THE POLYMORPHISM rs8050136:A>C IN FTO GENE IN OBESE BRAZILIAN WOMEN WITH TYPE 2 DIABETES MELLITUS


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The type 2 Diabetes mellitus (T2DM) is a group of metabolic disorders which affects carbohydrates, fatty and proteins metabolism. T2DM development is associated by genetic factors and obesity. FTO (Fat Mass and Obesity Associated, OMIM: 610966) gene encodes for an enzyme called the 2-oxoglutarate-dependent nucleic acid demethylase (2OG oxygenase). The mechanism proposed for this enzyme is associated with DNA and RNA demethylation, which regulates the energetic balance. Modifications in 2OG oxygenase expression may increase the risk for T2DM and obesity development. This case-control study aimed to investigate the association of rs8050136:A>C in T2DM obese women in a Brazilian sample population. A sample of 271 unrelated Euro-Brazilian women were classified as either healthy non-obese (CTRL, n=141; Body Mass Index (BMI)<25 kg/m$^2$) or obese T2DM women (ObT2DM, n=130; BMI≥30 kg/m$^2$). The diabetes diagnosis was based on the American Diabetes Association criteria (2010). The Ethics Committee on Human Research of the Federal University of Parana approved this study. The genomic DNA samples were obtained from peripheral leukocytes (salting out method). The genotyping was performed using real-time PCR (fluorescent probe code C___2031259_10, rs8050136:A>C, 7500 Fast™, Applied Biosystems). A probability of less than 5% ($P<0.05$) was considered significant for all analyses. This polymorphism was in the Hardy-Weinberg equilibrium for both groups. The genotypes frequencies for CTRL and ObT2DM, respectively, were AA=34.8%, AC=45.4%, CC=19.8% and AA=30.0%, AC=52.3%, CC=17.7%, $P=0.521$. The minor allele frequencies (MAF% [95%CI]) for CTRL was 42.6% [37-48%] and 43.8% [38-50%] for ObT2DM, $P=0.761$. Against with our results, the A-allele of the rs8050136:A>C polymorphism was reported strongly associated with T2DM in Han Chinese and in European subjects. In conclusion, rs8050136:A>C (FTO) was not associated with obesity-type 2 diabetes in Euro-Brazilian women.

Keywords: Type 2 Diabetes mellitus, obese women, FTO (rs8050136).

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