The sixth Experiment : *SERUM*

HDL, LDL, vLDL

A. High-Density Lipoprotein Cholesterol (HDL-C)

It is a class of lipoproteins produced by the liver and intestines. It plays a role in the metabolism of the other lipoproteins and in cholesterol transport from peripheral tissues to the liver.

- Decreased HDL levels are atherogenic, whereas elevated HDL levels protect against arthrosclerosis by removing cholesterol from vessel walls and transporting it to the liver where it is removed from the body. This is known as the "reverse cholesterol transport pathway."
- HDL-C, the good cholesterol, is used to asses coronary artery disease (CAD) risk and monitor persons with known low HDL levels.

Reference Values

Men: 35-65 mg/dL or 0.91-1.68 mmol/L
Women: 35-80 mg/dL or 0.91-2.07 mmol/L

Clinical significance:

a) *Increased HDL-C values* occur in the following conditions:

1. Chronic liver disease (cirrhosis, alcoholism, hepatitis)
2. Long-term aerobic or vigorous exercise.

b) *Decreased HDL-C values* occur in the following conditions:

1. Hypertriglyceridemia (familial)
2. Hepatocellular diseases
3. Cholestasis
4. Chronic renal failure, uremia.

B. Low-Density Lipoprotein (LDL) & Very-Low-Density Lipoprotein (VLDL)

Sixty to 70% of the total serum cholesterol is present in the LDL. LDLs are the cholesterol-rich remnants of the VLDL lipid transport vehicle.

Because LDL has a longer half-life (3-4 days) than its precursor VLDL, LDL is more prevalent in the blood. It is mainly catabolized in the liver.

The VLDLs are major carriers of triglycerides. Circulating fatty acids form triglycerides in the liver, and these are packaged with apoprotein and cholesterol to be exported into the blood as VLDLs.

This test is specifically done to determine CHD risk. LDL, " the bad cholesterol," is closely associated with increased incidence of atherosclerosis and CHD. The test of choice is LDL because it has a longer half-life and it is easier to measure.

Reference Values

Adults:
Desirable: <130 mg/dL or <3.4 mmol/L
Borderline high-risk: 140-159 mg/dL or 3.4-4.1 mmol/L
High-risk: >160 mg/dL or >4.1 mmol/L

Children and adolescents:
Desirable: <110 mg/dL or <2.8 mmol/L
Borderline high-risk: 110-129 mg/dL or 2.8-3.4 mmol/L
High-risk: >130 mg/dL or >3.4 mmol/L

- (high-density lipoproteins [HDLs]) = α-lipoproteins (low-
- density lipoproteins [LDLs]) = β-lipoproteins (very-low-
- density lipoproteins [VLDLs]) = pre-β-lipoproteins

A lipid profile usually includes cholesterol, triglycerides, LDL, and HDL levels.

principle and procedure in kit