Abstract

Obesity is one of the most common metabolic diseases in the whole world that increases risk of many other health problems. Origin of this multifactorial disease is influenced by many factors, including genetic ones. This work was realized within the project COPAT (Childhood Obesity Prevalence And Treatment). The main goal was to study two single nucleotide polymorphisms (SNPs) (rs9939609, rs1421085) in *FTO* (fat mass and obesity associated) gene and their possible impact on anthropometric traits, body composition or weight reduction. We examined two groups – 356 overweight and obese children who took part in 4-weeks weight reduction program and 412 Czech adolescents of the control group. Genotyping was performed using TaqMan allelic discrimination. Weight reduction program resulted in significantly loss of most of the examinated antropometric traits including body fat mass and visceral fat ($p < 0,001$). Results showed significant association of the minor A-alelle of rs9939609 with overweight and obesity (OR = 1,33; 95%CI 1,08−1,64) as well as of the minor C-alelle of rs1421085 (OR = 1,38; 95%CI 1,12−1,70). Nevertheless, there was no clear evidence of interaction between the *FTO* rs9939609 genotype and antropometric traits, body composition or weight loss. Results of this work confirmed that tested minor alleles in *FTO* gene are possible risk factors for development of obesity.

Key words: obesity, children, adolescents, body composition, weight loss, genetic factors, *FTO* gene