

ASSOCIATION OF OXIDATIVE STRESS GENETIC POLYMORPHISMS WITH OBESITY IN A SOUTHEASTERN EUROPEAN CAUCASIAN POPULATION

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Introduction: Obesity is a chronic inflammation categorized with BMI. Studies show correlation between oxidative stress and obesity. We examined the polymorphisms rs4880 (*SOD2*), rs1050450 (*GPx1*) and rs2234922 (*EPHx1*) which are related to oxidative stress in Southeast European Caucasian population. The aim of this study is to relate these polymorphisms to the predisposition of obesity to this specific population.

Materials and Methods: DNA samples have been collected in buccal swaps from 203 volunteers, 18-65 years old. Each subject was classified to one of the following groups: a) normal weight ($18,5 \leq \text{BMI} < 25$) 73 volunteers, b) overweight ($25 \leq \text{BMI} < 30$) 59 volunteers c) obese ($\text{BMI} \geq 30$) 71 volunteers. Obese were further categorized to d) obese type I ($30 \leq \text{BMI} < 35$) 41 volunteers, e) obese type II+III ($\text{BMI} \geq 35$) 30 volunteers. Genotyping was performed using real-time PCR after anonymization and de-identification of the volunteers. The results were statistically analyzed.

Results: With statistical analysis we obtained the following: Regarding rs2234922: the homozygous wild genotype A:A is more frequent in the overweight group than in volunteers with normal BMI ($p=0.015$, $\text{OR}=0.421$, $\text{CI}=0.209-0.850$) and the frequency of distribution of A:A in the obese type I group differs from the overweight group ($p=0.016$, $\text{OR}=2.713$, $\text{CI}=1.191-6.179$). In respect to rs4880, homozygous mutant genotype T:T is more frequent in the obese type I group than the obese type II+III group ($p=0.046$, $\text{OR}=3.370$, $\text{CI}=0.980-11.587$). Regarding rs1050450: the homozygous mutant genotype T:T is more frequent in the obese type I group than in subjects with normal BMI ($p=0.037$, $\text{OR}=3.141$, $\text{CI}=1.029-9.583$), T:T is more frequent in obese subjects than in overweight subjects ($p=0.013$, $\text{OR}=5.797$, $\text{CI}=1.242-27.054$) and T:T is more common in the obese type I group than the overweight group ($p=0.004$, $\text{OR}=8.016$, $\text{CI}=1.631-39.392$).

Discussion and Conclusions: The A:A genotype of rs2234922 shows a tendency of appearance in the overweight group than in subjects with normal BMI. Still, the A:A tends to occur more often in obese and obese type I subjects than the overweight, as individuals with rs2234922 show increased antioxidant activity of the EPHx1. The T:T genotype of rs4880 exhibit a higher frequency in the obese type I group than in the obese type II and III group. The T:T genotype of rs1050450 tends to occur more often in the obese type I group than in the normal BMI group and also in the obese group and the obese type I subjects than in the overweight, which is expected due to the role of the GPx1.