

RLP-TG (Remnant Lipoprotein Triglyceride)

Analyte: Remnant Lipoprotein - Triglyceride

Specimen Type: Serum, EDTA Plasma, Inquire for additional option(s)

Optimum Volume: 0.5 mL

Stability:

2-8 Degrees C	-20 Degrees C	-70 Degrees C
Unstable*	N.A.*	N.A.*

Reporting Units: mg/dL

Method: Immunoaffinity / Enzymatic

Biological or Clinical Significance:

Plasma triglycerides (TG), which reflect the sum of all the TG in plasma lipoproteins, are considered a weak risk-factor for the development of atherosclerosis. Recent research has shown that certain fractions of triglyceride rich lipoproteins are a measure of the atherogenic triglyceride-rich lipoproteins (TRLs). These TRLs derive from both the intestine and the liver. Measurement of plasma triglycerides does not distinguish the various subspecies of TRLs, which clearly have different degrees of atherogenicity. Triglyceride-rich remnant lipoproteins (RLP) are formed in the circulation when chylomicrons of intestinal origin [with apolipoprotein B-48 (apo B-48)] and VLDL of hepatic origin (with apo B-100) are converted by lipoprotein lipase (and to a lesser extent by hepatic lipase) into smaller and denser particles. Compared with their nascent precursors, RLPs are depleted of triglycerides, phospholipids, and apo C, and are enriched in cholesteryl esters and apo E and are believed to be more atherogenic than the larger TRLs.

Several lines of evidence have implicated RLPs in premature atherosclerosis. In fact, the prototypic disorder of remnant metabolism, type III lipoproteinemia, is associated with accelerated atherosclerosis. Other evidence incriminating remnants as proatherogenic factors include the following: increased intermediate-density lipoprotein (IDL) concentrations have been associated with an increased incidence or recurrence of coronary artery disease (CAD). Increased IDL is also found in diseases associated with accelerated atherosclerosis, such as type III lipoproteinemia, type 2 diabetes mellitus, end stage renal disease (ESRD), and familial combined hyperlipidemia. Several previous reports have linked various measures of remnants to CAD in controlled angiographic follow-up trials.

Principle of Test Method:

The RLP-TG assay is an automated enzymic method with the pre-treatment of samples using the immunoaffinity principle.

* Please contact PBI for more information on stability.

References:

1. Nakajima K, Saito T, Tamura A., et al. Cholesterol in remnant-like lipoproteins in human serum using monoclonal anti apo B-100 and anti A-I immunoaffinity mixed gels. Clinica Chimica Acta, 1993; 223: 53-71.
2. Leary, ET, Wang, T, Baker, DJ, Cilla, DD, Zhong, J, Warnick, GR, Nakajima, K, and Havel, RJ. Evaluation of an immunoseparation method for quantitative measurement of remnant-like particle-cholesterol in serum and plasma. Clin Chem, 1998; 44: 2490-2498.
3. Wang, T, Nakajima, K, Leary, ET, Warnick, GR, Cohn, JS, Hopkins, PN, Wu, LL, Cilla, DD, Zhong, J, and Havel, RJ. Ratio of remnant-like particle-cholesterol to serum



Biomarker Menu

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total triglycerides is an effective alternative to ultracentrifugal and electrophoretic methods in the diagnosis of familial type III hyperlipoproteinemia. Clin Chem, 1999; 45: 1981-1987.