- Immune system sends white blood cells (WBCs) to engulf the invading cholesterol
- Macrophages (WBCs) get full of cholesterol and get stuck in wall and fatty streak develops in wall

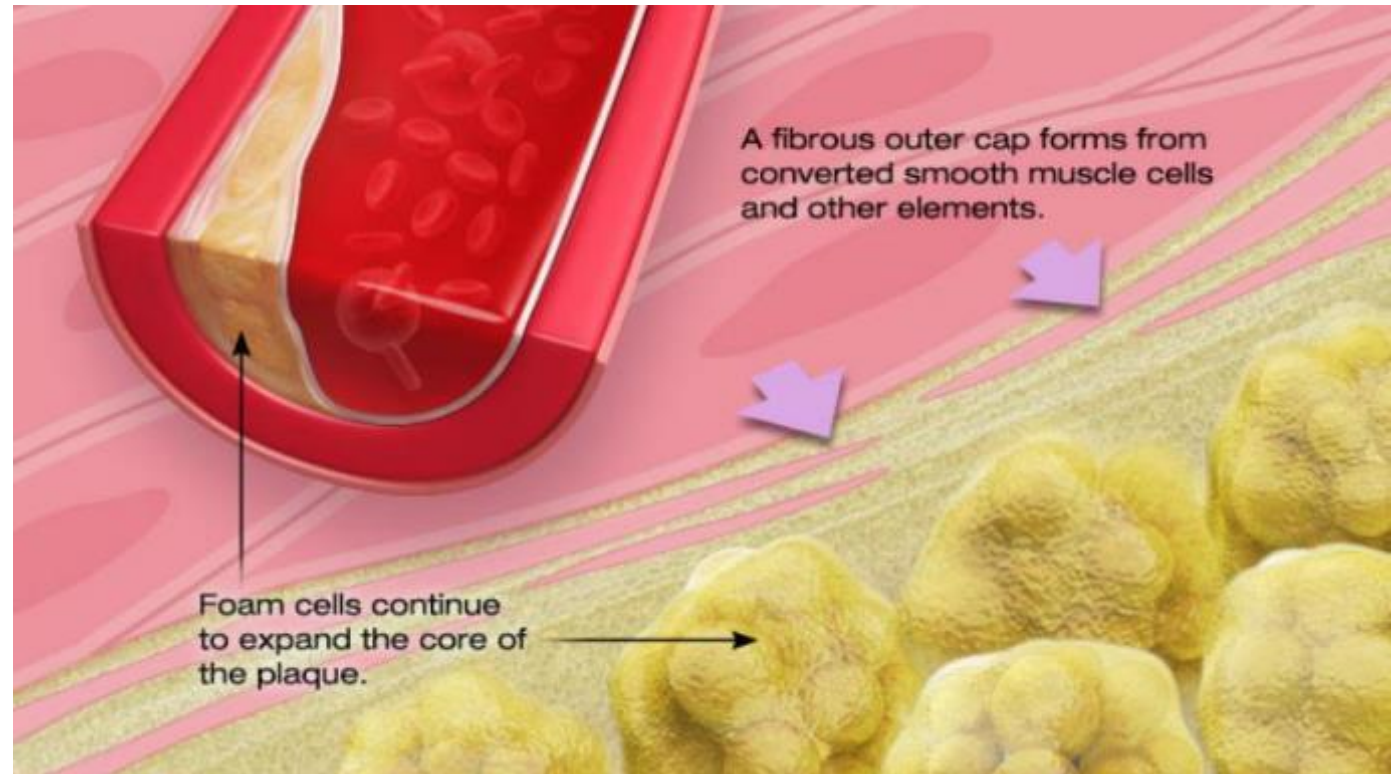


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Coronary Artery Disease:

- More “foam cells” collect in artery wall, fatty streak gets bigger and becomes plaque.
- Narrows blood flow in artery.



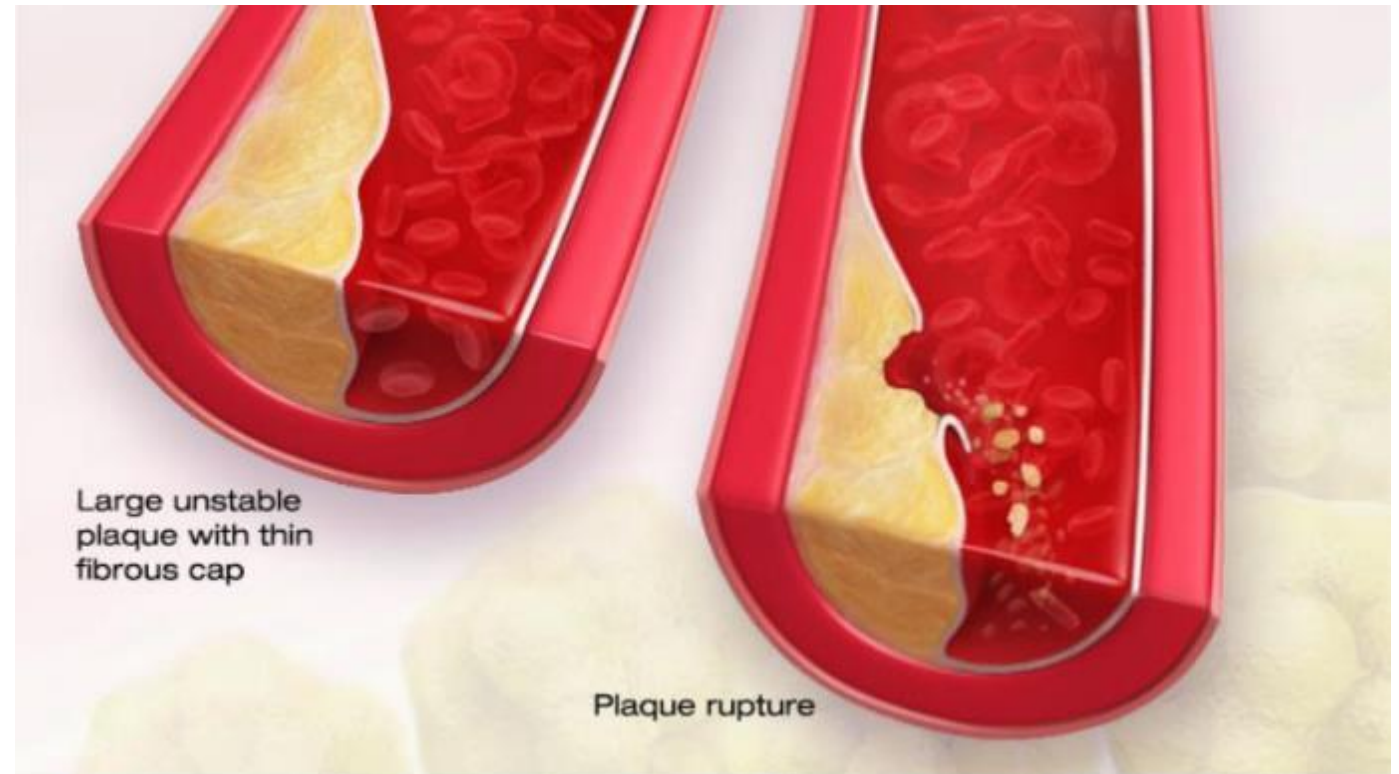
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Coronary Artery Disease:

- Plaque develops fibrous coating, but can weaken as plaque grows
- Rupturing of fibrous coating can send “clots” downstream in artery
- Can cause full blockage in downstream artery.

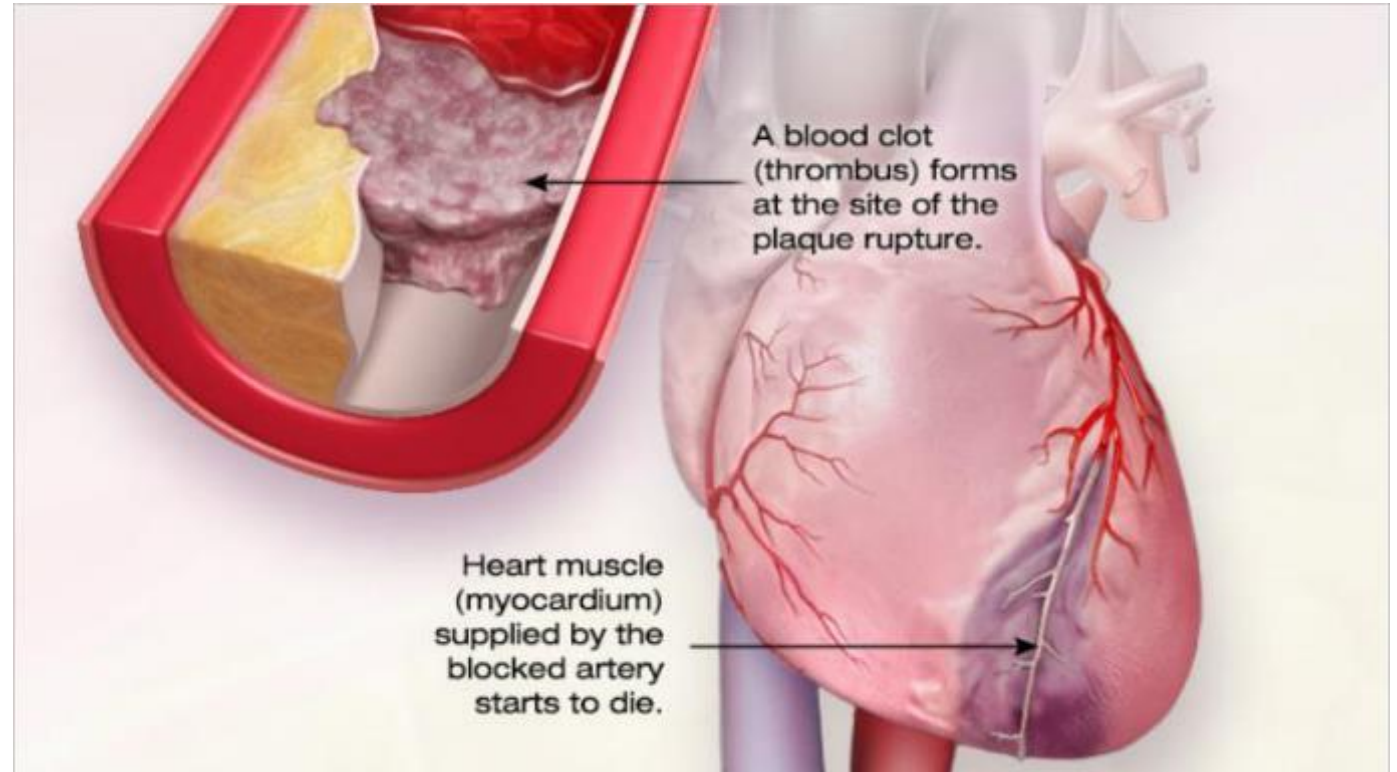


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Coronary Artery Disease:

- If clot blocks artery the tissue meant to be receiving the oxygenated blood can die.
- In the heart this is called a myocardial infarction (heart attack)



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Summary:

Area of Application	Description
Nutraceutical	Decrease artery plaque, support circulatory system, prevents growth of E.coli and Salmonella. Packaged into supplements in gel capsules.
Food Industry	Improve nutrition profile of health foods and protein powders. Powder form makes it easy to introduce into foods.



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