World Academy of Science, Engineering and Technology
International Journal of Biomedical and Biological Engineering
Vol:10, No:02, 2016

Apolipoprotein A1 -75 G to a Substitution and Its Relationship with Serum ApoA1 Levels among Indian Punjabi Population

Authors : Savjot Kaur, Mridula Mahajan, AJS Bhanwer, Santokh Singh, Kawaljit Matharoo

Abstract : Background: Disorders of lipid metabolism and genetic predisposition are CAD risk factors. ApoA1 is the apolipoprotein component of anti-atherogenic high density lipoprotein (HDL) particles. The protective action of HDL and ApoA1 is attributed to their central role in reverse cholesterol transport (RCT). Aim: This study was aimed at identifying sequence variations in ApoA1 (-75G>A) and its association with serum ApoA1 levels. Methods: A total of 300 CAD patients and 300 Normal individuals (controls) were analyzed. PCR-RFLP method was used to determine the DNA polymorphism in the ApoA1 gene, PCR products digested with restriction enzyme MspI, followed by Agarose Gel Electrophoresis. Serum apolipoprotein A1 concentration was estimated with immunoturbidimetric method. Results: Deviation from Hardy- Weinberg Equilibrium (HWE) was observed for this gene variant. The A- allele frequency was higher among Coronary Artery disease patients (53.8) compared to controls (45.5), p= 0.004, O.R= 1.38(1.11-1.75). Under recessive model analysis (AA vs. GG+GA) AA genotype of ApoA1 G>A substitution conferred ~1 fold increased risk towards CAD susceptibility (p= 0.002, OR= 1.72(1.2-2.43). With serum ApoA1 levels < 107 A allele frequency was higher among CAD cases (50) as compared to controls (43.4) [p=0.23, OR= 1.2(0.84-2)] and there was zero % occurrence of A allele frequency in individuals with ApoA1 levels > 177. Conclusion: Serum ApoA1 levels were associated with ApoA1 promoter region variation and influence CAD risk. The individuals with the APOA1 -75 A allele confer excess hazard of developing CAD as a result of its effect on low serum concentrations of ApoA1.

Keywords : apolipoprotein A1 (G>A) gene polymorphism, coronary artery disease (CAD), reverse cholesterol transport (RCT)
Conference Title : ICSMA 2016 : International Conference on Cardiovascular System and Medical Applications
Conference Location : Melbourne, Australia
Conference Dates : February 04-05, 2016