

ASSOCIATION BETWEEN GENETIC VARIANTS AND OBESITY IN THE LITHUANIAN ADULT POPULATION

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Introduction: Eating habits play a big role in the onset of obesity and there are some genes, associated with regulation of the food intake. The melanocortin-4 receptor (*MC4R*) and neuropeptide Y (*NPY*) are peptides that play part in the hypothalamic appetite regulation mechanism. Fat mass and obesity associated (*FTO*) gene variant is associated with human adiposity and metabolic disorders. The aim of this study was to evaluate the effect of *MC4R*, *NPY* and *FTO* genes polymorphisms on body mass index in the Lithuanian adult population. Methods: The study subjects were participants of the Kaunas Cardiovascular Risk Cohort study. The data from 507 subjects (48-49 year-old) were analysed. The single-nucleotide polymorphisms, *MC4R* rs17782313, *NPY* rs16139, *FTO* rs9939609 gene was assessed using a real-time polymerase chain reaction. Results: We found that the *MC4R* rs17782313 polymorphism has a statistically significant effect on the body mass index in the Lithuanian population: women with the CT and CC genotypes have a higher BMI by 1,97 kg/m² than women with the TT genotype, men with the same genotype have a 1,53kg/m² higher BMI than men with the TT genotype. The carriers of the *FTO* AA genotype had the highest mean values of body mass index. (BMI). They had 1.72 time higher odds of obesity (P=0.009) than those with the TT genotype. We didn't find statistically significant association between the *NPY* rs16139 polymorphism and BMI. Conclusion: The *MC4R* rs17782313 and *FTO* rs9939609 variants were significantly associated with BMI, and with the risk of obesity in the Lithuanian population.