Lipid profile

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

- **Extended lipid profile**

General:

The examination provides detailed results of the different subfractions of LDL. Small, dense LDL are the most atherogenic and are often found in conjunction with high triglyceride levels (e.g. in metabolic syndrome, type 2 Diabetes mellitus) and often low HDL-levels. This easy-to-interpret patient lipoprotein profile shows lipoprotein distribution cholesterol level in each fraction and subfraction (from VLDL to HDL, 14 parameters) in comparison to cholesterol distribution for a normal lipoprotein profile. The highly atherogenic small dense LDL and IDL, the less atherogenic LDL and VLDL and the protective HDL are identified.*

*Oxidized LDL is not included but can be requested separately.

Indication:	evaluation of arteriosclerosis risk, screening and monitoring tool for lipid disorders associated with coronary artery disease
Preanalytics:	EDTA plasma possible, 12 hours fasting, keep cool not frozen for max. 7 days
Material:	1 ml serum
TAT:	same day, FML
Method:	electrophoresis

- **Lipoprotein electrophoresis**

General:

The examination includes VLDL, LDL, and HDL cholesterol as well as the calculation of the ratio: LDL/HDL.

Indication:	Phenotyping of primary dyslipoproteinemias (familial hyperlipoproteinemia according to the classification of Fredrickson), fat metabolism disturbances, evaluation of arteriosclerosis risk
Preanalytics:	no plasma, 12 hours fasting
Material:	1 ml serum
TAT:	5-7 days*
Ref.- range:	see report

Types according to Fredrickson:

Type	I	Iia	Iib	III	IV	V
Synonym	fat induced hyper-triglyceride-mia	Hyper-cholesterol-emia	mixed hyper-lipidemia	Broad beta disease	endogenous hyper-triglyceride-mia	endogenous exogenous hypertrigly-ceridemia
fasting serum	turbid & clear	clear	slightly turbid	clear-turbid	turbid	turbid
cholesterol [mg/dl]	normal 200-500	increased 500-800	increased 500-800	increased 350-800	normal 200-350	increased 350-600
triglycerides [mg/dl]	increased 3000-5000	normal 150-250	increased 250-500	increased 350-800	increased 400-1000	increased 1500-5000
chylomicrones [%]	62-82	0-2	0-2	1-5	0-2	12-22
β-lipoproteins [%]	5-13	57-77	50-66	75	28-50	26-38
pre-β lipo-proteins [%]	7-19	5-15	21-31	95	38-58	39-51
α + pre-β lipoproteins [%]	3-9	14-30	9-21	7-17	8-18	3-9
occurrence	rare	approx. 10%	approx. 15%	<5%	approx. 70%	<5%
arteriosclerosis risk	-	+++	+++	+++	++	+

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