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## The Effects of Insulin on Serum Levels of Apo A-I Containing Lipoprotein Particles in Syndrome X Patients With Coronary Heart Disease

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**Abstract:** Syndrome X consists of low serum high density lipoprotein-cholesterol (HDL-C), raised serum triglyceride, glucose intolerance, increased blood pressure, abdominal obesity and insulin resistance which is associated with increased risk of coronary heart disease (CHD). Apolipoprotein (apo) A-I containing lipoprotein particles, lipoprotein A-I (Lp A-I) and lipoprotein A-I:A-II (Lp A-I:A-II.) may have different metabolic functions. The purpose of this study was to evaluate the relationship between insulin and apo A-I containing lipoproteins in syndrome X patients with or without CHD. We selected 38 male patients with syndrome X and divided into two groups: The one with CHD (n=21) and the other without CHD (n=17). Third group including 22 normal male subjects was the control group. We measured fasting blood glucose, cholesterol, triglyceride, low density lipoprotein-cholesterol (LDL-C), HDL-C, apo A-I, apo B, Lp A-I, Lp A-I:A-II and insulin, and 2-h glucose and insulin levels after a 75 g oral glucose tolerance test in all subjects. In both syndrome X groups, serum levels of triglyceride, apo B, fasting glucose and insulin, and 2-h glucose and insulin were significantly increased ( $p<0.01$  for fasting insulin,  $p<0.001$  for others) in comparison with the control group, whereas HDL-C, apo A-I and Lp A-I concentrations were significantly lower ( $p<0.001$  for all). However Lp A-I:A-II levels were not different between three groups. Syndrome X group with CHD had significantly higher 2-h and fasting insulin levels than syndrome X group without CHD ( $p<0.02$ ). Lp A-I and Lp A-I:A-II levels were correlated inversely with triglyceride, fasting and 2-h insulin levels (varying degrees between  $p<0.05$  and  $p<0.001$ ) only in syndrome X group with CHD. These results suggest that (1), low HDL-C levels observed in syndrome X patients could be attributed to only decreased Lp A-I concentration; (2), the serum levels of apo A-I containing lipoproteins can be effected by insulin; (3), the greater insulin levels observed in syndrome X patients with CHD may be responsible in part for increased risk of CHD.

**Key Words:** High density lipoprotein-cholesterol, Apolipoprotein A-I, Lipoprotein A-I, Lipoprotein A-I:A-II, Glucose intolerance, Atherosclerosis, Insulin resistance, Hyperinsulinaemia.

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