Association of beta-adrenergic receptors polymorphisms with Body Mass Index in a Southeastern European Caucasian population


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Introduction: Catecholamines are major stimulating lipolysis hormones and their function is regulated through the activation of beta-adrenergic receptors. Genetic polymorphisms of these receptors, rs1801252, rs1801253 (ADRB1), rs1042713, rs1042714 (ADRB2) and rs4994 (ADRB3), have been associated with Body Mass Index (BMI) and obesity. The aim of this study is to investigate the association of the aforementioned polymorphisms with BMI and obesity in a Southeastern European Caucasian population.

Materials and Methods: A total of 332 volunteers were divided in groups according to their BMI. After signing a written informed consent DNA was extracted from buccal swabs and genotyping was performed using real-time PCR. Data were analyzed with IBM Statistics SPSS 22.0.

Results: Rs1801252 showed significant association of body weight gain between normal and overweight subjects, and rs1801253 among obese subgroups (p-value<0.05). Rs1042713 and rs1042714 were associated with elevated BMI among overweight and obese subgroups (p-value<0.05). The rest comparisons showed no statistically significant results.

Discussion: Beta-adrenergic receptor polymorphisms seem to influence BMI values in Southeastern European individuals. Thus, genotyping for these polymorphisms might provide a better understanding on the development of obesity and contribute to its prevention. Further investigation in larger samples and different populations is required to determine their correlation with obesity.