Interactions Between Caveolin-1 (rs3807992) Polymorphism and Major dietary patterns on Cardio-metabolic Risk Factors Among Obese and Overweight Women

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Abstract

Background: Caveolin is a cholesterol-dependent essential component located in caveolae. Several studies have been shown CAV-1 SNP related to cardio-metabolic parameters in animal models, however there is few studies in humans. Importantly, there is no study has investigated the interaction between CAV-1 rs3807992 gene and dietary pattern on CVDs risk factors in Iranian population.

Methods: The current cross-sectional study was conducted on 404 overweight and obese females with mean age of 36 years. Dietary intake obtained from FFQ with 147 items. The CAV-1 genotype was measured by the PCR-RFLP method. The anthropometric measurements, serum lipid profile and inflammatory markers were measured.

Results: There was a significant interaction between CAV-1 rs3807992 and healthy dietary pattern on HDL (P interaction=0.03), TC/HDL (P interaction=0.03) and hs-CRP (P interaction=0.04); in A-allele carriers, higher adherence to the healthy dietary pattern was related to higher level of HDL and lower TC/HDL and hs-CRP. As well as, the significant interactions were observed between CAV-1 rs3807992 and unhealthy dietary pattern in relation to TG (P interaction = 0.001), AST (P interaction = 0.01) and MCP-1(P interaction = 0.01); A-allele carriers were more adherence to the unhealthy dietary pattern to lower levels of TG, AST and MCP-1.

Conclusions: Our study showed that CAV-1 rs3807992 SNP interacts with adherence to unhealthy or healthy dietary patterns to influence several cardio-metabolic risk factors in obese and overweight females. Further large prospective studies are warranted to confirm our findings