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To investigate the influence of polymorphisms in *PRDM16* and *PDE4D* genes which are involved in thermogenesis process on obesity and blood lipids profile in Saudi population

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Aim: The aim of this study was to investigate the influence of polymorphisms in *PRDM16* and *PDE4D* genes which are involved in thermogenesis process on obesity and blood lipids profile in Saudi population.

Methods: A case control format was used that involved 89 obese individual and 84 non-obese (control). The *PRDM16* (rs2651899) and *PDE4D* (rs295978) polymorphisms were genotyped using KASPTM (Competitive Allele-Specific PCR) method.

Results: Participants with the mutated genotypes, AA and AG, of *PRDM16* (rs2651899) polymorphism were significantly more likely to be obese as compared to participants with wild type genotype (OR=21, 95% CI=5.4190 to 84.4231, P value<0.0001 and OR=44.6, 95% CI=11.5984 to 172.0157, P value<0.0001, respectively). This polymorphism found to be significantly affecting the participants blood lipids profiles. In contrast, *PDE4D* (rs295978) polymorphism was not associated with risk of obesity and had no effects on blood lipids profile.

Conclusions: We found that the *PRDM16* polymorphism (rs2651899) is a risk factor for obesity and influence blood lipids profiles significantly in Saudi population. While the *PDE4D* (rs295978) polymorphism didn't show significant effect on risk of obesity or blood lipids profiles.

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