Lipoprotein lipase (LPL)

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Lipoprotein lipase (LPL)

**Description**
Lipoprotein lipase (LPL) is a multifunctional enzyme produced by many tissues, including adipose tissue, cardiac and skeletal muscle, islets, and macrophages. LPL is the rate-limiting enzyme for the hydrolysis of the triglyceride (TG) core of circulating TG-rich lipoproteins, chylomicrons, and very low-density lipoproteins (VLDL).

LPL-catalyzed reaction products, fatty acids, and monoacylglycerol are in part taken up by the tissues locally and processed differentially; e.g., they are stored as neutral lipids in adipose tissue, oxidized, or stored in skeletal and cardiac muscle or as cholesteryl ester and TG in macrophages.

**Indication**
- Hyperlipidemia
- Hypertriglyceridemia
- Diabetes mellitus Type 2
- Metabolic syndrome
- Atherosclerosis

**Pathophysiology**
Dysfunction of LPL is observed in patients with type I, IV, or V hyperlipidemia. Also, low concentrations of plasma LPL is thought to cause hypertriglyceridemia.

A small quantity of LPL protein, preLPL, is measured in serum, and it has been reported that preLPL is related negatively to triglycerides or visceral adiposity, and positively to HDL-cholesterol. Also, preLPL is significantly lower in type 2 diabetes mellitus and coronary atherosclerosis. Given these data, preLPL may be considered one of the most important indicators of insulin resistance. Furthermore, a recent study over a wide range of ages reported a low preLPL level in metabolic syndrome, proposing that preLPL may be a biomarker of metabolic syndrome.

Recently, a prospective study has demonstrated that low serum LPL concentration predicts future coronary events. Taken together, pre-heparin LPL mass in plasma or serum provides useful and important information on the development of metabolic disorders leading to atherosclerotic disease.

**References**
LPL ELISA

Principle of the assay
The LPL ELISA kit is an enzyme-linked immuno-sorbent assay for the quantitative determination of lipoprotein lipase (LPL) in human serum, plasma, or post-heparin plasma.

Test wells are coated with anti-LPL mAb, which binds with LPL in the sample. After the first incubation and washes to remove all of the unbound material, anti-LPL pAb is added. The pAb binds with LPL immobilized in the well by the coated mAb. After the second incubation and subsequent washes, enzyme-labeled pAb is added. The enzyme-labeled pAb binds with anti-LPL pAb. After the third incubation and subsequent washes, the antibody/LPL/enzyme complex is incubated with a substrate solution and terminated with a stop solution. The intensity of color that develops is read by a microplate reader. The absorbence is proportional to the concentration of LPL in the sample.

References

Key Features
- **Format:** 96-well plate
- 2-step sandwich ELISA
- **Sample type:** human serum, plasma, or post-heparin plasma
- **Reference range:** 164 - 284 ng/ml
- **Linearity:** 0.2 - 5 ng/ml
- **Sensitivity:** 0 ng/ml ≤ 0.2 Abs
- 10 ng/ml 0.3 ~ 1.4 Abs
- **Specificity:** 85 ~ 115% of expected value
- **No cross-reactivity** with hepatic triglyceride lipase and pancreatic lipase
- **Reproducibility:** CV value less than 10%
- **Shelf life:** 24 months