

Cholesterol

see also **Lipoprotein electrophoresis**

The following tests are available:

- **Total cholesterol**

General:

Cholesterol is an essential component of cell membranes and lipoproteins as well as a precursor for the synthesis of steroid hormones and bile acids. Cholesterol occurs in plasma - due to its low water solubility - exclusively as a complex with apolipoproteins. LDL bound cholesterol is transported to the peripheral tissues. Elimination of the excessive cholesterol to the liver occurs through HDL. Nutritionally supplied cholesterol is absorbed to only 40%. Endogenous cholesterol synthesis is normally prevented by high concentrations of LDL cholesterol in plasma and increased alimentary cholesterol supply. However oral supply of long-chain polysaturated fatty acids (triglycerides) or increased energy supply in general can lead to an increase of LDL cholesterol in plasma resulting in hypercholesterinemia and, as a consequence, to an elevated cardiovascular risk. Cholesterol elimination occurs mainly via bile. The inherited form of primary hypercholesterolemia leads to accumulation of LDL in plasma due to reduced transport of LDL cholesterol into the cell. Secondary hypercholesterolemia appears in cases of hypothyroidism or kidney disorders as well as in pancreas or liver disorders.

Indication: Elevated serum cholesterol levels are considered a major risk factor of coronary heart disease.

Material: 1 ml serum

Stability: 7 days at 2 to 8°C

TAT: same day, FML

Units: mg/dl

Method: photometric

Ref.- range: see report

Note: in case of values exceeding 200, HDL cholesterol and triglyceride determination is additionally recommended for the estimation of the LDL concentration (according to Friedewald).

Friedewald formula: $LDL [mg/dl] = (Cholesterol\ total) - (HDL\ Cholesterol) - (Triglycerides/5)$

(can be applied only in clear serum samples without chylomicrons and with

triglyceride contents < 400)

- HDL cholesterol

General:

While LDL transports cholesterol to peripheral tissues, the HDL fractions are necessary for the return transport of excessive cholesterol to the liver. About 25% of the total serum cholesterol is transported in the High-Density Lipoprotein (HDL) class. HDL cholesterol is affected by several factors, e.g. smoking, sports, hormones, gender and age. In contrast to LDL, HDL is a protective factor in the development of coronary heart disease.

Indication: hypercholesterolemia, risk estimation of atherosclerosis (e.g. heart attack), hypertriglyceridemia.

Preanalytics: 12 hours fasting

Material: 1 ml serum

Stability: 7 days at 2 to 8°C

TAT: same day, FML

Units: mg/dl

Method: photometric

Ref.- range: see report

- LDL-cholesterol

Indication: Hypercholesterolemia, risk evaluation of atherosclerosis (e.g. heart attack), xanthoma

Preanalytics: after 12 hours fasting

Material: 1 ml serum

Stability: 7 days at 2 to 8°C

TAT: same day, FML

Method: photometric

Ref.- range: see report

For complete list of laboratory test offered at Freiburg Medical Laboratory, please visit <http://www.fml-dubai.com/parameter-listings/>