

International Clinical Laboratories



NEW! Test Review on Cardiovascular Disease Risk

APOLIPOPROTEINS A-I AND B

An Apolipoprotein is a protein that binds to a fat (lipid). When an Apolipoprotein bonds to a lipid, it forms a Lipoprotein.

apo A-I and B are structural and functional components of lipoprotein particles that serve as transporters of cholesterol. apo B transfers cholesterol and triglyceride from sites of production to tissues where they are utilized for energy production, storage, membrane assembly, or hormone synthesis. On the other hand, Apo A-I plays an important role in the reverse cholesterol transport by transferring cholesterol from tissues back to the liver.

Epidemiologic research and clinical event trials have shown that both apo A-I and B play important role in the initial assessment and ongoing monitoring of CVD for coronary events and stroke.

The A lipoproteins form the major proteins found in HDL-C. The ability of HDL to predict coronary risk has been confirmed in a number of studies linking low levels of serum HDL-C to increased CHD morbidity and mortality. Since apo A-I is the


predominant apo associated with HDL-C, it seems reasonable to assume that apo A-I levels would behave similarly to HDL-C with anti-atherogenic properties.

apo B is essential for the transport of all cholesterol carrying lipoproteins. including secretion of triglyceride-rich lipoproteins, LDL, IDL and VLDL. Many experts feel that apo B is potentially the most biologically and analytically superior marker for all atherogenic particles.

Risk for CHD increases in proportion to total cholesterol and LDL-C levels and inversely according to HDL-C concentration. Based on these relations, cholesterol ratios such as total cholesterol/HDL-C and LDL-C/HDL-C are considered by some investigators as a simple approach for lipid risk assessment. The ratio reflects two powerful components of risk and provides a tool to express the balance between the proatherogenic and the antiatherogenic lipoproteins.

A number of reports have confirmed that apo B/apo A-I ratio as a better predictor of CHD and stroke risk than any of the

conventional cholesterol indices. As a result many investigators are recommending that the apo B/apo A-I ratio be accepted as an alternative to the total cholesterol/HDL-C ratio for risk assessment.

In summary, the rationale of using apo A1 and B together with classical lipid profiles panels (HDL-C, LDL-C) is to increase the efficiency of CVD risk assessment and lipid-lowering therapies in patients with elevated triglycerides. Moreover, the non-fasting ApoB/ApoA1 ratio was reported to be superior to any of the cholesterol ratios for estimation of the risk of AMI in all ethnic groups, in both sexes, and at all ages, and that it should be introduced into worldwide clinical practice 

ICL is happy to announce the availability of apo A1 and apo B assay starting from February, 2013. For further information, please inquire in any of our branches or you can contact us online at info@icladdis.com or www.icladdis.com

Method: Both the Randox Apo B and Apo A-1 methods are traceable to the WHO/IFCC reference material. values of Randox Apo A-1 and B Calibrator and Randox Lipid controls are also traceable to this standardisation.

Specimen: Serum or plasma, fasting is not a requirement.

References:

1. McQueen M, et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study); case-control study. Lancet 2004; 364:937-52.

2. Talmud PJ, et al. Non-fasting apolipoprotein B and triglyceride levels as a useful predictor of coronary heart disease risk in middle-aged UL men. Arterioscler Thromb Vasc Biol 2002; 22:1918-1923.
3. Barter PJ, et al. Apo B versus cholesterol in estimating cardiovascular risk and in guiding therapy: report of the thirty-person/ten-country panel. J Intern Med 2006; 259:247-258.
4. Maziar R, et al. Coronary artery disease is associated with the ratio of apolipoprotein A-I/B and serum concentration of apolipoprotein B, but not with paraoxonase enzyme activity in Iranian subjects. Atherosclerosis 2002; 162:381-9.

Interpretation Guideline

Risk Status	Decision Cutpoints, g/L		
	Primary Target: LDL Cholesterol	Secondary Target: Non-HDL Cholesterol	Secondary Target: Total apo B
High risk: CHD or CHD risk equivalents	< 1.00	< 1.30	< 0.90
Moderate risk: ≥ 2 risk factors	< 1.30	< 1.60	< 1.10
Low risk: 0-1 risk factors	< 1.60	< 1.90	< 1.30

Abbreviations: LDL, low density lipoprotein; HDL, high density lipoprotein; apo, apolipoprotein; CHD, coronary heart disease.