

Association of Brain-Derived Neurotrophic Factor (BDNF) Gene with Obesity and Metabolic Traits in Malaysian Adults

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Abstract : Obesity is a growing global health issue. Obesity results from a combination of environmental and genetics factors. Brain-derived neurotrophic factor (BDNF), a gene encodes the BDNF protein and the BDNF gene have been linked to regulation of body weight and appetite. Genome-wide association studies have identified the BDNF variants to be related to obesity among Caucasians, East Asians, and Filipinos. However, the role of BDNF in other ethnic groups remains inconclusive. This case control study aims to investigate the associations of BDNF gene polymorphisms with obesity and metabolic parameters in Malaysian Malays. BDNF rs4074134, BDNF rs10501087 and BDNF rs6265 were genotyped using Sequenom MassARRAY. Anthropometric, body fat, fasting lipids and glucose levels were measured. A total of 663 subjects (194 obese and 469 non-obese) were included in this study. There were no significant associations association between BDNF SNPs and obesity. The allelic and genotype frequencies of the BDNF SNPs were similar in the obese and non-obese groups. After adjustment for age and sex, the BDNF variants were not associated with obesity, body fat, fasting lipids and glucose levels. Haplotypes at the BDNF gene region, were not significantly associated with obesity. The BDNF rs4074134 was in strong LD with BDNF rs10501087 ($D'=0.98$) and BDNF rs6265 ($D'=0.87$). The BDNF rs10501087 was also in strong LD with BDNF rs6265 ($D'=0.91$). Our findings suggest that the BDNF variants and the haplotypes of BDNF gene were not associated with obesity and metabolic traits in this study population. Further research is needed to explore other BDNF variants with a larger sample size with gene-environment interactions in multi ethnic Malaysian population.

Keywords : genomics of obesity, SNP, BMI, haplotypes

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