Pre-ß1-High density lipoprotein (pre-ß1-HDL)

Description

High density lipoproteins (HDL) are defined as lipoproteins in the density range of 1.0–1.2 kg/l. HDL particles are heterogeneous in size, apolipoprotein composition, and function.

Pre-ß1-HDL is a specific HDL subfraction that migrates with pre-ß mobility on agarose gel electrophoresis. The main components of pre-ß1-HDL are apolipoprotein AI (apoAI) and phospholipids.

Pre-ß1-HDL is an acceptor of cellular cholesterol and is critical for reverse cholesterol transport.

In normal plasma, lecithin:cholesterol acyltransferase (LCAT) converts pre-ß1-HDL to α-migrating HDL, which transports esterified cellular cholesterol to the liver for further processing

Indication

- coronary artery disease (CAD)
- ischemic heart desease (IHD)
- unstable angina pectoris (uAP)
- dyslipidemia

Pathophysiology

Plasma pre-ß1-HDL levels have been reported to be increased in patients with coronary artery disease (CAD) and dyslipidemia. Elevation of the plasma pre-ß1-HDL level is associated with the atherosclerotic phase of CAD and may be useful for the identification of patients with unstable angina pectoris. High pre-ß1-HDL concentrations and low lecithin cholesterol acyltransferase (LCAT) activities are strong positive risk markers for ischemic heart disease and independent of HDL-cholesterol.

Hyrayama et al. have demonstrated that the pre-ß1-HDL concentration is elevated in type 2 diabetic patients and that a high pre-ß1-HDL concentration is a predictor of carotid atherosclerosis.

Many prospective studies have reported positive correlations between the severity of carotid atherosclerosis and cardiovascular risks in general populations and diabetic patients. Accelerated atherosclerosis in diabetic patients may be explained by insulin resistance, chronic inflammation, hyperglycemia, and dyslipidemia.

LCAT-dependent conversion of pre-ß1-HDL into α-migrating HDL is severely delayed in hemodialysis patients.

References

- High pre-beta1 HDL concentrations and low lecithin: cholesterol acyltransferase activities are strong positive risk markers for ischemic heart disease and independent of HDL-cholesterol. Sethi AA et al., Clin Chem. 2010 Jul;56(7):1128-1137.
- Plasma pre beta1-HDL level is elevated in unstable angina pectoris. Tashiro J et al., Atherosclerosis. 2009 Jun;204(2):595-600.
- Apolipoprotein M predicts pre-b-HDL formation: studies in type 2 diabetic and nondiabetic subjects. Plomgaard P et al., J Intern Med. 2009 Sep;266(3):258-267.
- Pre-ß1-HDL concentration is a predictor of carotid atherosclerosis in type 2 diabetic patients. Hirayama S et al., Diabetes Care. 2007 May;30(5):1289-1291.
- LCAT-dependent conversion of pre-ß1-HDL into α-migrating HDL is severely delayed in hemodialysis patients. Miida T et al., J Am Soc Nephrol. 2003 Mar;14(3):732-8.

Product information pre-ß1-HDL ….over

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Pre-ß1-HDL ELISA

Principle of the assay

Pre-ß1-HDL ELISA is a quantitative enzyme-linked immunosorbent assay (ELISA) kit for pre-ß1-HDL in human plasma.

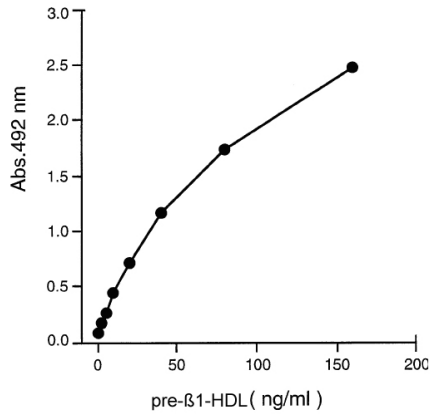
Test wells are coated with anti-pre-ß1-HDL mAb (55201). Pre-ß1-HDL in the sample is captured by the antibody in the 1st incubation. After the 1st incubation and washing to remove all of the unbound material, HRP-labeled goat anti- apoA-I pAb is added. After the 2nd incubation and subsequent washing, substrate solution is added. Next, stop reagent is added. The intensity of color that develops is read by a microplate reader. The absorbance is proportional to the concentration of pre-ß1-HDL in the sample.

References

- A new sandwich enzyme immunoassay for measurement of plasma pre-ß1-HDL levels. Miyazaki O et al. Journal of Lipid Research 2000; 41, 2083-2088.
- Analytical performance of a sandwich enzyme immunoassay for pre-ß1-HDL in stabilized plasma. Miida T et al., J Lipid Res. 2003 Mar;44(3):645-650.

Key Features

- **Format:** 96-well plate
  2- step sandwich ELISA
- **Sample type:** human plasma
- **Reproducibility:** CV value less than 10%
- **Shelf life:** 24 months



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