

High prevalence of the PDE8B rs4704397 (G>A) risk allele in a cohort of normal and overweight/obese Sri Lankan young women

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The “A” allele of the phosphodiesterase 8B (PDE8B) rs4704397(G>A) polymorphism is proposed to increase the risk of subclinical hypothyroidism, a known risk factor for infertility and obesity. While only one study has examined the role of A allele in childhood obesity, its association with adult obesity remains unclear. Hence, we aimed to examine the prevalence of PDE8B rs4704397(G>A) polymorphism among normal and overweight/obese Sri Lankan females. A case-control study was conducted at NSBM Green University on 30 healthy young females, including 14 with normal BMI (18.5–22.9 kg/m²) and 16 overweight/obese (BMI ≥23 kg/m²). The rs4704397(G>A) polymorphism was genotyped using PCR-RFLP method. Associations between BMI groups and polymorphisms were analyzed using the chi-square test. The study was approved by the Ethics Review Committee, Faculty of Medicine, University of Colombo (EC-23-140). The mean BMI was 20.9 kg/m² for normal-weight and 26.2 kg/m² for overweight/obese, with a mean age of 23 years (SD=1.931). Among the 14 normal-weights, seven (50%) carried the AA genotype and the 50% carried the AG genotype. None had the GG genotype. In 16 overweight/obese group, all three genotypes were present: AA (n=4;25%), AG (n=9;56%), and GG (n=3;19%). All normal-weight participants carried at least one A (risk) allele, compared to 13 (81%) in overweight/obese. The frequency was higher in the normal-weight (75%) than in the overweight/obese (53%), with an overall allele distribution of 63% A and 37% G. No association was observed between BMI and rs4704397(G>A) polymorphism (p=0.139). The findings indicate that carrying the risk allele may not be directly associated with BMI, possibly due to unmeasured factors such as fat distribution. The presence of the risk allele in normal-weight females suggests a potential future risk for thyroid dysfunction and infertility. This study is a preliminary investigation of the PDE8B gene in Sri Lanka with a small, single-center sample. Larger studies across diverse populations are needed to gain more comprehensive insights.

Keywords: *PDE8B Gene, rs4704397 (G>A), Risk allele, Thyroid dysfunction, Overweight/obese*