Cholesteryl ester transfer protein (CETP)

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Description
Cholesteryl ester transfer protein (CETP) mediates the transfer/exchange of cholesteryl ester (CE) and triglyceride (TG) between plasma lipoproteins. Because CE is mainly generated by lecithin:cholesterol acyltransferase in HDL in plasma, the hetero-exchange of CE with TG by CETP leads to the net CE transfer from HDL to apolipoprotein B-containing lipoproteins. This reaction is believed to be one of the key steps of cholesterol transport from peripheral tissues to the liver, which is proposed to involve cellular cholesterol efflux to HDL, its esterification in HDL, CE transfer to other lipoproteins, and eventually, the uptake of the lipoproteins by the liver via receptor-mediated processes.

The pathway is of physiological importance because the cholesterol molecule is not catabolized in the peripheral tissues except for the steroidogenic cells, and thus CETP is expected to play an important role in cholesterol homeostasis.

Pathophysiology
Cholesteryl ester transfer protein (CETP) is a new therapeutic target, because the cholesteryl ester transfer process lowers HDL cholesterol and contributes to an atherogenic lipoprotein profile, particularly when plasma triglycerides are high.

Clinical evidence suggests that coronary artery calcification as well as intima media thickness is positively related to plasma cholesteryl ester transfer, and that high plasma CETP concentration is associated with increased cardiovascular risk in hypertriglyceridaemia.

However, CETP could also have anti-atherogenic potential, since it provides a potentially beneficial route for delivery of HDL-derived cholesteryl esters to the liver. In addition, CETP could also favourably stimulate peripheral cell cholesterol removal and enhance hepatic cholesterol uptake. Recent evidence suggests that a high CETP level may confer lower cardiovascular risk in the context of low triglycerides.

Indication
- Atherosclerosis

References
CETP ELISA

Principle of the assay
The CETP ELISA kit is an \textit{in vitro} quantitative assay for CETP (cholesteryl ester transfer protein) in human serum and plasma.

The assay is based on two different monoclonal antibodies that were raised against rabbit CETP and cross-react with human CETP. Test wells are coated with anti-CETP mAb (3-11D). CETP in the sample is captured by the antibody in the 1\textsuperscript{st} incubation. After the 1\textsuperscript{st} incubation and washing to remove all of the unbound material, HRP-labeled anti-CETP mAb (14-8F) is added. After the 2\textsuperscript{nd} 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 CETP in the sample.

References

Key Features
- Format: 96-well plate
  2-step sandwich ELISA
- Sample type: human plasma and serum
- Linearity: 0.2 ~ 5\textmu g/ml
- Sensitivity: 0 \textmu g/ml \leq 0.15 \text{Abs} 
  2.5 \textmu g/ml 0.2 ~ 0.9 \text{Abs} 
  5.0 \textmu g/ml 0.5 ~ 2.0 \text{Abs}
- Specificity: 85\% ~ 115\% of expected value
- Reproducibility: CV value less than 10\%
- Shelf life: 24 months